Mission Springs Water District
66575 Second Street, Desert Hot Springs, CA 92240 • www.mswd.org • p 760.329.6448 • f 760.329.2482

**Notice of Availability of a Draft Program Environmental Impact Report (PEIR)
prepared by the Mission Springs Water District (MSWD)
for its Comprehensive Water System Master Plan (Water Master Plan)**

The proposed project is the adoption of a Water Master Plan by MSWD. The Master Plan identifies the water system improvements that are forecast to be needed by MSWD to meet the anticipated demand for water over the planning period through the year 2025. The Master Plan identifies the type, location and timing of water system improvements that are forecast to be needed over the Master Plan planning period. The Master Plan identifies the wells, reservoirs, booster pump stations, pipelines and other appurtenant facilities that will be needed based on projected growth and growth patterns within the MSWD service area.

The purpose of the Master Plan is to provide a comprehensive planning tool to allow MSWD to more logically and efficiently provided water service to its customers over both the short and long terms. The beneficiaries of this more efficient method of planning for and implementing the needed water system improvements will be the customers of MSWD in that it this method of planning will provided a more reliable and efficient water supply.

MSWD has authorized the release of the Draft PEIR for public review and comment. The Draft PEIR is available for review at the MSWD office at the address listed below. The period of review for the Draft PEIR will be from March 3, 2008 to April 16, 2008. Written comments on the Draft PEIR should be submitted to MSWD at the following address no later than April 16, 2008:

Mission Springs Water District
Attn: Mr Brent Gray
66575 Second Street
Desert Hot Springs, CA 92240

In addition to being available for public review at the MSWD, the Draft PEIR is available for public review at:

Riverside County Library
Desert Hot Springs Branch
11691 West Drive
Desert Hot Springs, CA 92240

The date for consideration of the Draft PEIR by MSWD has not yet been scheduled. Appropriate public notice shall be given when the date and location of the hearing related to this project is known. Please contact Mr. Brent Gray at (760) 329-6448 for further information.

DRAFT
PROGRAM ENVIRONMENTAL IMPACT REPORT

FOR THE
MISSION SPRINGS WATER DISTRICT
WATER MASTER PLAN PROJECT

(SCH#2006071105)

Prepared for:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Prepared by:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

FEBRUARY 2008

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List of Abbreviations and Acronyms

AAQS	Ambient Air Quality Standards
acre-ft/yr	acre-feet per year
AMSL	above mean sea level
APCD	Air Pollution Control Districts
APE	area of potential effect
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARAs	Aggregate Resource Areas
BACMs	Best Available Control Measures
BART	Bay Area Rapid Transit
CAA	Clean Air Act
Caltrans	California Department of Transportation
CARB	California Air Resource Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDHS	California Department of Health and Safety
CEQA	California Environmental Quality Act
CFD	County Fire Department
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNG	Compressed Natural Gas
CPUC	California Public Utilities Commission
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DDA	Disposition and Disposal Agreement
DOT	U.S. Department of Transportation
DTSC	Department of Toxic Substances Control

List of Abbreviations and Acronyms (continued)

EMSTC	El Monte Station Transit Center
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Floor Area Ratio
FHWA	Federal Highway Agency
FTA	Federal Transit Authority
gpd	gallons per day
HCM	Highway Capacity Manual
HI	hazard index
HOV	High Occupancy Vehicle
HWCL	Hazardous Waste Control Law
HWMP	Hazardous Waste Management Plan
I-10	Interstate 10 freeway
LACDA	Los Angeles County Drainage Area
LARWQCB	Los Angeles Regional Water Quality Control Board
Ldn	day-night average sound levels
LEED	Leadership in Energy & Environmental Design, a green building rating system
Leq	equivalent sound levels
LOS	Level of Service
MCL	maximum contaminant levels
MGD	million gallons per day
Mmcfd	million cubic feet per day
MSDSs	Material Safety Data Sheets
MTA	Metropolitan Transportation Authority
NAHC	Native American Heritage Commission
NIH	National Institutes of Health
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
OEHHA	Office of Environmental Health Hazard Assessment
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
OU	Operable Unit

List of Abbreviations and Acronyms (continued)

PCE	perchloroethylene
PEIR	Program Environmental Impact Report
RCRA	Resource Conservation and Recovery Act
RMC	Rivers and Mountains Conservancy
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments & Reauthorization Act
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SEAs	Significant Ecological Areas
SoCAB	South Coast Air Basin
SoCalGas	Southern California Gas Company
SUSMP	Standard Urban Storm Water Mitigation Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCE	trichloroethylene
TDA	Tom Dodson & Associates
TMDLs	Total Maximum Daily Loads
TOD	transit-oriented development
TPH	Total Petroleum Hydrocarbon
UBC	Uniform Building Code
UFC	Uniform Fire Code
UMPTA	Urban Mass Transportation Administration
USFWS	U.S. Fish and Wildlife Service
V/C	volume-to-capacity
VOCs	volatile organic compounds
WDRs	Waste Discharge Requirements
WRPs	water reclamation plants

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CHAPTER 1 - EXECUTIVE SUMMARY

This Executive Summary addresses the environmental effects of implementing the proposed Mission Springs Water District's Comprehensive Water System Master Plan (Water Master Plan or WMP) project including the Northwest Area Water Master Plan Technical Memorandum prepared by URS dated October 22, 2007 (Northwest Area Technical Memorandum). The Northwest Area Technical Memorandum is an addendum to the WMP. This Chapter summarizes the project background, project objectives, and project description. Table 1-1 summarizes environmental impacts, mitigation measures, and mitigation responsibility is included at the end of this summary. The State Clearinghouse (SCH) has assigned the project SCH#2006071105.

1.1 INTENDED USE OF THIS ENVIRONMENTAL IMPACT REPORT

This environmental impact report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) Statutes and Guidelines, 1990, pursuant to Section 21151 of CEQA. The Mission Springs Water District is the local Lead Agency for the project and has supervised the preparation of this EIR. The EIR is an informational document which will inform and assist public agency decisionmakers and the general public of significant environmental effects of the project. Possible ways to minimize significant effects of the project and reasonable alternatives to the project are also identified in the EIR. This document assesses the impacts, including unavoidable adverse impacts and cumulative impacts, related to the construction and operation of the proposed project. This EIR is also intended to support the permitting process of all agencies from which discretionary approvals must be obtained for particular elements of this project.

This environmental impact report (EIR) will serve as a program EIR (PEIR) for the Water Master Plan. Section 15168 of the State CEQA Guidelines provides that a " program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related " in the following manner: within the same geographic area; they are interrelated as a logical part in the chain of contemplated actions by MSWD; and they are essentially part of the overall program (one large project) being implemented by MSWD to fulfill its water resources management responsibilities within its service area.

The California Environmental Quality Act (CEQA) requires that the Lead Agency (in this case the MSWD) consider the environmental information in the project record, including this PEIR, prior to making a decision on the proposed project. The decision that will ultimately be considered by the governing board of MSWD is whether or not to certify the Final PEIR (FEIR) as adequate to in addressing environmental effects of implementing the Water Master Plan.

This PEIR has been prepared by Tom Dodson & Associates (TDA) under contract to Mission Springs Water District in accordance with Section 21151 of CEQA. MSWD retained TDA to assist in performing the independent review of the project required by CEQA prior to releasing the PEIR as a draft for public review. MSWD has reviewed the content of the Draft PEIR and concurs with the evaluations, conclusions and findings contained herein.

1.2 PROJECT BACKGROUND

Mission Springs Water District (MSWD or District) was incorporated under California water law as the Desert Hot Springs County Water District (DHSCWD). In 1987, the Board of Directors of DHSCWD changed the water district's name to MSWD. Continued land annexation and acquisition of water facilities has caused MSWD to grow from one square mile and 504 services in 1953 to a service area encompassing approximately 135 square miles and over 12,000 services. MSWD is obligated by state law to provide an adequate supply of high quality water to customers in its service area. The provision of this service requires substantial resources to operate and maintain the system. To maintain system efficiency, capacity and reliability, a periodic review and evaluation of the entire water system is required. To accomplish this, MSWD updated its August 2000 Water Master Plan through preparation of this Water Master Plan dated November 2005 (2005 Water Master Plan).[1] Data contained in the Water Master Plan and other documents are used in this PEIR.

The Water Master Plan identifies a series of water system improvements which should be implemented to meet future water demands in the service area based on regional and local growth projections. These improvements include the installation of new wells, booster pump stations, reservoirs, pipelines, etc. The Water Master Plan forecasts that the MSWD system would experience a water production and storage shortfall within its service area. To overcome this shortfall, MSWD is proposing to construct a series of water system improvements over the planning life of this WMP (2025). These location, type and timing of these water system improvements have been determined using the best planning data available. However, the actual construction of these improvements will be dependent on the actual need based on population growth patterns and timing. Therefore, it is possible that not all the WMP facilities will be developed at the time proposed by the WMP. This WMP is considered a planning tool for MSWD to operate its water system in the most efficient and effective methods available.

The Northwest Area Technical Memorandum provides recommendations for adjustments to the current District and WMP's primary pressure zones and identifies system improvements that are forecast to be needed through buildout of the MSWD Service Area estimated to be about 2050. Therefore, the Northwest Area Technical Memorandum identifies the need for more water production and supply facilities than the Comprehensive Water System Master Plan which has a planning horizon of 2025. The Northwest Area Technical Memorandum does not propose additional water production facilities through the year 2025 than are proposed by the WMP. However, the adjustments to the primary pressure zones are intended to be implemented on an ongoing basis to provide a more efficient water system through implementation of the WMP.

1.3 PROJECT OBJECTIVES

The District is obligated by State law to provide an adequate supply of potable water to customers within its service area. MSWD does not establish land uses (density and type of development) allowed within its service area. These issues are under the jurisdiction of the cities of Desert Hot Springs and Palm Springs and the County of Riverside for MSWD's Service Area.

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[1] Mission Springs Water District *Comprehensive Water System Master Plan* prepared by URS Corporation, November 30, 2005.

The Water Master Plan forecasts that MSWD will experience a potential water supply shortfall based on anticipated growth and current land uses allowed. The District's objective is to provide its customers a reliable and adequate supply of potable water based on existing and anticipated demand. The WMP has been developed to contribute to the District's ability to meet this objective and California Department of Health Services requirements for system reliability, redundancy, and public health and safety.

1.4 PROJECT APPROVALS

1.4.1 Lead Agency

- Mission Springs Water District
  - » Approve the Water Master Plan and authorize the expenditure of the necessary funds to construct, operate and maintain the proposed facilities.
  - » Certify the Environmental Impact Report.

1.4.2 Responsible Agencies

The following state and local agencies may serve as responsible agencies for this project based on their need to issue permits or agreements to implement the Water Master Plan.

- California Regional Water Quality Control Board (RWQCB)
  - » Issue a National Pollution Discharge Elimination System (NPDES) General Permit for construction activities.
  - » Issue a DeMinimus Discharge Permits for discharges of water from the proposed well.
- California Department of Health Services
  - » Revise Mission Springs Water District's permit to operate the water system to include the facilities developed as part of the Water Master Plan.
- California Department of Fish and Game
  - » Streambed Alteration Agreement under Section 1600 of the State Fish and Game Code, if needed.
- California Regional Water Quality Control Board
  - » Issue a water quality certification under Section 401 of the State Clean Water Act, if needed.
- California Department of Transportation (Caltrans)
  - » Issue Encroachment Permits for work in state highways.

- County of Riverside
  - » Issue an inspection permit for work performed in public right-of-ways.
  - » Issue a well drilling permit.
- Riverside County Flood Control and Water Conservation District
  - » Issue an Encroachment Permit for work in Mission Creek Channel, if needed.
- Cities of Desert Hot Springs and Palm Springs
  - » Issue Encroachment Permits for work in City roads.

1.5 PROJECT IMPACTS

Before MSWD can proceed with the proposed project, it is required to identify the potential environmental impacts of the project and, where potential significant impacts are identified, the agency must determine whether there are feasible mitigation measures or alternatives that can be implemented to avoid or substantially lessen significant environmental effects of a project. The first step in this process, completion of an Initial Study to determine whether an EIR is required, was completed for the project.

The Initial Study determined that, with applicable mitigation, the WMP could be implemented without causing significant adverse impacts to or associated with the following issues: ***aesthetics, agricultural resources, hazards and hazardous materials, mineral resources, recreation, and transportation and traffic***.

The Initial Study determined that for following issues, implementation of the WMP had the potential to result in significant adverse impacts:

Air Quality
Biological Resources
Geology and Soils
Hydrology and Water Quality
Land Use and Planning
Noise
Population and Housing
Public Services
Utilities and Service Systems

Comments on the scope of the PEIR received during the NOP process and public meeting process are provided in Chapter 8 and summarized in the subsections of Chapter 4 for the applicable issues. These comments have been considered and included in the evaluation provided in this document.

The comments received did not result in any additional issues being identified for evaluation in this PEIR and the scope of this document remains the same as identified in the NOP.

1.6 ALTERNATIVES

The California Environmental Quality Act (CEQA) and the State CEQA Guidelines require an evaluation of alternatives to the proposed action. Section 15126 of the State CEQA Guidelines indicates that the "discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of not significant...." In this case the Initial Study determined that nine environmental issues with the potential of causing potential or actual significant adverse impacts if the proposed project is implemented as proposed. The State Guidelines also state that "a range of reasonable alternatives to the project....which could feasiblely attain the basic objectives of the project" and "The range of alternatives required in an EIR is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." For this project, two alternatives have been selected for evaluation in an effort to reduce the proposed project's impacts to a less than significant level. A discussion of the alternatives considered and evaluated are provided in Section 7 of this PEIR.

The no-project alternative evaluated in this PEIR has two possibilities. The first is that the WMP is not adopted and no future water supply systems within the MSWD Service Area are developed. The existing system remains the only water supply system available within the MSWD Service Area. The other no-project alternative assumes that the WMP is not adopted or implemented but that water system improvements are developed in the future by other jurisdictions, individuals or even MSWD on an ad hoc or as-needed basis without the benefit of a master plan. Because it is forecast that population growth and the demand for water will continue to increase, it is anticipated that this demand will be satisfied in some manner as long as water is available in the MSWD Service Area. This means that individual jurisdictions such as the cities or individuals could develop their own water systems. Therefore, this no-project alternative is considered to be the most reasonable or likely no-project alternative.

In addition to the no-project alternative, one other alternative was determined to feasibly attain the basic objectives of the project and is also a reasonable choice. This alternative is Extract Groundwater from Other Sub-basins. Five groundwater sub-basins are located within the MSWD boundaries. Of these sub-basins, MSWD extracts groundwater from three. Of these groundwater extractions, over 90 percent is extracted from the Mission Creek Groundwater Subbasin (MCGS). The WMP proposes the development of 17 new water supply wells. Of these 17 new wells, 16 are proposed within the MCGS. Of these 16 proposed wells, 7 of the wells are necessary to fill critical water surplus shortfalls and necessary system redundancy needs in the present MSWD system. The analysis of this alternative evaluates the potential impacts associated with the development of wells within the other basins. The evaluation of these alternatives also includes the identification of an environmentally superior alternative as required by CEQA. The Extraction of Water from Other Sub-basins was determined to be the environmentally superior feasible alternative for significant impacts associated with implementation of the WMP as currently proposed but could result in significant impacts to the other sub-basins and biological resources dependant on those sub-basins that would not result from implementing the proposed project. The significance of the impacts to other sub-basins and biological resources from implementing this alternative is not identifiable at this time based on the information available.

Generally, a reduced project alternative would be evaluated. However, this project is a master plan intended for use as a planning tool to determine the type and location of water facilities that will be needed to meet future demand, fill critical system surplus shortfalls and provide system redundancy needs. The WMP evaluated a reduced growth scenario and determined that for planning purposes, use of the high growth alternative would provide the District with the most effective method of planning for future water system improvements. The actual development of water facilities will be dependant on the demand for such facilities and it is anticipated they will be constructed when needed regardless of which growth scenario is used in the WMP. The high growth scenario was determined to be the most effective for planning purposes in that it allows the District to plan for future water system improvements in the shortest period of time and thus better ensure that it meets its obligation to provide an adequate water supply to customers in its service area.

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Geology / Soils	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-1 A site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Special Publication 117, Guidelines for Evaluation and Mitigating Seismic Hazards in California.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-2 If evidence of faulting is identified, a site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Note 49, Guidelines for Evaluating the Hazard of Surface Fault Rupture. Facility location and design will be adjusted as necessary to provide structural setbacks. Additional measures may include strengthened foundations, other engineering design, and flexible utility connections.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-3 Apply appropriate design and construction criteria to all structures subject to significant seismic groundshaking.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-4 If evidence of liquefaction is identified, project design mitigation may include: • In-situ densification of susceptible soil. • Ground improvements such as removal and replacement of susceptible soils or dewatering. • Deep foundations designed to accommodate liquefaction. • Shallow foundation design to accommodate vertical and lateral ground displacement.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Geology / Soils (continued)	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-5	Comprehensive geotechnical investigations shall be required prior to engineering and design development or structural and/or substantial rehabilitation of structures identified under Risk Class I & II, e.g., public facilities, as identified below: Risk Class I & II, Structures Critically Needed after Disaster: Structures that are critically needed after a disaster include important utility centers, fire stations, police stations, emergency communication facilities, hospitals, and critical transportation elements such as bridges and overpasses and smaller dams. <u>Acceptable Damage</u>: Minor non-structural; facility should remain operational and safe, or be suitable for quick restoration of service. Risk Class III: High occupancy structures; uses are required after disasters (i.e., places of assembly such as schools and churches). <u>Acceptable Damage</u>: Some impairment of function acceptable; structure needs to remain operational. Risk Class IV, Ordinary Risk Tolerance: The vast majority of structures in urban areas; most commercial and industrial buildings, small hotels and apartment buildings, and single family residences. <u>Acceptable Damage</u>: An "ordinary" degree of risk should be acceptable. The criteria envisioned by the Structural Engineers Association of California provide the best definition of the "ordinary" level of acceptable risk. These criteria require that buildings be able to:	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Geology / Soils (continued)	.	4.2.5 (cont.) a. Resist minor earthquakes without damage; b. Resist moderate earthquakes without structural damage, but with some non-structural damage; or c. Resist major earthquakes, of the intensity or severity of the strongest experienced in California, without collapse, but with some structural, as well as non-structural damage. Risk Class V, Moderate to High Risk Tolerance: Open space uses, such as farms, ranches and parks without high occupancy structures; warehouses with low intensity employment; and the storing of non-hazardous materials. Acceptable Damage: Not applicable.	
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-6 All structures previously identified in categories III through V shall be designed in accordance with the applicable multiplier factor seismic design provisions of the Seismic Safety Report to promote safety in the event of an earthquake.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-7 The direct impacts of faults upon proposed projects shall be considered during preliminary planning processes, and the engineering design phases.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-8 All rehabilitation and new development projects implemented as a result of the proposed Project shall be built in accordance with current and applicable Uniform Building Code (UBC) standards and all other applicable laws, regulations and guidelines.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Geology / Soils (continued)	Degradation of surface water quality	4.2-9	Utilize silt-fencing, protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).	Less than Significant
	Degradation of surface water quality	4.2-10	Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After pipeline installation, soil shall be compacted to a level similar to pre-construction conditions.	Less than Significant
	Degradation of surface water quality	4.2-11	Construct diversion dikes and interceptor ditches to divert water away from construction areas.	Less than Significant
	Degradation of surface water quality	4.2-12	Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-13	Construction of facilities and structures areas with high liquefaction potential shall be limited without further geologic and hazard-related studies conducted by a qualified geologist or geotechnical firm. Such studies will provide guidelines to minimize the risks to humans and to capital-intensive facilities.	Less than Significant
	Exposure of people and new or rehabilitated structures to the risk of adverse effects associated with geologic hazards and soil constraints.	4.2-14	Any pipelines crossing the western portion of the Prado Basin and facilities at the CCWRF, RP-5, RP-2 and several OMMP facilities could be subject to subsidence and ground rupture associated with the subsidence. Any construction of facilities in or pipelines crossing this zone is required to have detailed geotechnical and structural engineering studies to ensure designs that can safely accommodate, per building code requirements, the described ground movement(s).	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Geology / Soils (continued)	Exposure of new and existing structures to adverse effects associated with subsidence induced by implementation of WMP facilities.	4.2-15	Continue to identify and study subsidence hazards and susceptible areas, and propose mitigation technology that is appropriate to the findings of the monitoring study. The implementation of WMP facilities shall not contribute to subsidence conditions in pre-existing subsidence zones. Implementation of the WMP will not cause or contribute to any new, significant subsidence impacts greater than a total of 6 inches in magnitude over the planning period. Impacts less than 6 inches in new areas are considered to be less than significant.	Less than Significant
Hydrology and Water Quality	Exposure of people and property to hazardous conditions or the degradation of water quality during construction.	4.3-1	For each Water Master Plan project construction site, regardless of size, a SWPPP will be prepared and implemented. Each plan shall identify the BMPs that will be used for that site to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality, including solid waste and require that any spills be cleaned up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. At a minimum, BMPs shall achieve a 60 percent removal of sediment and other pollutants.	Less than Significant
	Exposure of people and property to hazardous conditions or the degradation of water quality during construction.	4.3-2	Prior to authorizing contracts for drilling wells under the WMP, MSWD will require the well driller to identify all chemicals that will be used at the drilling site and require the submittal of a SWPPP for review and approval before allowing the drilling to commence. The SWPPP shall also address the proper use and	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Hydrology and Water Quality (continued)		4.3-2 (cont.) disposal of water obtained from well test pumping. A performance bond shall be provided by the driller to ensure that any residual contamination from will drilling can be corrected.	
	Exposure of people or property to flood hazards	4.3-3 If the facilities are constructed in a flood-zone, the facility will be brought to a level above flood hazards, or hardened against flood related impacts. Additionally, if facilities must be located within flood plains or hazard areas, a flood management program to minimize impacts to people and surrounding property shall be created and implemented for each facility that may occur within these hazards areas.	Less than Significant
	Exposure of people and property to hazardous conditions	4.3-4 Prior to implementation of a WMP facility at a specific site, MSWD shall evaluate the potential for the site to contain hazardous substances or wastes.	Less than Significant
		The following are the mitigation measures contained in the Initial Study:	
	Exposure of people and property to hazardous conditions	VII-1 If petroleum products are accidentally released to the environment during any phase of construction, MSWD shall require the area of contamination to be defined; shall require the removal of any contaminated soil or material from the contaminated area; and ensure that any area exposed to accidentally released contaminants are remediated to a threshold that meets regulatory requirements established by law or agencies overseeing the remediation.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Hydrology and Water Quality (continued)	Exposure of people and property to hazardous conditions	VII-2	Prior to initiating construction on any future District facility, the District will ensure that the various computer data bases are checked to determine whether any contaminated locations are known to occur within the construction footprint of the facility. If a known location with contamination is identified, the District shall proceed with construction only after conferring with a licensed professional (such as an industrial hygienist) and identifying any specific construction and employee protection measures that will be observed if the contamination is encountered during construction activities. The performance standard shall be the protection of all employees involved in construction from health hazards associated with the type of contamination that may be encountered.	Less than Significant
	Degradation of surface water quality	4.3-5	Design and construction of WMP facilities shall include the methods of reducing the amount of surface water discharged from the developed sites to as near pre-project conditions as possible. This shall include minimizing hard surfacing and the use of infiltration basin where feasible. This will also serve to improve the quality of water discharged from the developed site.	Less than Significant
	Depletion of groundwater supplies	4.3-6	MSWD shall continue to implement water conservation plans provided in the WMP, including public education.	Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Hydrology and Water Quality (continued)	Depletion of groundwater supplies	4.3-7	MSWD shall continue to percolate treated wastewater into the groundwater basin subject to future water reclamation plans and/or projects for the beneficial use of tertiary treated wastewater.	Significant
	Depletion of groundwater supplies	4.3-8	Delivery of recharge water to the MCGS via the recharge basins is subject to annual allocations from the California Department of Water Resources (DWR) administered through Desert Water Agency (DWA) our state contractor and according to an agreement between DWA, Coachella Valley Water District (CVWD), and Metropolitan Water District (MET) for exchange of State Water Project water for Colorado River water. Historically the range of recharge has varied from 0-to 25,000 AFY, with an average close to 15,000 AFY. Based on the historical record, future deliveries are anticipated to be on average 15,000 AFY subject to the availability of actual allocations. MSWD will support and promote to the best of its abilities the continued possibility for maximum recharge to the MCGS available.	Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Biological Resources	Reduction in habitat for and adverse effects on sensitive biological resources	4.4-1	Breeding Habitat in the Whitewater Canyon Conservation Area – Activities will be conducted outside of the March 1 - June 30 reproductive season unless otherwise authorized through a Minor Amendment to the Plan or through authorization by the permitting agency. Activities and projects involving water diversions in arroyo toad habitat are not Covered Activities. Take Authorization for Listed Species requires a Minor Amendment with Wildlife Agency concurrence or permitting agency concurrence if not covered by the Plan. Under the Plan, Wildlife Agencies nonconcurrence with Minor Amendments must occur within 60 days of receipt of a written proposed amendment. If the Wildlife Agencies concur, or if they fail to respond within the 60-day period, the Minor Amendment may be approved.	Less than Significant
	Reduction in habitat for and adverse effects on sensitive biological resources	4.4-2	Riparian Habitat – Covered Activities, including operation and maintenance (O&M) of facilities and construction of permitted new projects, in riparian Habitat will be conducted to the maximum extent feasible outside of the March 15 - September 15 nesting season for least Bell's vireo, and the May 1 – September 15 nesting season for southwestern willow flycatcher, summer tanager, yellow warbler, and yellow-breasted chat. If Covered Activities must occur during the nesting season, surveys shall be conducted to determine if any active nests are present. If active nests are identified, the Covered Activity shall not be conducted within 200 feet of an active nest. If surveys conducted during the nesting season document that Covered nesting riparian bird Species are not present, the Covered Activity may proceed.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)	Adverse effects on Desert Tortoise and its habitat.	4.4-3 Desert Tortoise – Inactive Season Protocol. This protocol is applicable to pre-construction and construction phases of utility Covered Activity projects occurring between November 1 and February 14. These protocols apply only to the site preparation and construction phases of projects. The project proponent must follow the eight pre-construction protocol requirements listed below. These protocol are adequate for projects not covered by the MSHCP which have been determined to have a potential to impact desert tortoise 1. A person from the entity contracting the construction shall act as the contact person with the representative of the appropriate Reserve Management Unit Committee (RMUC.) or the permitting agency. He/she will be responsible for overseeing compliance with the protective stipulations as stated in this protocol. 2. Prior to any construction activity within the Conservation Areas, the contact person will meet with the representative of the appropriate RMUC or the permitting agency to review the plans for the project. The representative of the appropriate RMUC or the permitting agency shall review the plans and recommend plan modifications to the contact person to further avoid or minimize potential impacts to desert tortoise.	Less than Significant

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SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) 3. The construction area shall be clearly fenced, marked, or flagged at the outer boundaries to define the limits of construction activities. The construction right-of-way shall normally not exceed 50 feet in width for standard pipeline corridors, access roads and transmission corridors, and should be minimized to the maximum extent feasible. Existing access roads should be used to the maximum extent feasible, and rights-of-way for new and existing access roads should normally not exceed 20 feet in width. Other construction areas including well sites, storage tank sites and laydown/staging sites which require larger areas will be determined in the pre-construction phase. All construction workers shall be instructed that their activities shall be confined to locations within the fenced, flagged, or marked areas. 4. An Acceptable Biologist shall conduct pre-construction clearance surveys of all areas potentially disturbed by the proposed project. Any winter burrows discovered in the Conservation Areas or on the project site during the pre-construction survey shall be avoided or mitigated. The survey shall be submitted to the representative of the appropriate RMUC or the permitting agency as part of plan review.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) 5. All site mitigation criteria shall be determined in the pre-construction phase, including but not limited to seeding, barrier fences, leveling, and laydown/staging areas, and will be reviewed by the representative of the appropriate RMUC or permitting agency prior to the start of construction. 6. A worker education program shall be implemented prior to the onset of each construction project. All construction employees shall be required to read an educational brochure prepared or approved by the representative of the appropriate RMUC and/or the RMOC or the permitting agency and attend a tortoise education class prior to the onset of construction or site entry. The class will describe the sensitive species which maybe found in the area, the purpose of the MSHCP Reserve System, if applic-able, and the appropriate measures to take upon discovery of a sensitive species. It will also cover construction techniques to minimize potential adverse impacts. 7. All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the supervision of an Acceptable Biologist.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) 8. If there are unresolvable conflicts between the representative of the appropriate RMUC and the contact person, then the matter will be arbitrated by the RMOC and, if necessary, by CVCC or the permitting agency if the project is not covered by the MSHCP. The following terms are established in the MSHCP to protect the desert tortoise during utility-related construction activities in the Conservation Areas and are to be conducted by an Acceptable Biologist. These measures are also applicable to projects not covered by the Plan. 9. An Acceptable Biologist shall oversee construction activities to ensure compliance with the protective stipulations for the desert tortoise. 10. Desert tortoises found above ground inside the project area during construction shall be moved by an Acceptable Biologist out of harm's way and placed in a winter den (at a distance no greater than 250 feet). If a winter den cannot be located, the USFWS or CDFG shall determine appropriate action with respect to the tortoise. Tortoises found above ground shall be turned over to the Acceptable Biologist. 11. No handling of tortoises will occur when the air temperature at 15 centimeters above ground exceeds 90°F.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) 12. Desert tortoise burrows shall be avoided to the maximum extent feasible. An Acceptable Biologist shall excavate any burrows which cannot be avoided and will be disturbed by construction. Burrow excavation shall be conducted with the use of hand tools only, unless the Acceptable Biologist determines that the burrow is not occupied. Active Season Protocol. This protocol is applicable to pre-construction and construction phases of utility development projects occurring between February 15 and November 1. It is identical to the Inactive Season Protocol with the following additions: 13. Work areas shall be inspected for desert tortoises within 24 hours of the onset of construction. To facilitate implementation of this condition, burrow inspection and excavation may begin no more than 7 days in advance of construction activities, as long as a final check for desert tortoises is conducted at the time of construction. 14. All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the overall supervision of an Acceptable Biologist. Any hazards to tortoises created by this activity, such as drill holes, open trenches, pits, other excavations, or any steep-sided depressions, shall be checked three times a day for desert tortoises. These hazards shall be	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) eliminated each day prior to the work crew leaving the site, which may include installing a barrier that will preclude entry by tortoises. Open trenches, pits or other excavations will be backfilled within 72 hours, whenever possible. A 3:1 slope shall be left at the end of every open trench to allow trapped desert tortoises to escape. Trenches not backfilled within 72 hours shall have a barrier installed around them to preclude entry by desert tortoises. All trenches, pits, or other excavations shall be inspected for tortoises by a biological monitor trained and approved by the Acceptable Biologist prior to filling. 15. If a desert tortoise is found, the biological monitor shall notify the Acceptable Biologist who will remove the animal as soon as possible. 16. Only burrows within the limits of clearing and surface disturbance shall be excavated. Burrows outside these limits, but at risk from accidental crushing, shall be protected by the placement of deterrent barrier fencing between the burrow and the construction area. The barrier fence shall be at least 20 feet long and shall be installed to direct the tortoise leaving the burrow away from the construction area. Installation and removal of such barrier fencing shall be under the direction and supervision of the biological monitor. 17. If blasting is necessary for construction, all tortoises shall be removed from burrows within 100 feet of the blast area.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-3 (cont.) Disposition of Sick, Injured, or Dead Specimens. Upon locating dead, injured, or sick desert tortoises under any utility or road project, initial notification by the contact representative or Acceptable Biologist must be made to the USFWS or CDFG within 3 working days of its finding. Written notification must be made within 5 calendar days with the following information: date; time; location of the carcass; photograph of the carcass; and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care. Injured animals shall be taken care of by the Acceptable Biologist or an appropriately trained veterinarian. Should any treated tortoises survive, USFWS or CDFG should be contacted regarding the final disposition of the animals.	
	Adverse effects on Burrowing Owl and its habitat	4.4-4 Burrowing Owl – Prior to construction, the project area and adjacent areas within 500 feet of the site, or to the edge of the property if less than 500 feet, will be surveyed by an Acceptable Biologist for burrows that could be used by burrowing owl. If a burrow is located, the biologist will determine if it is occupied and if so a 160 foot buffer during the non-breeding season, 250 feet during the breeding season, or a buffer to the edge of the property boundary if less than 500 feet will be established around the burrow. The buffer will be staked and flagged. No construction or O&M activities will be permitted within the buffer until the young are no longer dependent on the burrow.	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-4 (cont.) If the burrow is unoccupied, it will be made inaccessible to owls, and the project may proceed. If the biologist determines that a burrowing owl is in the burrow, but the burrow is not an active nest site, owls shall be relocated pursuant to accepted Wildlife Agency protocols. A burrow is assumed occupied if records indicate that, based on protocol surveys, at least one burrowing owl has been observed occupying a burrow on site during the past three years. If there are no records for the site, surveys must be conducted to determine, prior to construction, if burrowing owls are present.	
	Adverse effects on Le Conte's Thrasher and its habitat	4.4-5 Le Conte's Thrasher – In modeled Le Conte's thrasher Habitat in all the Conservation Areas, during the nesting season, January 15 - June 15, prior to the start of construction activities, surveys will be conducted by an Acceptable Biologist on the construction site and within 500 feet of the construction site, or to the property boundary if less than 500 feet. If nesting Le Conte's thrashers are found, a 500 foot buffer, or to the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged.	Less than significant
	Adverse effects on Crissal Thrasher and its habitat	4.4-6 Crissal Thrasher – In modeled Crissal Thrasher Habitat in the Willow Hole Conser-vation Area, surveys will be conducted by an Acceptable Biologist prior to the start of	Less than significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-6 (cont.) construction activities during the nesting season, January 15 - June 15, to determine if active nest sites for this species occur on the construction site and/or within 500 feet of the construction site, or to the edge of the property boundary if less than 500 feet. If nesting Crissal Thrashers are found, a 500-foot buffer, or a buffer to the edge of the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction activities will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged. The MSHCP also calls for evaluating the impacts of groundwater management on mesquite areas, which are important habitat for crissal thrasher, to determine if the water sources for this habitat are adequately protected or if additional water sources may be needed.	
	Adverse effects on Triple-ribbed milkvetch and its habitat	4.4-7 Triple-ribbed milkvetch – For Covered Activities within modeled triple-ribbed milkvetch habitat in the Whitewater Canyon, Whitewater Floodplain and Upper Mission Creek/Big Morongo Canyon Conservation Areas, surveys by an Acceptable Biologist will be required for activities during the growing and flowering period from February 1 - May 15. Any occurrences of the species will be flagged and public infrastructure projects shall avoid impacts to the plants to the maximum extent feasible. In particular, known occurrences shown on a map maintained by CVCC shall not be disturbed.	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Biological Resources (continued)	Adverse effects on fluvial sand transport areas	4.4-8	Essential Ecological Process Fluvial Sand Transport Areas – Development in Essential Ecological Process fluvial sand transport areas shall not obstruct natural watercourses, and the rate of flow and sediment transport shall not be impeded. Salvage of top soil and/or seeds conducted by or in cooperation with the CVCC should occur prior to ground disturbance. To ensure maintenance of the habitat for the Little San Bernardino Mountains linanthus, the potential for periodic and unpredictable flooding to rework stream channels and channel sediments, and create shallow terraces along the wash bottom must be maintained.	Less than Significant
	Adverse effects on Palm Springs pocket mouse	4.4-9	Palm Springs pocket mouse – Clearing: For construction that would involve disturbance to Palm Springs pocket mouse habitat, activity should be phased to the extent feasible and practicable so that suitable habitat islands are no farther than 300 feet apart at any given time to allow pocket mice to disperse between habitat patches across nonsuitable habitat (i.e., unvegetated and/or compacted soils). Prior to project construction, a biological monitor familiar with this species should assist construction crews in planning access routes to avoid impacts to occupied habitat as much as feasible (i.e., placement of preferred routes on project plans and incorporation of methods to avoid as much suitable habitat/soil disturbance as possible). Furthermore, during construction activities, the biological monitor will ensure that connected, naturally vegetated areas with sandy soils and typical native vegetation remain intact to the extent feasible and practicable. Finally, construction that involves clearing of habitat should be avoided	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-9 (cont.) during the peak breeding season (approximately March to May), and activity should be limited as much as possible during the rest of the breeding season (January to February and June to August). Revegetation: Clearing of vegetation (e.g., creosote, rabbitbrush, burrobush, cheesebush) should include revegetation resulting in habitat types of equal or superior biological value for Palm Springs pocket mouse. Trapping/Holding: All trapping activity should be conducted in accordance with accepted protocols and by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California. Translocation: Should translocation between distinct population groups be necessary, as determined through the Adaptive Management and Monitoring Program, activity should be conducted by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California. Trapping and subsequent translocation activity should be conducted in accordance with accepted protocols. Translocation programs should be coordinated by or conducted by the CVCC and/or RMOC to determine the appropriate trapping, holding, marking, and handling methods and potential translocation sites.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)	Adverse effects on sand transport	4.4-10 Sand Transport – Activities within designated sand transport areas will be conducted in a manner to maintain the sand transport capacity of the system. The permit requires that natural flows onto parcels in the fluvial sand transport areas shall be conveyed offsite in the natural pre-disturbance direction of flow and floodwaters shall not be artificially retained onsite. Concentration of flows and increase in flow velocity offsite shall be minimized to avoid downstream erosion and scour. Alternatively, a flood control structure for the area that is designed to ensure no net reduction of sediment transport from the sand source area to the sand deposition area where aeolian sand transport processes are active may be used to achieve the Conservation Objective of fluvial sand transport.	Less than Significant
	Adverse effects on mesquite hummocks and species which rely on this habitat	4.4-11 The CVCC will require monitoring programs to detect and address substantial lowering of the water table. Should monitoring detect a substantial lowering or a decline in mesquite health, the following actions are required by the Plan Implementing Agreement. • Evaluate the results of the monitoring. • Prepare a damage assessment report. • Develop Feasible measures to ameliorate the effects of substantial lowering of the water table on mesquite hummocks and associated Covered Species. • Implement measures through Adaptive Management.	Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Biological Resources (continued)		4.4-11 (cont.) This measure is specific to the MSHCP and the participants in the Plan. However, this measure is intended to provided mitigation, to the greatest extent achievable , for potential impacts associated with the lowering of groundwater. Therefore, this measure should be considered and implemented to the greatest extent feasible by projects not included in the MSHCP.	
	Adverse effects on nesting bird species	4.4-12 State Fish and Game Code Section 3503 prohibits the take, possession or destruction of any bird nests. All construction activities should be limited to the non-nesting seasons or the site surveyed for the presence of nests prior to the start of activities that would disturb the nests. If nests are encountered during the survey, appropriate measures shall be identified and implemented to prevent the disturbance of any nests or the occupants during construction activities.	Less than Significant
	Adverse effects on streambeds, habitat and state listed species under the jurisdiction of the CDFG	4.4-13 When necessary, the MSWD shall negotiate and secure Streambed Alteration Agreements and/or a Section 2081 Take permits from the California Department of Fish and Game (CDFG) for activities associate with the WMP that are under the jurisdiction of the CDFG and not covered by the proposed MSHCP, if adopted. The MSWD shall provide replacement habitat for disturbances to native habitat and species under the jurisdiction of the CDFG at a 3:1 ratio. This is deemed adequate mitigation for potential impacts to riparian habitat and potential impacts to listed species. If negotiations with the CDFG results in greater compensatory mitigation, MSWD shall accept	Less than Significant

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Biological Resources (continued)		4.4-13 (cont.) the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as with the U.S. Army Corps of Engineers.	
	Adverse effects on "waters of the United States", and federally listed biotic species under jurisdiction of the COE and USFWS	4.4-14 When necessary, the MSWD shall negotiate and secure a Section 404 permit from the U.S. Army Corps of Engineers (COE) for potential impacts to "waters of the United States". If federally listed species are involved, the COE must consult with the U.S. Fish and Wildlife Service (USFWS) and obtain an incidental take permit from USFWS. This measure is applicable to projects not covered by the proposed MSHCP if adopted. The MSWD shall provide replacement habitat at a ratio of 3:1 . This is deemed adequate mitigation for potential impacts to "waters of the United States" and potential impacts to listed species. If the negotiations with COE results in greater compensatory mitigation, MSWD shall accept the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as those with the CDFG.	Less than Significant
Cultural Resources	Adverse effects on cultural resources	4.5-1 Inventory: A required basic archaeological inventory should encompass the following guidelines: a. Literature and Records Search - Existing maps, site reports, site records, and previous EIRs in the region of the subject area should be researched to identify known archaeological sites and works completed in the region. All maps, EIRs, historical maps and documents, and site	Less than Significant

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Cultural Resources (continued)		4.5-1 (cont.) records should be cited in text and references. Local historical societies and Native American tribes should also be contacted and referenced. State Information Centers will provide the bulk of this information. The Eastern Information Center at UC Riverside should be contacted. b. Field Reconnaissance - Conduct a surface survey to obtain comprehensive examination of current status of the area and gather general understanding of the kinds of cultural and related phenomena present. At a minimum, all ground surfaces chosen for survey should be walked over in such a way that every foot of ground can be visually scanned. All previously recorded cultural resources should be revisited to determine their current status, and all newly discovered sites should be recorded on either State Form 422 or 523 and supplements, as appropriate. Trinomial designations will be obtained from the Eastern Information Center. For the inventory process, a compilation of all historical resources, including archaeological and historic resources older than 50 years, using appropriate State record forms, following guidelines in the California Office of Historic Preservation's handbook should be completed for all new discoveries. Two copies of the report shall be submitted to the Eastern Information Center for the assignment of trinomials.	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Cultural Resources (continued)		4.5-1 (cont.) c. Report - A technical report should be prepared which fully describes both the methods and results of all efforts. Research sources should be listed, and the information summarized. The field work should be presented in detail, with all appropriate maps and graphics. Any areas not inspected with full intensity should be specified, preferably using clear, easily understood maps, and the reasons for the deficiency presented. Site records should be prepared for all new discoveries, and amendments prepared to update old records where necessary; since locational data are shielded from public access, the actual forms should be provided in the separable appendix, but the sites should be described in the main text. Each resource description should include a professional opinion of significance, with reference to the qualities or research potential which make it worthy of further consideration. Archaeological sites which need test excavation to confirm significance, integrity, and boundaries should be identified, and a sampling program recommended. For each potentially significant cultural resource, possible impacts should be listed and mitigating measures developed. All standards for compliance with the CEQA requirements and those of the lead agencies should be addressed	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Cultural Resources (continued)	Adverse effects on cultural resources	4.5-2	Assessment: Properties shall be evaluated using a well-understood cultural context that describes the cultural development of an area and identifies the significant patterns that properties represent. This same historic context is used to organize all identification, registration, and preservation decisions within the planning framework. To be useful in subsequent stages of the planning process, evaluation decisions must make clear the significance of the property with the historic context. Potential preservation treatments should not influence the evaluation of significance (National Park Service n.d.:35). The nature and type of assessment will depend on the particular resource(s) and level of information for a particular region. Consequently, it is not possible to prescribe specific methods to be utilized. However, there are certain basic elements that should be included and are as follows: a. Preparation of a Research Design - Archaeological documentation can be carried out only after defining explicit goals and a methodology for reaching them. The goals of the documentation effort directly reflect the goals of the preservation plan and the specific needs identified for the relevant historic contexts. b. Field Studies - The implementation of the research design in the field must be flexible enough to accommodate the discovery of new or unexpected data classes or properties, or changing field conditions. An important consideration in	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Cultural Resources (continued)		4.5-2 (cont.) choosing methods to be used in the field studies should be assuring full, clear, and accurate description of all field operations and observations, including excavation and recording techniques and strati-graphic or inter-site relationships. c. Report - The assessment report should evaluate the significance and integrity of all historical resources within the project area, using criteria established in Appendix K of the CEQA Guidelines for important archaeological resources and/or CFR 60.4 for eligibility for listing on the National Register of Historic Places. The report should contain the following information and should be submitted to the San Bernardino county Archaeological Information Center or to the Eastern Information Center at UC Riverside for permanent archiving: (1) Description of the study area; (2) Relevant historical documentation/background research; (3) The research design; (4) The field studies as actually imple-mented, including any deviation from the research design and the reason for the changes; (5) All field observations; (6) Analysis and results, illustrated as appropriate with tables, maps, and graphs; (7) Evaluation of the study in terms of the goals and objectives of the investigation, including discussion of how well the needs dictated by the planning process were served;	

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Cultural Resources (continued)		4.5-2 (cont.) (8) Information on where recovered materials are curated and the satisfactory condition of those facilities to protect and to preserve the artifacts and supporting data. The Eastern Information Center requests that historical resource data and artifacts collected within this project area be permanently curated at an appropriate repository. d. In the event that a prehistoric or historic artifact over 50 years in age is encountered within the project area, especially during construction activities, all land modification activities in the immediate area of the finds should be halted and an onsite inspection should be performed immediately by a qualified archaeologist. This professional will be able to assess the find, determine its significance, and make recommendations for appropriate mitigation measures. Further, if human remains of any kind are encountered on the property, the Riverside County Sheriff's and Coroner's Office must be contacted within 24 hours of the find, and all work should be halted until a clearance is given by that office and any other involved agencies.	

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Cultural Resources (continued)	Adverse effects on cultural resources	4.5-3	Monitoring: In situations where resources are potentially subject to direct or indirect impact and testing or data recovery is not proposed, an archaeological monitor and Native American observer/consultant should be present during subsurface work. One circumstance under which this might occur would be if a known resource was close to a area of impact and the site boundaries were ambiguous. Monitors help insure that exposed data or materials are collected and that if potentially significant cultural materials or features are encountered, they will be preserved either by realignment of the proposed facilities or by prompt evaluation and recommendations for any necessary mitigative measures.	Less than Significant
	Adverse effects on cultural resources	4.5-4	Data Recovery: If an archaeological resource is found to be significant and no other preser-vation option is possible, mitigation of adverse effects by scientific data recovery, including analysis and reporting is the method of last resort. Such a mitigation program is usually only developed after an assessment test has been completed to identify physical parameters and cultural complexity, and formulate a research design. Each specific program would have to be developed in response to the site and potential impact, with the concurrence of the appropriate agencies and in consultation with Native American representatives.	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Cultural Resources (continued)	Adverse effects on cultural resources	4.5-5	Future Project Siting: Future project shall be located, whenever possible or feasible, outside of known highly sensitive cultural resource areas. Before any projects are located, and before any construction activities begin, any proposed project that will result in ground disturbance to any area that does not have a complete cultural resource survey on record with the EIC office will conduct a site specific cultural resource evaluation and report prior to any ground breaking activity. Further, if cultural resources have been identified on the site, a qualified archeologist or paleontologist will be retained to devise an excavation and/or curation plan for the resources, and a qualified cultural resource monitor will be present onsite during all construction-related activities that could potentially uncover previously undiscovered resources. This monitor will examine excavated soils and have the authority to cease construction activities if resources are un-earthed.	Less than Significant
	Adverse effects on cultural resources	4.5-6	Based solely upon this level of investigation and at this stage of project planning, it would be premature to propose specific mitigation measures. However, certain options can be presented presupposing a general level of knowledge regarding impacts. These options can be utilized to avoid impacts upon the cultural resources - the preferred result - or to lessen adverse effects. It should be emphasized that these options are not the only ones that may be applied. As such, these measures are not recommended as conditions of Project approval but are included for the Authority's consideration and implementation as appropriate.	Less than Significant

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Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Cultural Resources (continued)		4.5-6 (cont.) a. Conduct a comprehensive historic building survey which is integrated with economic development programs; b. Adopt a preservation ordinance and create a preservation board; c. Ensure other planning programs, plans, and ordinances are compatible to the historic preservation goals and policies; d. Direct existing funding sources and loan programs to historic neighborhoods in need of revitalization; e. Provide incentives and direction encouraging preservation and revitalization; f. Develop ongoing programs for enhancing public appreciation of historic resources; and g. Project Redesign – A proposed project may be redesigned in either of two ways: (1) Outside of site boundaries, thus avoiding impact to the site; or (2) Restricting impacts to those areas of a site where previous impacts have already destroyed the integrity and research potential. Other options may also apply and may include capping of the site, relocation of structures, and integration of extant buildings into project design.	

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SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Cultural Resources (continued)	Adverse effects on cultural resources	4.5-7	Generally, the igneous and metamorphic rocks and those with Recent (Holocene) alluvium will not require any monitoring, although some of the Recent alluvium will need periodic moni-toring for excavations deeper than five feet in case older alluvium is encountered beneath the younger alluvium. The areas with outcroping Ocotillo and/or Cabazon Ganglomerate will require periodic monitoring from the start of excavations to determine if any fossil-bearing soils are present. Outcrops of tertiary-age sedimentary rocks (Tcs, Tcf, Ti, Tpf and Tps) will require monitoring on a continuous basis during ground disturbance activities.	Less than Significant
Air Quality	Adverse impacts to air quality for implementing the proposed WMP projects	4.6-1	The following mitigation measures shall be implemented throughout construction activities in order to reduce project impacts. • Use appropriate emission control devices on gasoline and diesel construction equipment and maintain construction equipment engines by keeping them tuned. This shall include the use of aqueous diesel fuel and particulate filters where feasible. • Prohibit idling and other unnecessary operation of equipment. • Utilize existing power sources (i.e., temporary power poles) and avoid onsite power generation where feasible. • Have sufficient equipment at the site to carry out dust-control measures in all areas covered by the contract work (not just the immediate area of construction).	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Air Quality (continued)		4.6-1 (cont.) This includes watering of the site three times per day or when dust is observed migrating from the site. The goal is to keep all disturbed areas continuously damp during construction. • Maintain all work and access areas free from dust. • Cover loaded trucks used in construction operations with tarpaulins or maintain at least 2 feet of freeboard and wash off trucks leaving the site. • Sweep streets if silt is carried over to adjacent public thoroughfares. • Construction operations affecting offsite roadways shall be scheduled for offpeak traffic hours and shall minimize obstruction of through-traffic lanes. • Develop a traffic plan to minimize traffic flow interference from construction activities including advance public notice of routing. • Use low VOC asphalt and coatings when applicable.	
	Adverse impacts to air quality for implementing the proposed WMP projects	4.6-2 The proposed project shall comply with the provisions of the 2003 Coachella Valley PM_{10} SIP and the 2007 AQMP which establishes minimum requirements for construction activities to reduce fugitive dust and PM_{10} emissions.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Air Quality (continued)	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-3	The project proponent shall comply with all applicable SCAQMD Rules and Regulations. In particular, SCAQMD Rule 403 shall be adhered to, insuring the clean up of construction-related dirt on approach routes to the site. Rule 403 prohibits the release of fugitive dust emissions from any active operation, open storage pile, or disturbed surface area beyond the property line of the emission source. Particulate matter deposits on public roadways are also prohibited.	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-4	Any vegetative ground cover to be utilized onsite shall be planted as soon as possible to reduce the disturbed area subject to wind erosion. Irrigation systems needed to water these plants shall be installed as soon as possible to maintain the ground cover and minimize wind erosion of the soil.	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-5	The maximum vehicle speed limit on unpaved roads shall be 15 mph.	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-6	Grading operations shall be suspended during first and second stage ozone episodes or when winds exceed 25 mph	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-7	Any construction equipment using diesel drive internal combustion engines shall use a diesel fuel with a maximum of 0.05 percent sulfur and a four degree retard when feasible.	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-8	Construction personnel shall be informed of ride sharing opportunities.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Air Quality (continued)	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-9	MSWD shall utilize the most energy efficient mechanical equipment feasibly available to reduce the demand for electricity by new equipment proposed by the WMP.	Less than Significant
	Adverse impacts to air quality for implementing the proposed WMP projects.	4.6-10	When feasible, MSWD shall utilize electricity generated by non or reduced GHG producing sources such as solar or wind generated electricity.	Less than Significant
Noise	Adverse impacts to the existing noise environment and people	4.7-1	All non-well drilling construction shall be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday, and between 9 a.m. to 6 p.m. on Saturday, and shall be prohibited on Sundays and federal holidays.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-2	To the extent feasible, MSWD will require utilization of construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-3	The MSWD shall respond to any noise complaints received for this project by measuring noise levels at the affected receptor. If the noise level exceeds an Ldn of 65 dBA exterior or an Ldn of 45 dBA interior at the receptor, the MSWD shall implement adequate measures such as the use of noise attenuating curtains or enclosing equipment within structures to reduce noise levels to the greatest extent feasible.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-4	All construction vehicles and fixed or mobile equipment shall be equipped with properly operating and maintained mufflers.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-5	Construction shall be scheduled such that the absolute minimum number of equipment would be operating at the same time.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Noise (continued)	Adverse impacts to the existing noise environment and people	4.7-6	Maintain good relations with the school and community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and the expected temporary and intermittent noise increases during the construction period.	Less than Significant
	Adverse noise effects on people	4.7-7	All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided with adequate hearing protection devices to ensure no hearing damage will result from construction activities.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-8	If equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account), portable noise barriers shall be installed that are demonstrated to be adequate to reduce noise levels at receptor locations below hearing damage thresholds.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-9	All production wells or booster pumps shall have their noise levels attenuated to 50 dBA CNEL at 50 feet from the noise source.	Less than Significant
	Adverse impacts to the existing noise environment and people	4.7-10	Project facilities shall be constructed and operated so that noise levels from operations do not exceed 50 dB during night hours and 65 dB averaged over the 12 hours of day time when located adjacent to existing or future sensitive land uses. This can be achieved by siting relatively noisy operations a sufficient distance from sensitive noise receptors; by incorporating attenuation features in the facility or designing attenuation features at the boundary of the property.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Land Use / Planning	Adverse effects on existing and planned land uses	4.8-1 Following selection of alternative sites for construction of water infrastructure facilities, each site shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or a technical report shall be prepared that identifies the specific measures that will be utilized to reduce potential incompatible activities or effects to below thresholds established in the general plan for the jurisdiction where the facility will be located. <u>The following Mitigation Measures contained in the Initial Study are incorporated into the PEIR</u>	Less than Significant
	Adverse effects on aesthetics and visual resources	4.8-2 All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural land-scapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is com-pleted, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.	Less than Significant
	Adverse effects on aesthetics and visual resources	4.8-3 Where facilities are proposed to be located adjacent to scenic highways, corridors or other scenic features identified in local agency planning documents, project implementation will conform with design requirements established in the applicable planning documents.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Land Use / Planning (continued)	Adverse effects on aesthetics and visual resources	4.8-4 Where facilities will disrupt views from occupied areas with significant scenic vistas, a visual simulation analysis shall be performed of the facility's impact on the important view. If the analysis identifies a significant impact on a scenic vista, the facility shall be relocated, if feasible, redesigned to reduce the impact to a non-significant level, or a subsequent environmental evaluation shall be prepared.	Less than Significant
	Adverse effects on aesthetics and visual resources	4.8-5 When above ground facilities are constructed in the future, the local agency design guide-lines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility.	Less than Significant
	Adverse effects on aesthetics and visual resources	4.8-6 All utilities for project facilities shall be placed underground unless such undergrounding is not technically feasible.	Less than Significant
	Adverse effects on aesthetics and visual resources	4.8-7 Future project review and implementation shall implement the following: • Use of low pressure sodium lights where security needs require such lighting to minimize impacts of glare. • Height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination. • Directing light and shielding shall be used to minimize off-site illumination. • No light shall be allowed to intrude into sensitive light receptor areas.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures	Impact After Mitigation
Land Use / Planning (continued)	Adverse effects on aesthetics and visual resources	4.8-8 All permanent lighting associated with the project will be directed towards the ground (shielded from the sky) and comply with the Mt. Palomar Lighting Policy so that light or glare does not fall off the property boundary.	Less than Significant
Population and Housing	Implementation of the WMP could affect the rate and amount of population growth and the need for housing	All impacts in this issue area are less than significant. No mitigation measures are required.	Less than Significant
Public Services	Implementation of the WMP could affect the rate and amount of population growth which could affect the need for additional public services	All impacts to Public Services resulting from implementation of the proposed project are considered less than significant. No mitigation beyond that required of new development is required.	Less than Significant
Utilities and Service Systems	Implementation of the WMP could affect stormwater drainage facilities during construction activities.	4.11-1 When pipelines must cross natural stream channels or stormwater drainages, the District will implement the following measures to minimize adverse environmental impacts from installing such facilities: a) first, the District will jack and bore such pipelines when feasible and avoid any surface disturbance; b) second, if jack and bore construction cannot be implemented, the District will install the channel crossing with the minimum area of above ground disturbance and shall return the channel bed to the same condition as before initiating construction. If above ground disturbance is required, the District will obtain all regulatory permits for discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.	Less than Significant

Table 1-1
SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES DISCUSSED IN THIS DRAFT PEIR

Environmental Category/Issue	Potential Impact Description	Mitigation Measures		Impact After Mitigation
Utilities and Service Systems (continued)	Implementation of the WMP has the potential to affect stormwater drainage facilities by placing structures within drainage channels	4.11-2	The District will avoid installing any new above ground facilities within stormwater drainages or natural channels, unless such a site cannot be avoided. If future facilities must be installed within a stormwater drainage or natural channel, the District shall document the reasons which this is required and shall prepare a drainage system study to demonstrate the hazards to the proposed facility from locating it at such a location and shall identify the measures required to harden or elevate the facility to a point that the facility is protected from the 100-year flood hazard. If above ground disturbance is required, the District will obtain all regulatory permits for discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.	Less than Significant
Transportation / Traffic	Implementation of the WMP has the potential to adversely affect transportation/traffic.	VII-3	During construction activities within existing road rights-of-way or other easements where continuous access is required, a road operation management plan shall be prepared and implemented. Continuous access shall be provided to all sites that may require emergency access and potential safety hazards on roadways shall be controlled to the maximum extent feasible.	Less than Significant
	Implementation of the WMP has the potential to adversely affect transportation/traffic.	XV-1	MSWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Desert Hot Springs/Palm Springs and/or County of Riverside standards.	Less than Significant

CHAPTER 2 - INTRODUCTION

Note: All Chapter 2 figures are located at the end of this chapter, not immediately following their reference in the text.

2.1 BACKGROUND

The first water well in the Desert Hot Springs area was dug about 1913. Twenty years later, driven by the prospect of future development of the desert area, L.W. Coffee sought out the water well. Upon discovery, he found the site to be decimated by weather with no sign of water. Further exploration of the area resulted in the location of another well dug by a homesteader named Bill Anderson. Anderson's well was dug by hand to a depth of 100 feet and then he used a make shift drilling rig to extend the well to a depth of approximately 170 feet. Coffee tested the water quality and was satisfied that the water could support development.

In May of 1933, Coffee began water well drilling operations at Anderson's Well site with the help of Earl Howard, a well driller. By November 1933, drilling operations were complete with a well depth of 333 feet. Soon after, a pump was installed which allowed several homes and buildings to establish. Development increased, and by 1940, the first water mains were installed which provided water service to various lots in the community. As growth slowly continued, two water systems developed to supply water in three subdivided tracts in the community of Desert Hot Springs. These two systems collectively formed the Old Mutual Water Company. The systems were purchased and sold several times until finally coming under ownership of Nelson and Ruth Launer. In May of 1948, Nelson Launer incorporated the water company and named it the Desert Hot Springs Water Company (DHSWC). The purpose of DHSWC was to acquire existing water properties and to install necessary additional facilities to supply adjoining and adjacent properties.

DHSWC continually expanded in response to slow but steady growth. In 1953, the company encompassed approximately one square mile of service area. In late 1953, Desert Hot Springs County Water District (DHSCWD) purchased DHSWC for $157,000. In 1987, the Board of Directors decided to change the water district's name to Mission Springs Water District (MSWD). This was prompted by the fact that nearly all domestic water supplied by the District is extracted from Mission Creek Groundwater Subbasin via deep wells.

Continued annexation of lands, acquisition of water facilities, and population growth has seen MSWD grow from one square mile and 504 services in 1953, to a service area encompassing approximately 135 square miles and about 12,000 service connections. The District furnishes water via three separate water distribution systems. The largest system provides services for the communities of Desert Hot Springs, North Palm Springs, West Garnet, Painted Hills, Mission Lakes Country Club, Desert Crest Country Club, Dillon Mobile Home Park, a small portion of Palm Springs near Interstate 10 and Indian Road, and other areas. The northern boundary is the Riverside/San Bernardino County Line. The other systems operated by MSWD are the Palm Springs Crest (Woodridge) and the West Palm Springs Village (Cottonwood) systems located along the I-10 freeway easterly of Cabazon. Figure 2-1 is a Regional Location Map and Figure 2-2 shows the boundaries of MSWD and the Woodbridge and Cottonwood systems.

MSWD is mandated by state law to provide an adequate supply of high quality water to customers in its service area. MSWD has and is experiencing very rapid population growth particularly over the last 5 years. This trend is expected to continue into the foreseeable future and therefore planning for new water supply will be very critical. MSWD has for many years recognized the need to properly plan and implement improvements to meet existing and future domestic water needs while providing and enhancing water distribution system facilities that will maintain their function during seismic events. To accomplish this, MSWD has prepared its Comprehensive Water System Master Plan (Water Master Plan or WMP) which builds on the previous water resources planning efforts commissioned by the MSWD to address the District's current and future water supply, treatment, and distribution system needs over the next 24 years.

Because the decision by MSWD to adopt and implement the Water Master Plan (WMP) is discretionary and could result in direct and indirect physical change to the environment, it is considered a project under the California Environmental Quality Act (CEQA) (State CEQA Guidelines Section 15378). Additionally, because MSWD is the public agency that will carry out this project, it will act as CEQA Lead Agency for the project (State CEQA Guidelines Section 15051(a)).

This environmental impact report (EIR) will serve as a program EIR (PEIR) for the Water Master Plan. Section 15168 of the State CEQA Guidelines provides that a " program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related " in the following manner: within the same geographic area; they are interrelated as a logical part in the chain of contemplated actions by MSWD; and they are essentially part of the overall program (one large project) being implemented by MSWD to fulfill its water resources management responsibilities within its service area.

The California Environmental Quality Act (CEQA) requires that the Lead Agency (in this case the MSWD) consider the environmental information in the project record, including this PEIR, prior to making a decision on the proposed project. The decision that will ultimately be considered by the governing board of MSWD is whether or not to certify the Final PEIR (FEIR) as adequate to in addressing environmental effects of implementing the Water Master Plan.

This PEIR has been prepared by Tom Dodson & Associates (TDA) under contract to Mission Springs Water District in accordance with Section 21151 of CEQA. MSWD retained TDA to assist in performing the independent review of the project required by CEQA prior to releasing the PEIR as a draft for public review. MSWD has reviewed the content of the Draft PEIR and concurs with the evaluations, conclusions and findings contained herein.

2.2 SCOPE AND CONTENT OF THIS PEIR

As the Lead Agency, MSWD initially concluded that the proposed project could result in one or more potentially significant adverse impacts to the environment and, therefore, a PEIR should be prepared. In accordance with Sections 15063 and 15082 of the State CEQA Guidelines, MSWD prepared an Initial Study and Notice of Preparation (NOP) of a PEIR to solicit comments identifying the environmental resources and man-made systems that could experience significant environmental impacts if the proposed Water Master Plan is implemented.

The Initial Study determined that, with applicable mitigation, the WMP could be implemented without causing significant adverse impacts to or associated with following issues: aesthetics, agricultural resources, hazards and hazardous materials, mineral resources, recreation, and transportation and traffic.

The Initial Study determined that for following issues implementation of the WMP had the potential to result in significant adverse impacts: air quality, biological resources, geology and soils, hydrology and water quality, land use and planning, noise, population and housing, public services, and utilities and service systems. Comments on the scope of the PEIR received during the NOP process and public meeting process are provided in Chapter 8 and summarized in the subsections of Chapter 3 for the applicable issues. These comments have been considered and included in the evaluation provided in this document.

The comments received did not result in any additional issues being identified for evaluation in this PEIR and the scope of this document remains the same as identified in the NOP.

In addition to evaluating the specific environmental issues, this PEIR contains all of the sections mandated by the State CEQA Guidelines. Table 2-1 provides a listing of the contents required in an EIR along with a reference to the chapter and page number where these issues can be reviewed in the document. This PEIR is comprised of two volumes. Volume 1 contains the CEQA mandated sections with Volume 2 containing the technical appendices.

Table 2-1
REQUIRED EIR CONTENTS

Required Section (CEQA)	Section in EIR	Page Number
Table of Contents (Section 15122)	same	ii
Summary (Section 15123)	Chapter 1	1-1
Introduction	Chapter 2	2-1
Project Description (Section 15124)	Chapter 3	3-1
Significant Environmental Effects of Proposed Project (Section 15126a); Environmental Impacts	Chapter 4	4-1
Unavoidable Significant Environmental Effects (Section 15126b)	Chapter 4	4-1
Mitigation Measures (Section 15126c)	Chapter 4	4-1
Cumulative Impacts (Section 15130)	Chapter 4	4-1
Alternatives to the Proposed Action (Section 15126d)	Chapter 5	5-1
Growth-Inducing Impacts (Section 15126g)	Chapter 6	6-1
Irreversible Environmental Changes (Section 15126f)	Chapter 6	6-1
Effects Found Not to be Significant (Section 15128)	Chapter 4	4-1

Required Section (CEQA)	Section in EIR	Page Number
Organizations and Persons Consulted (Section 15129)	Chapter 7	7-1
Initial Study, Notice of Preparation, and Comment Letters	Chapter 8	8-1
Technical Appendices and Other Materials	Volume 2	--

2.3 PEIR FORMAT AND ORGANIZATION

This PEIR contains eight chapters which, when considered as a whole, provide the reviewer with an evaluation of the potentially significant adverse impacts from implementing the proposed projects outlined in the Master Plan and the construction and operation of the facilities proposed by MSWD. The following paragraphs provide a summary of the content of each chapter of this PEIR.

Chapter 1 contains the executive summary for the PEIR. This includes an overview of the proposed project and a tabular summary of the potential adverse impacts and mitigation measures.

Chapter 2 provides the reviewer with an introduction to the document. This chapter of the document describes the background of the proposed project, its purpose, and its organization. The CEQA process to date is summarized and the scope of the PEIR is identified. Technical evaluations prepared for the PEIR are discussed and the format and availability of the PEIR are described.

Chapter 3 contains the project description used to forecast environmental impacts. This chapter describes for the reviewer how the existing environment will be altered by the proposed project. This chapter sets the stage for conducting the environmental impact assessment contained in the next several chapters.

Chapter 4 presents the environmental impact assessment for the issues considered in this PEIR. For the environmental issue identified in Chapter 1, the following impact evaluation is provided for the reviewer: the project's existing environmental setting; the potential impacts forecast to occur if the project is implemented; proposed mitigation measures; unavoidable adverse impacts; and cumulative impacts.

Chapter 5 contains an evaluation of alternatives to the proposed project. Included in this chapter is an analysis of the no project alternative and other project alternatives.

Chapter 6 presents the topical issues that are required in a PEIR. These include: any significant irreversible environmental changes; and growth inducing effects of the project.

Chapter 7 describes the resources used in preparing the PEIR. This includes persons and organizations contacted; list of preparers; and bibliography.

Chapter 8 contains those materials referenced as appendices to the PEIR, such as the Notice of Preparation, comment letters, distribution list, and other materials referred to in the PEIR.

Volume 2 contains the technical appendices referenced in Volume 1 of the PEIR.

2.4 AVAILABILITY OF THE PEIR

The Draft PEIR for the master plans has been distributed directly to all public agencies and interested persons identified on the NOP mailing list (see Appendix 8.1 of Chapter 8), as well as the State Clearinghouse, and any other requesting agencies or individuals. All reviewers will be provided 45 days to review the Draft PEIR and submit comments to MSWD for consideration and response. The Draft PEIR is also available for public review at the following locations during the 45-day review period:

Mission Springs Water District
Attn: Brent Gray, Director of Operations
66575 Second Street
Desert Hot Springs, CA 92240

Riverside County Library
Desert Hot Springs Branch
11691 West Drive
Desert Hot Springs, CA 92240

2.5 INCORPORATION BY REFERENCE

The following planning documents are cited throughout this Draft PEIR and are hereby incorporated by reference as permitted by State CEQA Guideline Section 15150, and are available at Mission Springs Water District at the following address:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

» City of Desert Hot Springs General Plan (2000)
» City of Palm Springs General Plan
» County of Riverside Western Coachella Valley Plan

All EIR documents related to the aforementioned General Plans are hereby included as reference and supporting informational materials for this PEIR.

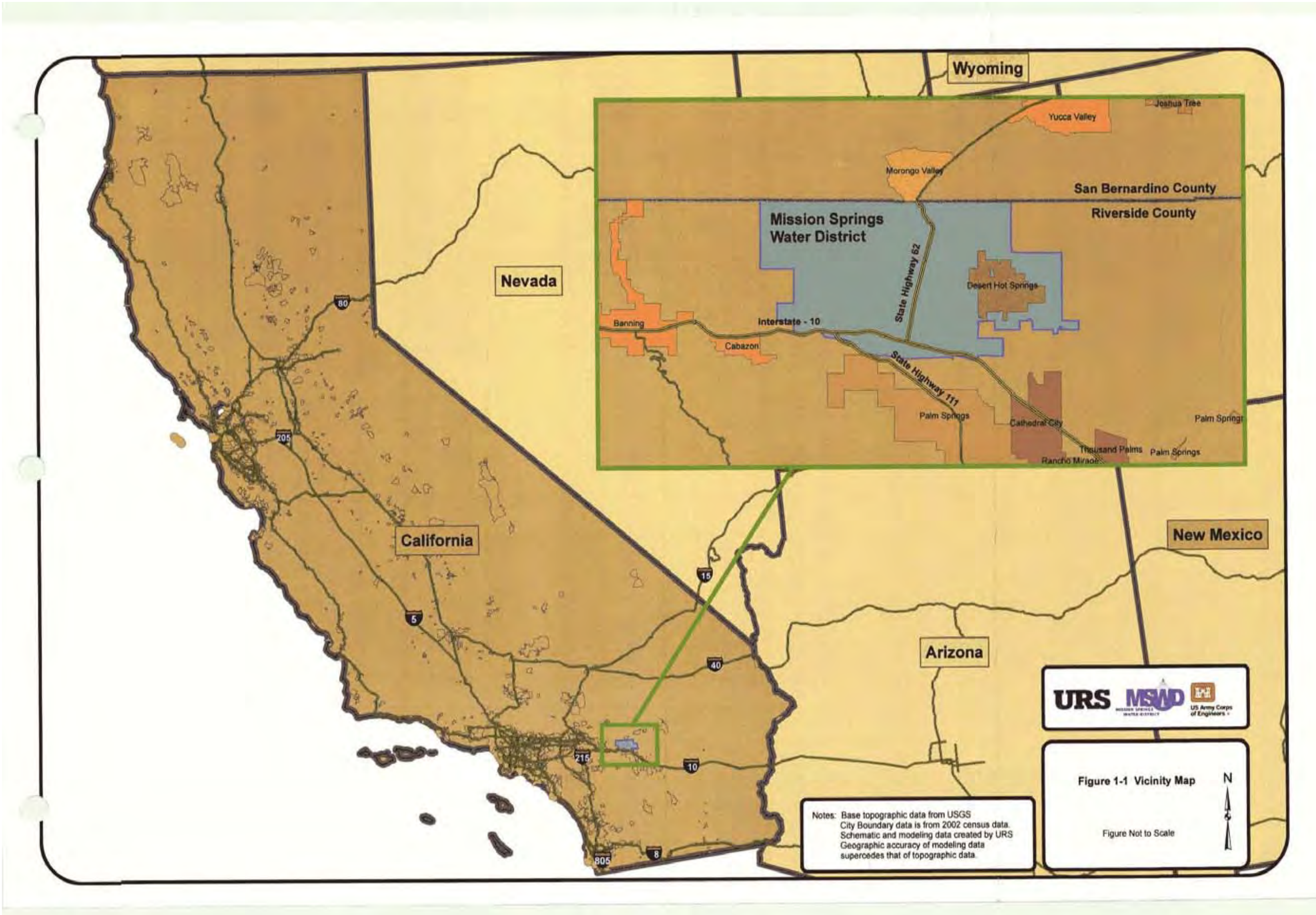
2.6 REVIEW PROCESS

In summary, after receiving comments on the Draft PEIR, MSWD will prepare a Final PEIR for review by the MSWD Board of Directors prior to their making a decision about the project. The MSWD Board of Directors will review the Final PEIR for adequacy and when determined adequate, the PEIR can be used as the informational document for compliance with CEQA. Other responsible agencies may also choose to review and approve the PEIR document in support of the Water

Master Plan projects. Information concerning the PEIR public review schedule for this project can be obtained by contacting:

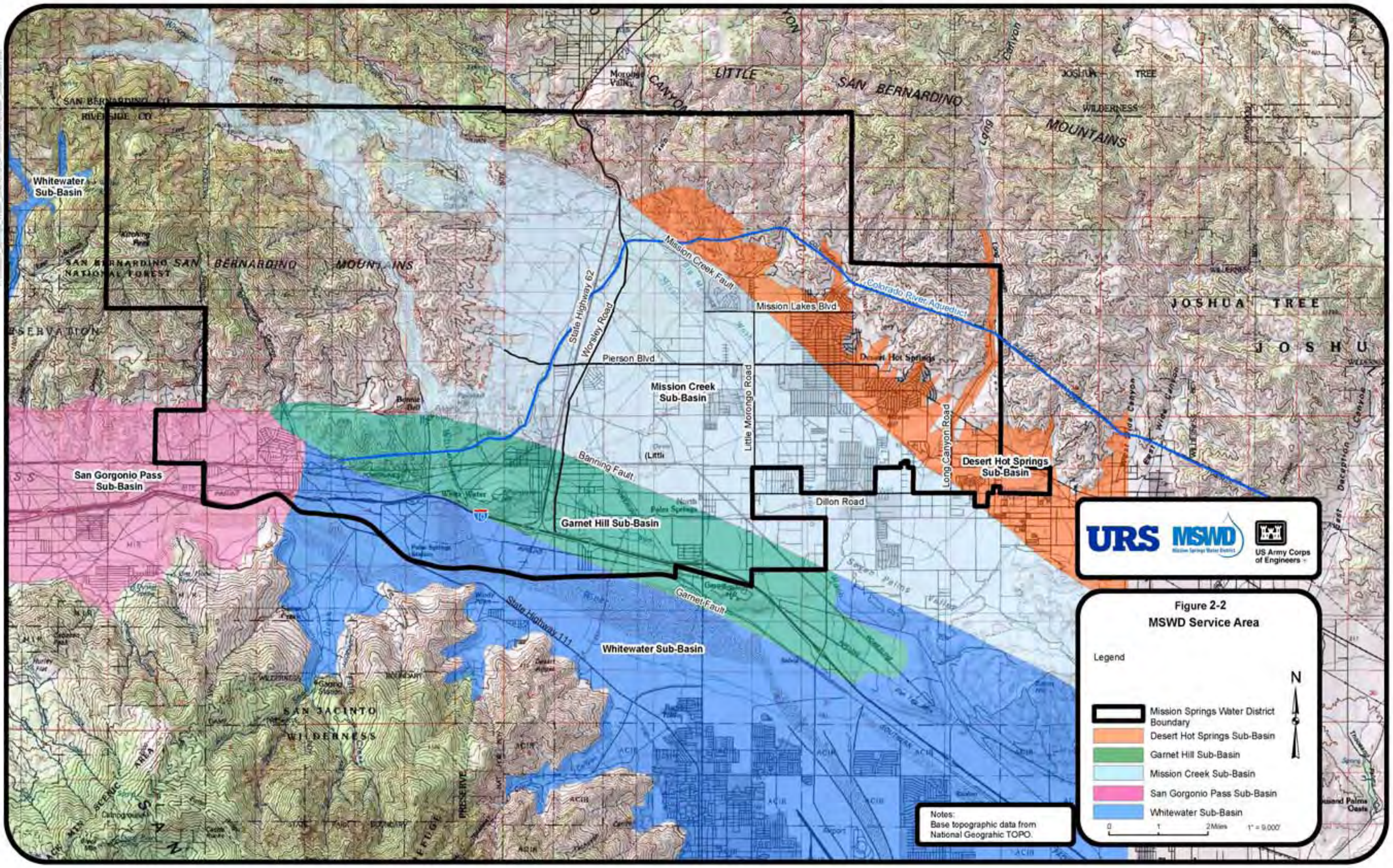
Mr. Brent Gray, Director of Operations – Wastewater
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240
(760) 329-6448

FIGURE 2-1
Regional Location



Source: MSWD Final Water Master Plan 2007

FIGURE 2-2
MSWD Service Area



Source: MSWD Final Water Master Plan 2007

CHAPTER 3 - PROJECT DESCRIPTION

Note: All Chapter 3 figures are located at the end of this chapter, not immediately following their reference in the text.

3.1 INTRODUCTION

Mission Springs Water District (MSWD or District) provides water and wastewater collection of treatment services to customers within its service area. The MSWD Service Area has and is experiencing very rapid population growth particularly over the last 5 years. This trend is expected to continue into the foreseeable future and therefore planning for new water supply and distribution facilities will be very critical. MSWD has for many years recognized the need to properly plan and implement improvements to meet existing and future domestic water needs, as well as, provide and enhance water distribution system facilities that will maintain their functionality during seismic events. To accomplish this, MSWD retained the engineering firm of URS to prepare the Comprehensive Water System Master Plan (Water Master Plan or Master Plan). The purpose of the Water Master Plan is to build on previous water resources planning efforts commissioned by MSWD to address the District's current and future water supply, treatment, and distribution system needs over the next 20 years.

The Water Master Plan examines the existing water supply system to determine its adequacy and provides findings and recommendations regarding future water facilities needed to allow MSWD to meet the projected demand for water within its service area for the next 20 years. Specifically, the Water Master Plan makes findings and recommendations which are provided within the following categories:

- Customers and Population,
- Water Requirements,
- Water Supplies,
- Water Distribution System Analysis,
- Water Distribution System Improvement Plan, and
- Capital Improvement Program.

The goals and objectives of the Water Master Plan are:

a. Review and update population projects incorporating local/regional land use plans for a 25-year planning horizon period.

b. Review and update domestic water requirements based on historical water use and incorporating possible water conservation strategies.

c. Evaluate the need for additional water supplies to meet current and future water demands, including the importation of water from outside MSWD.

d. Evaluate water quality issues identified in other reports to determine current and future water treatment requirements.

e. Update an existing hydraulic model (H2Onet) of MSWD water supply and distribution system and calibrate the model using flow measurements taken from selected MSWD fire hydrants.

f. Conduct an evaluation of the existing water distribution system utilizing the calibrated hydraulic modeling software.

g. Evaluate existing water distribution system facilities to meet the current and projected 25-year Maximum Day water demands plus fire flow requirements and identify improvements (2010, 2015, 2020, and 2025) to address deficiencies.

h. Evaluate the seismic reliability of existing water facilities and recommend improvements for increasing the reliability of the system to remain operational after a seismic event.

I. Prepare a 20-year System Improvement Plan in 5-year increments that identifies improvements and related costs for recommended water supply and distribution facilities.

MSWD intends to approve and implement the Water Master Plan.

This environmental impact report (EIR) serves as a program EIR (PEIR) for that plan. A PEIR has been selected as the appropriate document for compliance with the California Environmental Quality Act (CEQA) based on the definition of a program document contained in Section 15168 of the State CEQA Guidelines which states:

> "A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) Geographically, (2) As a logical part in the chain of contemplated actions, (3) In conjunction with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways."

The activities proposed by the Water Master Plan are geographically related, are a logical part of a series of actions that will be undertaken by a single agency and result in similar environmental effects and mitigation.

The purpose of a master plan is exactly what the name implies. It allows an agency, in this case MSWD, to more efficiently plan for and operate the facilities needed to meet existing and future water system demands in its service area. Therefore, the activities identified in the Water Master Plan merit evaluation under a single PEIR.

3.2 LOCATION

The Water Master Plan refers to three systems that comprise the Mission Springs Water District Service Area, namely the MSWD System which includes the entire MSWD water system except, the West Palm Springs Village System (WPSV System or Cottonwood System) and the Palm Springs Crest System (PSC System or Woodridge System). Although traditionally the Mission Springs Water District is referred to as MSWD, for purposes of distinguishing between the individual

MSWD systems and the entire MSWD Service Area, this document also uses the terms District, District-wide total or MSWD Service Area to identify the entire MSWD.

Figure 2-2 depicts the MSWD Service Area boundary and the Water Master Plan study area. The MSWD Service Area encompasses about 135 square miles in the northwesterly portion of the Coachella Valley. The project area is generally bounded by the following:

- on the north by the Riverside/San Bernardino countyline;
- on the south by State Highway 111 and Interstate 10;
- on the west by a boundary located between approximately 3 to 5 miles easterly of the community of Cabazon; and
- on the east a boundary approximately 19 miles easterly of the westerly boundary.

All the facilities identified in the Water Master Plan are located within the MSWD Service Area. The MSWD Service Area includes the City of Desert Hot Springs (DHS), portions of the northerly portion of the City of Palm Springs, and unincorporated land in the County of Riverside.

3.3 PROJECT DESCRIPTION

3.3.1 Introduction

To adequately evaluated the projected future water service demands and identify the facilities needed to meet that demand, the Water Master Plan contains the following five categories:

- Customers and Population,
- Water Requirements,
- Water Supplies,
- Water Distribution System Analysis, and
- Water Distribution System Improvement Plan.

A sixth category is also provided in the Water Master Plan:

- Capital Improvement Program.

The Capital Improvement Program section of the Water Master Plan estimates the capital improvement costs for the facilities needed to meet the projected demand for water over the 20-year planning period of the Water Master Plan. These improvements are identified in 5-year increments (2010, 2015, 2000, and 2025) for each MSWD pressure zone which comprise the MSWD Service Area.

The following data obtained from the Water Master Plan to describe the project proposed and the methodology used to arrive at the conclusions and recommendations in that plan.

3.3.2 Customers and Population

To forecast the future water demand for the MSWD Service Area, it is necessary to project the future population of the MSWD Service Area based on the type and location of new development. It is also necessary to evaluate the adequacy of the existing system to meet current demand.

To profile the District's historical growth in population and housing, data was collected from the U.S. Census Bureau, California Department of Finance, and Southern California Association of Governments. These organizations track population and total housing units (including occupied, vacant and seasonal homes) for each of the Coachella Valley cities – Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage. As these cities annexed additional lands and the new homes built on them since 1990, or as infill development progressed, these cities' populations and housing stocks have increased. Data was gathered for 1990, 2000, and 2005 where available.

To approximate the population and housing stock within MSWD's boundaries, data obtained from U.S. Census Bureau for MSWD's Census tracts in 1990 and 2000 and Southern California Association of Government (SCAG) projections for the six Census tracts in 2005 was relied upon. The SCAG forecasts were completed in 2004. Data collection from the U.S. Census tract level, including two tracts in 1990 and six tracts in 2000. It was possible to closely approximate MSWD's boundaries with Census tracts in 2000. The U.S. Census Bureau changed the boundaries of U.S. Census tracts within MSWD's Service Area between 1990 and 2000. The numbers from 1990 tract 445.01 were adjusted to reflect an approximation of 1990 population of the MSWD Service Area population.

To profile MSWD's historical growth in service connections, water service data collected from the District for 1991 through 2005 for the three systems, MSWD, Palm Springs Crest and West Palm Springs Village was used. These records showed monthly numbers of service connections in each of the District's service classes, including single-family residential, multifamily residential, mobile homes, commercial classes and other classes, primarily irrigation, and tract construction water.

To project future growth in MSWD's service connections, data on growth and change in the Coachella Valley were obtained from MSWD, Coachella Valley Water District, California Department of Finance, Riverside County, Coachella Valley Economic Partnership, Coachella Valley Association of Governments, Desert Hot Springs Chamber of Commerce, City of Desert Hot Springs, Palm Springs Unified School District, Building Industry Association – Desert Chapter, Metropolitan Water District, and SCAG. Historical growth patterns in other Coachella Valley cities were analyzed to determine what level of growth one might reasonably expect in MSWD's Service Area.

Finally, population estimates for MSWD Service Area based on U.S. Census Bureau data from 2000 for the Census tracts in the District was projected. An average occupancy rate was incorporated for the new housing units and an average population density, or persons per occupied housing unit, to estimate future populations. The service connection forecasts used to obtain the ultimate water demand projections.

3.3.2.1 Historical Population and Housing Growth

Historical population and housing data for the Census tracts that encompass the MSWD Service Area was obtained from the U.S. Census Bureau and from SCAG for 1990, 2000 and 2005, where available. Data on historical population for the MSWD Service Area are presented in Table 3-1 below. The population of DHS grew by a little more than 500 persons per year between 1990 and 2005, at an annual average rate of 3.4 percent. The Census tracts that approximate the MSWD Service Area grew at an annual average rate of 3.5 percent, or nearly 900 persons per year. The population of DHS and these Census tracts grew more quickly between 2000 and 2005 than between 1990 and 2000.

Table 3-1 (Table 3-1 of WMP)
POPULATION IN THE CITY OF DESERT HOT SPRINGS AND MSWD CENSUS TRACTS, 1990 - 2005

Description	1990 Population	2000 Population	2005 Population
City of Desert Hot Springs	11,668	16,582	19,386
Census Tract 445.02 *	15,201	---	---
Census Tract 445.01 *	4,269	---	---
Census Tract 445.06 *	---	5,844	7,178
Census Tract 445.07 *	---	4,428	5,454
Census Tract 445.08 *	---	4,795	6,257
Census Tract 445.09 *	---	2,811	3,470
Census Tract 445.10 *	---	4,692	5,843
Census Tract 445.03 *	---	3,544	4,682
MSWD Approximation	19,500	16,100	32,900

* Adjusted for portion of 445.04, delineated in 2000, that is not in the MSWD Service Area.

Sources: 1990 and 2000 U.S. Census Bureau and 2005 CA Department of Finance for Desert Hot Springs, SCAG for tracts.

Data on historical housing growth in DHS and in the MSWD Service Area are displayed below in Table 3-2. The stock of total housing units in DHS – including single-family (SFR) multifamily (MFR), and mobile home (other) housing units – grew by nearly 170 units per year between 1990 and 2005, at an annual average rate of 2.6 percent. The Census tracts that approximate the MSWD Service Area added housing stock at an annual average rate of 2.7 percent, or more than 350 units per year. Housing stocks grew more quickly between 2000 and 2005 than between 1990 and 2000.

Table 3-2 (Table 3-3 of WMP)
TOTAL HOUSING UNITS IN THE CITY OF DESERT HOT SPRINGS AND MSWD CENSUS TRACTS, 1990 - 2005

Description	1990 Housing Units	2000 Housing Units	2005 Housing Units
City of Desert Hot Springs	5,494	7,034	8,016
Census Tract 445.02 *	8,049	---	---
Census Tract 445.01 *	2,700	---	---
Census Tract 445.06 *	---	2,886	3,564
Census Tract 445.07 *	---	1,853	2,201
Census Tract 445.08 *	---	2,354	2,866
Census Tract 445.09 *	---	1,484	1,724
Census Tract 445.10 *	---	1,753	2,055
Census Tract 445.03 *	---	2,995	3,609
MSWD Approximation	10,700	13,300	16,000

* Adjusted for portion of 445.04, delineated in 2000, that is not in the MSWD Service Area.

Sources: 1990 and 2000 U.S. Census Bureau and 2005 CA Department of Finance for Desert Hot Springs, SCAG for tracts.

Historical service connection data was obtained from MSWD for the three systems covered by the Water Master Plan. The results of that investigation are provided in Tables 3-3 through 3-6.

Table 3-3 (Table 3-6 of WMP)
ANNUAL SERVICE CONNECTION IN THE MSWD SYSTEM, 1991 - 2005

Year	SFR	MFR	Commercial	Other	Total
1991	5,472	574	243	105	6,394
1992	5,673	595	256	172	6,696
1993	5,911	613	258	128	6,910
1994	6,285	646	272	134	7,337
1995	6,210	597	255	121	7,183
1996	6,198	609	259	131	7,197
1997	6,189	598	257	128	7,172
1998	6,141	591	255	144	7,131
1999	6,204	597	261	155	7,217
2000	6,303	601	308	164	7,376
2001	6,423	610	269	181	7,483
2002	6,534	612	276	174	7,596
2003	6,836	614	281	183	7,914
2004	7,361	616	280	210	8,467
2005	8,643	623	284	251	9,801

Table 3-4 (Table 3-6 of WMP)
ANNUAL SERVICE CONNECTION IN THE WEST PALM SPRINGS VILLAGE SYSTEM, 1991 - 2005

Year	SFR	MFR	Commercial	Other	Total
1991	80	1	1	3	85
1992	86	1	1	3	91
1993	90	1	1	3	95
1994	97	1	1	5	104
1995	99	1	1	4	105
1996	100	1	1	4	106
1997	98	1	1	4	104
1998	98	1	1	4	104
1999	98	1	1	4	104
2000	102	1	0	4	107
2001	100	1	0	6	107
2002	105	1	0	5	111
2003	108	1	0	5	114
2004	110	1	0	7	118
2005	136	1	0	9	146

Table 3-5 (Table 3-7 of WMP)
ANNUAL SERVICE CONNECTION IN THE PALM SPRINGS CREST SYSTEM, 1991 - 2005

Year	SFR	MFR	Commercial	Other	Total
1991	43	3	0	0	46
1992	44	3	0	0	47
1993	47	4	0	0	51
1994	49	4	0	0	53
1995	53	4	0	0	57
1996	49	4	0	0	53
1997	54	3	0	0	57
1998	59	3	0	0	62
1999	57	3	0	2	62
2000	59	3	0	0	62
2001	61	3	0	0	64
2002	61	3	0	0	64
2003	64	3	0	4	71
2004	72	3	0	0	75
2005	104	3	0	2	109

Table 3-6 (Table 3-8 of WMP)
ANNUAL SERVICE CONNECTION IN THE TOTAL MSWD SERVICE AREA, 1991 - 2005

Year	SFR	MFR	Commercial	Other	Total
1991	5,594	578	244	108	6,525
1992	5,803	599	257	175	6,834
1993	6,048	618	259	131	7,056
1994	6,431	651	273	139	7,494
1995	6,362	602	256	125	7,345
1996	6,347	614	260	136	7,356
1997	6,341	602	258	132	7,333
1998	6,298	595	256	148	7,297
1999	6,359	601	262	161	7,383
2000	6,464	605	308	168	7,545
2001	6,584	614	269	187	7,654
2002	6,700	616	276	179	7,771
2003	7,008	618	281	192	8,099
2004	7,543	620	280	217	8,660
2005	8,883	627	284	262	10,056

Growth in SFR and other service connections for the MSWD Service Area has been substantial and accelerating across the District but primarily in the MSWD system over the past 15 years. Growth in MFR and commercial service connections has been slower as demand for that type of housing and the commercial services to meet residential growth has been limited. It is forecast that the demand for additional SFR service connections and the commercial services and other water uses, such as irrigation and tract construction water, will increase dramatically over the next 15 years.

3.3.2.2 Projected SFR Service Connection Growth

SFR service connections were forecasted based on information from MSWD and the DHS Planning Department regarding new development in the DHS area. To forecast both service connections and water usage in MSWD, two scenarios: a baseline growth scenario that assumes all proposed SFR development as of May 2005 will occur by 2020, at a rate of roughly 820 new homes per year; and a second, high growth scenario that assumes this same level of SFR development will occur in only 10 years, by 2015, or at a rate of 1,230 new homes per year. These scenarios incorporate both new tract development and infill construction as proposed by developers and assume that growth would occur at a constant rate under both scenarios over the initial 10 to 15-year building period.

Future MFR, commercial or other types of service connections for this study were not forecast. Baseline forecasts of SFR service connections for the MSWD Service Area are presented in Table 3-7. SFR service connections under the high growth scenario is provided in Table 3-8.

**Table 3-7 (Table 3-9 of WMP)
PROJECTED SFR SERVICE CONNECTIONS,
BASELINE SCENARIO, 2010 - 2035**

Year	SFR Service Connections
2010	13,200
2015	17,300
2020	21,400
2025	22,400
2030	23,400
2035	24,400

**Table 3-8 (Table 3-10 of WMP)
PROJECTED SFR SERVICE CONNECTIONS,
HIGH GROWTH SCENARIO, 2010 - 2035**

Year	SFR Service Connections
2010	15,300
2015	21,500
2020	24,600
2025	27,700
2030	30,800
2035	33,900

3.3.2.3 Projected Population Growth

The Water Master Plan projects the District's estimated population based upon the projections of SFR service connections and upon U.S. Census data from 2000 on occupancy rates and density in the Census tracts that encompass MSWD, which are presented in Table 3-9. MSWD's Census tracts had a year 2000 weighted average occupancy rate (weighted on occupied housing units) of 74 percent. This means that roughly 74 percent of total housing units in MSWD are occupied year round and are not temporarily vacant or vacant for seasonal use. MSWD's Census tracts had a year 2000 persons per occupied housing unit of 2.7. These averages were utilized to estimate the District's population from 2005 through 2035.

Table 3-9 (Table 3-11 of WMP)
TOTAL HOUSING UNIT OCCUPANCY RATES AND PERSONS PER OCCUPIED HOUSING UNIT FOR DHS AND MSWD CENSUS TRACTS, YEAR 2000

Geographic Description	Occupancy Rate Year 2000	Persons per Occupied Housing Units, Year 2000
City of Desert Hot Springs	83%	2.80
Census Tract 445.06	69%	2.92
Census Tract 445.07	75%	3.16
Census Tract 445.08	81%	2.47
Census Tract 445.09	81%	2.32
Census Tract 445.10	88%	2.99
Census Tract 445.03	48%	2.39
MSWD Approximation	74%	2.71
Sources: 1990 and 2000 U.S. Census Bureau and 2005 CA Department of Finance for Desert Hot Springs, SCAG for tracts.		

Forecasts of baseline scenario population for the MSWD Service Area total are provided in Table 3-10. The Water Master Plan projects that MSWD will add roughly 1,600 persons per year from 2005 through 2020 and 400 persons per year each year from 2020 through 2035. This growth is tied closely to new SFR service connections.

Table 3-10 (Table 3-12 of WMP)
BASELINE SCENARIO, MSWD SERVICE AREA POPULATION PROJECTS, 2005 - 2035

Year	SFR Service Connections
2005	23,000
2010	31,000
2015	39,000
2020	48,000
2025	50,000
2030	52,000
2035	54,000

Projections of high growth scenario population for the MSWD Service Area are provided in Table 3-11. Under this scenario, it is projected that MSWD will add roughly 2,400 persons per year from 2005 through 2015 and 1,200 persons per year each year from 2015 through 2035. This growth is also tied closely to new SFR service connections.

**Table 3-11 (Table 3-13 of WMP)
HIGH GROWTH SCENARIO, MSWD SERVICE AREA
POPULATION PROJECTIONS, 2005 - 2035**

Year	SFR Service Connections
2005	23,000
2010	35,000
2015	48,000
2020	54,000
2025	61,000
2030	67,000
2035	73,000

3.3.3 Water Requirements

As of 2004, MSWD served about 10,000 acre-feet (acre-ft) of potable water to nearly 11,000 service connections throughout its service area. MSWD serves potable water to single-family and multifamily residential homes, mobile homes and mobile home parks, commercial businesses, such as hotels and retail establishments, schools, MSWD properties, and park and landscape irrigation.

MSWD has experienced significant growth in water use across the District since 1991. The District's annual usage has increased by more than 4,000 acre-ft from 1991 to 2005 as MSWD added more than 3,500 SFR service connections during that period.

To profile the District's historical growth in water usage. The District tracks water usage by type of metered user, including single-family residential (SFR), multifamily residential (MFR), commercial classes and other classes of water use, such as irrigation, schools and tract construction water (other). MSWD also tracks water usage separately for its three water systems, MSWD system, West Palm Springs Village system and Palm Springs Crest system. MSWD then records unaccounted-for-water for the overall system by comparing metered sales to metered water production from the District's groundwater wells. Unaccounted-for-water, as measured by MSWD, includes leaks, evaporation and any mismetering of water usage or water production. Metered sales plus unaccounted-for-water equals total water production, which reflects the District's total demand for water.

From that historical profile of water usage, patterns of water use were analyzed to determine the water use factors or assumptions that could be applied to develop water demand projections. Patterns of SFR usage per service connection per day were examined. In 1991, average annual water use per SFR service connection per day was 481 gallons; by 2004, that usage factor had risen to 563 gallons. MSWD's average gallons per SFR service connection per day over that time period was roughly 520 gallons, which was incorporated into the projections of water demands from SFR service connections in the District. Total SFR service connections were multiplied by 520 gallons per SFR service connection per day throughout each year to derive total SFR water demands through 2035. This average is lower than typical usage since 1998 because it assumes future water conservation measures will be implemented by MSWD and DHS.

The analysis in the Water Master Plan identified the District's unaccounted-for-water and based on data from 1999-2005 determined that a 10 percent unaccounted-for-water factor would be used for 2005-2010. From 2010 through 2035 factor would be reduced to 8 percent as MSWD invests in capital improvements and water conservation activities. The Water Master Plan evaluated historic water usage for all types of development (SFR, MFR, commercial). Utilizing growth projections for both the baseline and high growth scenarios (see 3.3.2, Customers and Population) and historic water consumption rates for various types of development, the Water Master Plan forecasts the water requirements for the individual and District-wide system to meet projected growth. This forecast included unaccounted-for-water to determine a total water demand.

In its final step of water demand projections, the Water Master Plan applies a strategy to allocate District-wide demands to smaller areas throughout MSWD. The small area forecasts began with an allocation of demands between the MSWD, West Palm Springs Village (WPSV) and Palm Springs Crest (PSC) water systems. The relative proportion of total District water demands that each system comprised each year from 1991 through 2004 was about 98.5 percent of total water demands for the MSWD system, one percent for the WPSV system and 0.5 percent for the PSC system. These proportions were held constant through 2035 under both scenarios. Under the baseline scenario, this assumption results in growth of about 7 and 5 new SFR service connections per year in the WPSV and PSC systems, respectively. Under the high growth scenario, the consequent growth rate is about 10 and 8 new SFR service connections per year for the WPSV and PSC systems, respectively.

3.3.3.1 Historic Water Use

Data on past annual total water use and production for the MSWD system are presented in Table 3-12.

Table 3-12 (Table 4-1 of WMP)
ANNUAL WATER USE AND PRODUCTION IN THE MSWD SYSTEM, 1991 - 2004

Year	Annual Water Usage (acre-ft)					Annual Production (acre-ft)
	SFR	MFR	Commercial	Other	Total	
1991	2,990	1,180	853	498	5,521	---
1992	3,083	1,294	538	794	5,708	---
1993	3,215	1,300	539	779	5,833	6,562
1994	3,753	1,614	640	1,086	7,093	6,784
1995	3,533	1,290	602	742	6,167	6,723
1996	3,736	1,376	693	863	6,668	7,142
1997	3,693	1,279	636	912	6,467	7,146
1998	3,523	1,209	583	870	6,186	7,241
1999	3,787	1,369	671	1,146	6,73	7,627
2000	3,955	1,578	719	1,057	7,309	7,854
2001	3,928	1,457	665	1,083	7,133	7,843
2002	4,108	1,435	669	1,162	7,374	8,102
2003	4,318	1,468	690	1,097	7,572	8,567
2004	4,944	1,548	715	1,647	8,854	10,039

Data on historical annual total water use and production in the WPSV system are presented in Table 3-13.

Table 3-13 (Table 4-2 of WMP)
ANNUAL WATER USE AND PRODUCTION IN THE
WEST PALM SPRINGS VILLAGE SYSTEM, 1991 - 2004

Year	Annual Water Usage (acre-ft)					Annual Production (acre-ft)
	SFR	MFR	Commercial	Other	Total	
1991	32	0	0	50	82	---
1992	34	0	0	50	84	---
1993	35	0	0	51	86	107
1994	49	0	0	68	117	120
1995	46	1	0	51	98	113
1996	48	0	0	37	85	95
1997	50	1	0	42	93	103
1998	44	0	0	40	84	92
1999	46	0	0	27	73	84
2000	48	0	0	36	85	104
2001	47	0	0	41	87	78
2002	53	0	0	44	97	123
2003	51	0	0	45	96	114
2004	56	0	0	33	89	99

Data on historical annual total water use and production in the PSC system are presented in Table 3-14.

Table 3-14 (Table 4-3 of WMP)
ANNUAL WATER USE AND PRODUCTION IN THE
PALM SPRINGS CREST SYSTEM, 1991 - 2004

Year	Annual Water Usage (acre-ft)					Annual Production (acre-ft)
	SFR	MFR	Commercial	Other	Total	
1991	17	5	0	0	23	---
1992	22	8	0	0	30	---
1993	27	9	0	0	37	47
1994	29	10	0	0	39	52
1995	26	10	0	0	36	52
1996	25	18	0	0	42	55
1997	25	16	0	0	41	48
1998	26	14	0	0	41	49
1999	30	14	0	0	46	51
2000	32	13	0	0	45	53
2001	34	16	0	0	50	59
2002	36	15	0	0	51	58
2003	35	10	0	0	45	55
2004	39	11	0	0	50	59

SFR water use increased by about 6.6 percent per year between 1991 and 2004, while MFR water use increased somewhat more slowly, and commercial and other water use remained absent in this system. Water production increased at about 2.1 percent annually.

Summary data on historical annual water use and production for the District-wide total are presented in Table 3-15.

SFR water use across the District increased by about 4 percent per year between 1991 and 2004. MFR and commercial water use grew more slowly and comprised about 25 percent of water use by 2005. Other water use increased considerably over this same time period as demand for schools, irrigation and construction usage water increased in response to SFR water use.

Table 3-15 (Table 4-4 of WMP)
ANNUAL WATER USE AND PRODUCTION IN THE DISTRICT-WIDE TOTAL, 1991 - 2004

Year	Annual Water Usage (acre-ft)					Annual Production (acre-ft)
	SFR	MFR	Commercial	Other	Total	
1991	3,039	1,185	853	548	5,626	---
1992	3,139	1,302	538	844	5,823	---
1993	3,278	1,309	639	830	5,956	6,716
1994	3,831	1,624	640	1,154	7,249	6,957
1995	3,605	1,301	602	793	6,301	6,889
1996	3,808	1,394	693	900	6,795	7,292
1997	3,714	1,296	636	954	6,601	7,297
1998	3,594	1,224	583	910	6,311	7,382
1999	3,863	1,384	671	1,175	7,092	7,763
2000	4,035	1,591	719	1,094	7,439	8,010
2001	4,009	1,474	665	1,124	7,271	7,979
2002	4,197	1,450	669	1,207	7,523	8,283
2003	4,405	1,478	690	1,141	7,714	8,736
2004	5,039	1,558	715	1,679	8,992	10,197

3.3.3.2 Future Water Use

Future water use in the MSWD was forecast using the 520 gallons per day per SFR identified in Section 3.3.3, Water Requirements. MFR, commercial, and other water uses incorporated proportional analyses in the District. Table 3-16 provides water use projections including unaccounted-for-water.

Table 3-16 (Table 4-5 of WMP)
PROJECTED BASELINE SCENARIO, WATER USE BY CATEGORY AND TOTAL WATER DEMANDS, DISTRICT-WIDE TOTAL, 2005 - 2035 (in AFY)

Year	SFR	MFR/Mobile	Commercial	Other	Total	Total with Losses
2005	5,300	1,500	800	1,500	9,100	10,100
2010	7,700	1,500	1,200	2,300	12,700	13,800
2015	10,100	1,600	1,600	3,000	16,300	17,700
2020	12,500	1,600	2,000	3,800	19,900	21,600
2025	13,000	1,600	2,100	3,900	20,600	22,400
2030	13,600	1,600	2,200	4,100	21,500	23,400
2035	14,200	1,600	2,300	4,400	22,500	24,500

The high growth scenario projections for water use by category and total water demands, including unaccounted-for-water, for the District-wide total are presented in Table 3-17.

Table 3-17 (Table 4-6 of WMP)
PROJECTED HIGH GROWTH SCENARIO, WATER USE BY CATEGORY AND TOTAL WATER DEMANDS, DISTRICT-WIDE TOTAL, 2005 - 2035 (in AFY)

Year	SFR	MFR/Mobile	Commercial	Other	Total	Total with Losses
2005	5,300	1,500	800	1,500	9,100	10,100
2010	3,900	1,500	1,400	2,600	14,400	15,700
2015	12,500	1,500	2,000	3,700	19,700	21,400
2020	14,300	1,600	2,300	4,300	22,500	24,500
2025	16,100	1,600	2,600	4,900	25,200	27,400
2030	17,900	1,600	2,900	5,500	27,900	30,300
2035	19,700	1,700	3,200	6,000	30,600	33,300

3.3.4 Existing MSWD Facilities

3.3.4.1 Introduction

The Water Master Plan evaluates the existing MSWD water supply and distribution systems relative to its ability to meet demand and requirements.

The criteria used to evaluate the MSWD water system is based on published standards and current MSWD parameters for supply, storage, and distribution system components. Based on current MSWD records, the average daily demand (ADD) was determined to be 8.01 million gallons per day (MGD) or 5,564 gallons per minute (gpm). The 2005 AAD demand projections calculated for the model is 6,256 gpm. Table 3-18 describes the peaking coefficients or factors for maximum day demand (MDD) and maximum hour demand (MHD). The maximum day factor is used to represent the ratio between MDD and ADD (MDD/ADD). Similarly, the maximum hour factor represents the ratio between MHD and ADD (MHD/ADD).

Table 3-18 (Table 8-1 of WMP)
2005 EXISTING MODEL DEVELOPMENT CRITERIA

Average Day Total System Demand (gpm)	Maximum Day Factor (MDD/ADD)	Peak Hour Factor (MHD/ADD)	Absolute Minimum Fire Flow (gpm)
6,256	2.0	4.0	500

According to the Riverside County Fire Department, a reasonable minimum requirement for fire flow in the MSWD system is 1,500 gpm (for 2 hours) for commercial and 1,000 gpm (for 2 hours) for residential. Typical published standards for fire flow indicate a range between 500 and 2,000 gpm for single-family residential areas. For existing system model analysis, an absolute minimum fire flow of 500 gpm is used for evaluation. The water distribution model analyzed system performance under a residual system pressure of 20 psi.

The existing MSWD System is a combination of water distribution systems, some of which are interconnected and others that are completely independent. The Palm Springs Crest and West Palm Springs Village systems are located about 5 miles from the MSWD System and there are no interconnects between the systems. Because of the distance and topographical constraints, there are currently no plans to integrate these three systems together.

The primary source of water supply for each of the three water systems is groundwater obtained through production wells. Figure 3-1 illustrates the existing MSWD water system. The MSWD currently has nine wells that supply the MSWD System and two wells each for the Palm Springs Crest System and the West Palm Springs Village System.

An emergency source of water for MSWD is the Coachella Valley Water District (CVWD). MSWD currently has two inter-connections with the CVWD that can be used to provide emergency water to the MSWD System on a temporary and very limited basis.

A third source of water is obtained through an agreement between the Desert Water Agency (DWA) and the Metropolitan Water District of Southern California (MWD) to exchange Colorado River water for State Water Project (SWP) water. DWA obtains this water through a turnout from the Colorado River Aqueduct and manages a recharge facility near the turnout that enables the water (when it is available) to replenish the aquifer used by MSWD.

The current and projected demand for water in the MSWD under the High Growth Scenario is shown in Table 3-19.

Table 3-19 (Table 5-1 of WMP)
CURRENT AND PROJECTED WATER DEMAND (HIGH GROWTH SCENARIO)

Study Year		Annual Demand (AFY)	ADD (MGD)	MDD (MGD)
MSWD System	2005	9,940	8.88	17.75
	2010	15,450	13.79	27.59
	2015	21,070	18.81	37.63
	2020	24,130	21.55	43.09
	2025	26,980	24.09	48.18
West Palm Springs Village System	2005	100	0.09	0.18
	2010	160	0.14	0.29
	2015	210	0.19	0.38
	2020	250	0.22	0.45
	2025	270	0.24	0.48
Palm Springs Crest System	2005	50	0.04	0.09
	2010	80	0.07	0.14
	2015	110	0.10	0.20
	2020	120	0.11	0.21
	2025	140	0.13	0.25
Source: Harvey Economics, 2005				

The Water Master Plan evaluates the MSWD's existing District-wide system in terms of water supplies, storage, and distribution facilities. Based on the adequacy of the existing system to meet the current demand for water, the Water Master Plan identifies recommended improvements to the District-wide system to meet current requirements.

3.3.4.2 Water Supply

The MSWD Service Area is currently supplied by a total of 13 wells that feed the various distribution systems. The locations of the wells can be seen in Figure 3-1. Table 3-20 provides the pressure zone service, horsepower, pump setting, and the capacity fo each well.

Table 3-20 (Table 5-2 of WMP)
EXISTING WELL INFORMATION, MSWD SERVICE AREA

Well Designation	Pressure Zone Served	Motor (hp)	Pump Setting (ft)	Capacity (gpm)	Capacity (MGD)	Capacity (ac-ft/yr)
MSWD System						
22	Terrace	400	493	1,750	2.52	2,822
24	Terrace	600	529	1,200	1.73	1,938
27	Valley View	200	262	1,100	1.58	1,770
28	Annandale	600	632	1,900	2.74	3,058
29	Terrace	350	403	1,700	2.45	2,744
30	Mission Lakes	250	655	825	1.19	1,333
31	Two Bunch	350	250	1,900	2.73	3,058
32 (Little Morongo)	913	—	—	2,000	2.88	3,226
33 (Garnet)	913	—	—	800	1.15	1,288
Subtotal				**13,175**	**18.97**	**21,246**
West Palm Springs Village System						
26	W. Palm Springs Village	100	245	350	0.50	560
26A	W. Palm Springs Village	30	450	170	0.25	280
Subtotal				**520**	**0.75**	**840**

Well Designation	Pressure Zone Served	Motor (hp)	Pump Setting (ft)	Capacity (gpm)	Capacity (MGD)	Capacity (ac-ft/yr)
Palm Springs Crest System						
25	Palm Springs Crest	125	420	400	0.79	885
25A	Palm Springs Crest	40	500	175	0.27	302
Subtotal				**575**	**1.06**	**1,187**
TOTAL				**14,285**	**20.78**	**23,275**
Source: MSWD, 2005						

MSWD System: The MSWD System is served by nine existing wells. The nine wells will have a total estimated pumping capacity of 13,175 gpm, or about 19 MGD. These wells are scattered throughout the MSWD System, and all but one are located in the Mission Creek Groundwater Subbasin (MCGS). Well 33, the Garnet Well, is located in the Garnet Hill Groundwater Subbasin (GHGS).

Palm Springs Crest System: Two wells, Well 25 and Well 25A, are currently the only sources of water supply for the Palm Springs Crest System. Well 25 has been in operation since 1958, Well 25A was installed in September 2002 to provide a redundant source of water. These wells are located in the San Gorgonio Groundwater Subbasin.

West Palm Springs Village System: Two wells, Well 26 and Well 26A, are the only sources of water supply for the West Palm Springs Village System. Well 26 has been in operation since 1928, and is currently the main source of water for this system. Well 26A was installed in November 2001 to provide a redundant source of water. This well was shut down in early 2002 due to high uranium levels from natural sources measured in the discharge. MSWD has installed a well head treatment system to reduce uranium levels to below drinking water standards and the well is presently operating. These wells are located in the San Gorgonio Pass Groundwater Subbasin

3.3.4.3 Water Balance

The MSWD Service Area overlies five groundwater basins. These are the Desert Hot Springs Groundwater Subbasin (DHSGS), the Mission Creek Groundwater Subbasin (MCGS), the Whitewater River Groundwater Subbasin (WRGS), Garnet Hill Groundwater Subbasin (GHGS), and San Gorgonio Pass Groundwater Subbasin (SGPGS).

About 98.5% of the groundwater produced by MSWD is extracted from the MCGS. Therefore, this subbasin has received the greatest amount of study and is addressed in the greatest detail by MSWD.

Regional groundwater levels in the MCGS have been declining since the early 1950s due to scarce annual precipitation and groundwater extractions. Groundwater level data indicate that since 1952, water levels have declined at a rate of 0.5 to 1.5 feet per year. The estimated rate of withdrawal has varied from 3,900 acre-feet per year (AFY) to as high as 12,884 AFY, depending upon the author and the time period studied. Slade (2000) calculated the loss of groundwater from the subbasin as 5,340 AFY between 1978 and 1997. This calculation was based on a previous GTC (1979) report and an evaluation of historical water records for CVWD Well No. 3407, which showed a 1.5 feet of water level decline per year. Krieger and Stewart (2005) used the Slade/GTC assumptions and more recent water levels between 1998 and 2004 and estimated a rate of withdrawal of 9,700 AFY for the northwesterly three-quarters of the MCGS and 12,884 AFY for the entire MCGS.

Because of continued concerns over the consistent drop in groundwater levels, MSWD retained Psomas and GSI to perform independent studies of the MCGSB. The results of these two independent studies were that the estimated basin overdraft at that time was approximately 3,900 to 4,400 AFY. These studies are discussed in greater detail in Section 4.3.2.1 of this PEIR.

However, the most recent revision to the MSWD's Urban Water Management Plan (UWMP, or Plan) (2006) recognizes the existence and operation of the MSWD's groundwater recharge facilities as an element of the basin wide groundwater system, helping to offset declines in basin groundwater levels. Additionally, the Plan accounts for recharge from treated wastewater. Table 3-21 shows the anticipated future groundwater balance of the Mission Springs Subbasin aquifer as determined in the 2005 UWMP.

Table 3-21 (Table 5-3 of WMP)
MSWD WATER BALANCE

Year	MCGS Recharge(1)	CVWD Subbasin Production(2)	Surplus GW Recharge(3)	Total MSWD Demand(4)	Recharge from 35% Return Flow(5)	Net Recharge Available(6)	Total MSWD GW Demand(7)	Net Balance(8)
2005	27,000	5,000	22,000	9,200	3,200	25,200	9,200	16,000
2010	11,200	4,000	7,200	14,400	5,000	12,200	14,400	(2,200)
2015	14,100	5,500	8,600	19,800	6,900	15,500	17,800	(2,300)
2020	16,100	7,100	9,000	22,500	7,900	16,900	17,200	(300)
2025	17,800	8,900	8,900	25,200	8,800	17,700	19,100	(1,400)
2030	19,100	10,700	8,400	27,900	9,800	18,200	21,200	(3,000)

Notes:
AF – all numbers rounded to nearest 100 AF
(1) From Table 2-13 of CVWD 2005 UWMP for Mission Creek Spreading Facility; 2005 value from 11/9/05 email from Dave Luker (General Manager of DWA) to Arden Wallum (General Manager of MSWD).
(2) From Table 3-3 in CVWD 2005 UWMP for MCGS.
(3) Difference between MCGS Recharge and CVWD Production.
(4) Total Projected MSWD demand including recycled water demand (refer to subsequent tables in this section).
(5) Naturally occurring recharge from return flow (35% of Total MSWD Demand).
(6) Net Recharge Available = Surplus GW Recharge plus Recharge from Return Flow.
(7) Total MSWD GW Demand (excludes recycled water demand).
(8) Net Balance = Total MSWD GW Demand minus Net Recharge Available.

Source: MSWD Final Water Master Plan, June 2007.

Table 3-21 reflects more potential influences to groundwater levels, and presents a more detailed picture of future impacts to the aquifer, than the earlier studies. Accordingly, the Plan acknowledges that surplus recharge to the aquifer can occur in wet years such as 2005. Overall, however, under conditions of “normal” precipitation, the Plan predicts annual overdrafts of the aquifer ranging from 300 to 3,000 acre-ft.

According to the Plan, the estimated recharge potential of the new 60-acre facility range from 15,000 to 60,000 AFY, depending on the quantity and timing of water availability. The recharge of at least 15,000 acre-ft of imported water per year for 25 years is a key component of the UWMP. In accordance with the Plan, MSWD will work with DWA and the CVWD to protect the Subbasin as a source of water via implementation of a Groundwater Replenishment and Assessment Program (GWRAP).

DWR (1964) estimated that total groundwater storage capacity for the MCGS to be 2.6 million acre-ft. This is the amount of groundwater the Subbasin can theoretically contain assuming 1935 groundwater levels and assuming a maximum basin depth below ground surface of 1,000 feet.

GTC (1979) estimated that actual groundwater in storage in the MCGS (within the MSWD boundaries) was 1.44 million acre-ft in 1978. The subbasin was separated into two zones: (1) Zone A (western portion of the subbasin) contains 558,576 acre-ft while Zone B (eastern portion of the subbasin) contains 890,130 acre-ft. Currently, all of MSWD’s wells are located in Zone B. Assuming the amount of available groundwater was 1.44 million acre-ft in 1978 and using an over-drafting rate of 4,400 AFY (which does not include any recharge) results in the current (2005) actual groundwater in storage being estimated at 1.32 million acre-ft.

Assuming that the rate of over-drafting stays constant at about 4,400 AFY, the expected lifetime for the aquifer is about 300 years. If only Zone B is considered, the expected lifetime reduces to about 200 years at the current rate of extraction. Water levels would continue to drop and eventually impact existing wells resulting in the need to either re-set pumps at a lower elevation or re-drill the wells.

The previous discussion assumes that the rate of over-drafting remains constant into the foreseeable future. Slade (2000) predicated that the rate of water level decline would increase (assuming no recharge of imported water) from 1.5 feet per year between 1978 and 1997 to 3 feet per year between 1998 and 2018, and to an even greater rate of 6 feet per year between 2018 and 2048. The actual drop in water level (and rate of over drafting) will depend upon the general health of the economy, rate of population growth in the area, quantity of pumping required to meet the demands, amount of recharge water imported from MWD, success of conservation incentives, and development of alternative water supplies such as recycled water.

Subsequent to preparation of the Water Master Plan, MSWD retained the engineering consulting firm of Psomas to prepare the Groundwater Flow Model of MCGS April 2007 (Psomas 2007 Report). The Psomas 2007 Report utilized services data to develop a three-dimensional conceptual understanding of the subbasin to model groundwater flow in the subbasins. The results of this modeling effort are provided in the Psomas 2007 Report. Table 3-22 provides a summary of the groundwater budget developed by the Psomas 2007 Report.

Table 3-22
SUMMARY OF GROUNDWATER BUDGET

Scenario	Inflow			Outflow			Storage Change
	Spreading	Boundary Inflow	Total Inflow	Pumping	Boundary Outflow	Total Outflow	
Declining Boundary Head	15000	5978	20978	26961	3218	30179	-9202
Note: All values represent averaged 2007-2030 Simulation and are in AF/yr.							

As can be seen in Table 3-22, the Psomas 2007 Report identifies a substantially greater loss of water in storage in the subbasin without water spreading from that provided in Table 3-21. The difference between the two projections, without water spreading, is primarily a greater projection of inflow by the Psomas 2004 Report than identified in the Psomas 2007 Report (15,549 acre-ft versus 6,508 acre-ft). With water spreading, the volume of water in storage remains about the same or increases depending on the amount of water recharged into the subbasin. A further evaluation of effects of implementing the Water Master Plan is provided in Section 4.3, Hydrology and Water Quality of this PEIR. To forecast the potential effects of implementing the Water Master Plan, the PEIR primarily relies on data contained in the Psomas 2007 Report.

The WMP does not propose to extract water from the GHGS, the WRGS, or the DHSGS.

DWR (1987) estimated the total estimated storage capacity of the Cabazon Storage Unit of the San Gorgonio Pass Groundwater Subbasin (SGPGS) to be 1,152,000 acre-ft, and the actual groundwater storage at that time to be 640,000 acre-ft. Since water levels in this basin appears to have decreased since that date, it is assumed that the actual groundwater in storage has also decreased by an unknown amount. The USGS is currently studying the Cabazon Storage Unit to more clearly define the geohydrologic characteristics of the area. MSWD is one of eight agencies financially participating in the USGS studies. At this time, no data is available from the USGS.

Other Water Supply Options

The following water supply options can assist the MSWD in reducing overdraft of the aquifer and providing an adequate supply to its customers:

- Imported Water
- Water Conservation
- Recycled Water
- Pumping and Treatment of DHSGS

Imported Water Supply Options

The MSWD has several sources of water that are either currently available or may be available in the near future:

- Emergency water from CVWD (Existing Source)
- Groundwater Recharge from Colorado River Aqueduct (Existing Source)
- Direct Use of Colorado River Aqueduct water (Future Option)
- Use of State Water Project water (Future Option).

Emergency Water from CVWD

There are two inter-connections with the CVWD that allow water to be conveyed between the MSWD and CVWD systems. The two connections both feed the Two Bunch Pressure Zone and are situated at the following locations:

- A 6-inch connection located at Little Morongo Road and Dillon Road
- A 8-inch connection located at Bubbling Wells Road and Camino Aventura.

The capacity of the emergency interties was estimated assuming a design flow of 5 feet per second. Estimated capacity of the 6-inch and 8-inch connections is 450 gpm and 775 gpm, respectively. The emergency water can only be used for the Two Bunch and the Terrace pressure zones, and conveying it to the Terrace zone requires significant effort on the part of the MSWD. Since the Two Bunch Pressure Zone is one of the lowest pressure zones in the MSWD System, pumping emergency water to other pressure zones requires opening various normally closed valves and utilizing a pump to boost from the Two Bunch Pressure Zone into the Terrace Pressure Zone.

Mission Creek Groundwater Subbasin Recharge

The overdraft condition, discussed previously, in the MCGS has led MSWD to pursue recharge (spreading) operations in the subbasin. Spreading water provides more flexibility as to when the MSWD can take delivery of the untreated water. Fortunately, this timing also corresponds to the most efficient recharge period because evaporation will be lessened during the cooler times of the year. This program is essential to the short-term maintenance of groundwater levels in the MCGS. As demand increases, long-term groundwater levels are forecast to decline. Section 4.3, Hydrology and Water Quality of this PEIR provides an evaluation of the effects of potential groundwater recharge of the MCGS.

Desert Water Agency (DWA) is the MSWD's wholesale supplier for the California State Water Project. As a State Water Contractor, it is entitled to State Water Project (SWP) water. A conveyance system to provide SWP water directly to the Coachella Valley currently does not exist. However, the Colorado River Aqueduct (CRA) does go through the valley. DWA has entered into an agreement with MWD to exchange SWP water for CRA water.

In 1997, MWD tapped into the CRA for DWA and installed a 48-inch turnout just south of Indian Avenue and west of Worsley Road. DWA acquired approximately 190 acres of land in the vicinity of the turnout and constructed spreading ponds to percolate Colorado River water.

The possibility of continued recharge depends largely on the availability of future water from the MWD's Colorado River Aqueduct and on exchange agreements with DWA. This source of water does provide a significant amount of inflow to the northwesterly portion of the MCGS and reduces the amount of overdrafting of the aquifer. In addition, assuming that sufficient water is available, this recharge facility provides for conjunctive use possibilities, such as water banking of Colorado River water.

It should be noted that while this recharge program is included in the evaluation of the WMP, it is not a program proposed by the WMP. The recharge program is existing and has and can be implemented regardless of whether this WMP is adopted or implemented.

Section 4.3, Hydrology and Water Quality of the PEIR provides further evaluation of groundwater basin recharge.

Direct Use of Colorado River Aqueduct Water

Rather than recharging Colorado River (CRA) water, it may be possible to directly introduce CRA water into the MSWD water system. The main components are: (1) importing Colorado River water, (2) providing the necessary treatment to achieve potable water quality, and (3) distributing treated water to the MSWD Service area. MSWD would use DWA's existing connection to the CRA located near the spreading ponds to import the water. This option would also require the construction of a water treatment plant and new transmission pipelines to connect the aqueduct turnout to the water treatment plant and to the District's existing distribution system.

While identified as a possible option, the WMP does not include the development of a water treatment facility.

Use of State Water Project Water

This option would consist of adding State Water Project water to MSWD's source water portfolio. DWA and CVWD currently have entitlements to 171,000 acre-ft of SWP water, but cannot use it directly because of the lack of conveyance facilities. As discussed previously, DWA instead exercises its entitlements in an exchange with MWD for Colorado River water delivered through the CRA. However, this arrangement has several issues that make it less desirable than directly receiving SWP water:

- Colorado River water is saltier than SWP water, resulting in lower consumer satisfaction and higher operation and maintenance costs.
- Colorado River water may have higher concentrations of known chemical contaminants.
- SWP water comes from a different source than Colorado River water and may be available when CRA supplies are low, thus providing more flexibility for the supplier.

Currently, the State Water Project brings water from Northern California to two locations near MSWD: Beaumont, California, located approximately 26 miles from Desert Hot Springs, and Yucca Valley, about 20 miles from Desert Hot Springs. There are several options being considered for extending the SWP into the Coachella Valley:

- San Gorgonio Pass Water Agency (SGPWA) is considering constructing a pipeline that extends from Beaumont to a proposed recharge facility in the Cabazon area to recharge SWP water. Several alignments for pipelines capable of conveying design flows between 16 cfs (11,500 AFY) and 113 cfs (81,500 AFY) were identified and evaluated (Boyle, 2003). Estimated costs for the various pipeline alignments varied from $17.6 million to $19.8 million.

- CVWD and DWA are currently conducting a preliminary engineering study to assess options for bringing SWP water to the Coachella Valley. The two main options being considered are: (1) constructing a pipeline from Devils Canyon to Yucca Valley and then southward to the Windy Point Recharge Facility in the White Water area (104 miles at a cost of $1.2 billion); and (2) constructing a pipeline through the San Gorgonio Pass to recharge water in the Windy Point Recharge Facility, a distance ranging from 42 to 60 miles with costs ranging from $687 million to $734 million. Although bringing the water through the San Gorgonio Pass is shorter, this route involves other challenges such as construction through urban areas, crossing obstructions (freeways, flood control channels, and major utilities), endangered species and access through Native American land. The preliminary study is nearing completion and should be available for public review in July/August 2005.

Conversations with both the SGPWA and the CVWD/DWA team indicate that both entities are interested in working with the MSWD to define MSWD's future water requirements and together developing a plan to meet those requirements using SWP water (personal communications with SGPWA and CVWD, June 2005).

Water Conservation

MSWD currently promotes water conservation through the following programs:

- Conservation pricing
- Ordinance prohibiting wasting of water
- Landscape guidelines
- Free water audits to all customers
- Promotes enforcement of City/County water conservation requirements
- Educational programs/outreach
- Public outreach/Water Issues Study Group (WISG)

In 2004, MSWD adopted two major conservation policy statements: a water conservation master plan and water efficient landscaping guidelines. The water conservation master plan identifies several key areas in which MSWD will pursue more efficient water use practices, namely: efficient landscaping guidelines; efficient landscaping requirements for new development; landscape education center and xeriscape demonstration garden; efficient landscaping incentives; conservation education programs in schools, community and bimonthly billing information; tiered water pricing that encourages conservation; updated water shortage ordinance; water audits for the largest users; and rebates for water efficient plumbing fixtures. The District intends to strongly pursue these conservation measures over the coming years; therefore, the Water Master Plan utilized this lower average water use factor for SFR service connections to reflect those future water savings.

Recycled Water

Recycled water is defined by the California Water Code as "water, which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource." The availability of recycled water is limited to water generated as part of the wastewater treatment associated with sewage colleted from sewered residential, commercial, and industrial properties. One advantage of recycled water is that the amount of available recycled water generally increases with the amount of potable water used by the community.

MSWD currently operates two wastewater treatment plants located in the MSWD system, serving a total of about 6,000 developed parcels. The Alan L. Horton Wastewater Treatment Plant provides secondary treatment to the sewerage generated by customers hooked up to the system. The Horton plant currently has a permitted capacity of 2.0 MGD (2,815 AFY). The Desert Crest Treatment Plant is a much smaller system with 180,000 gpd (200 AFY) capacity, which serves various developments, as well as the Desert Crest Country Club and Dillon Mobile Home Park. MSWD has estimated that the amount of water recharged in this manner is just over 1,000 AFY. MSWD also has plans for a new regional wastewater treatment plant that will be constructed near I-10 and Indian Avenue.

The disposal of effluent from both the Horton and Desert Crest treatment plants is accomplished by utilizing percolation ponds located within the plants on the southwest (cold water) side of the Mission Creek Fault. In addition, effluent is used for irrigation and wash down at the plants. The District's wastewater treatment plants currently treat wastewater using a secondary treatment process.

Potential uses for recycled water can be divided into the following five major categories:

- Groundwater recharge
- Surface irrigation for food crops, parks and playgrounds, schoolyards, residential landscaping, golf courses, cemeteries, and freeway landscaping.
- Impoundments for recreation, fish hatcheries, landscape ponds.
- Cooling for industrial and commercial applications.
- Other Uses, such as flushing toilets, priming drain traps, structural fire fighting, decorative fountains, commercial laundries, industrial boiler feed, soil compaction, mixing concrete, and dust control on roads and streets.

Direct reuse for most of the above uses would require that the plant effluent be treated using a tertiary process. This method would require a significant investment in improved treatment facilities, more extensive effluent quality monitoring program, a separate piping and pumping distribution system, as well as increased administrative costs related to metering, billing, and regulatory compliance. There are currently no significantly large manufacturing and irrigation users near the Horton WWTP or the MWD turnout that could be potential customers for non-potable water. However, the future Highland Falls, Stoneridge and Tuscan Hills golf course developments are being designed to utilize recycled water. The MSWD is currently conducting preliminary investigations into the feasibility of using reclaimed water from the Horton WWTP and from the future regional WWTP for non-potable uses.

MSWD, supported by funding from the U.S. Bureau of Reclamation (USBR), is in the process of developing a comprehensive plan to assist in future decision-making regarding water resources. The first phase, called the Phase I Water Recycling Appraisal study, was completed and included an evaluation of the following:

- Water Resources Availability, which includes a general overview of the MCGS, identification of water resources, and concluded with a determination that the subbasin is in an overdraft condition.

- Water Quality, which includes a general overview of the water quality of the MCGS and potential threats to the existing water quality with a special emphasis on potential impacts from the more than 5,000 septic tanks currently in use in the study area.

- Groundwater Monitoring Program, which describes existing groundwater monitoring along with a recommended program that includes water level monitoring and water quality sampling. This section also provides recommendations for a Groundwater Management Plan.

- Quantification of Recycled Water, which identifies surface irrigation and groundwater recharge as potential uses of recycled water, estimates the quantity of available recycled water for the near term (2009) to be 4 MGD versus an estimated demand of 5.3 MGD from the golf courses, and that the supply will grow to 25 MGD at full build-out of the study area, and estimates the potential costs associated with additional treatment and conveyance facilities required for the use of recycled water.

- Conceptual Recycled Water Management Options, which describes a conceptual approach to using recycled water for various uses in the MCGS.

The District is intent on making reclaimed water a significant component of its future water supply portfolio. However, the only use of recycled water accounted for in this PEIR and the Water Master Plan is groundwater recharge.

Pumping and Treatment of Desert Hot Springs Groundwater Subbasin

The mineralized groundwater found in the DHSGS is a resource that could be utilized to meet the future water demands within the MSWD Service zone boundaries. Implementing this option would require the construction of several shallow production wells, a water treatment plant, and transmission piping to connect to the existing MSWD water systems. Disposal of the brine concentrate that is created as a waste product of the treatment process is also an issue that needs to be addressed.

The MSWD will give careful consideration before utilizing the DHSGS for water supply uses. As discussed earlier, this water feeds the local spa resort industry, which provides greater than 40 percent of the income for the local community. Very little is known about the geohydrology of this subbasin and the extraction of groundwater (whether of low or high temperature) could have unintended consequences. Because of the value of this resource to the local economy, MSWD will perform the following before considering use of water from the DHSGS in its system.

- Undertake a detailed geological exploration plan to fully characterize the DHSGS.
- Develop a set of guidelines for managing and protecting this resource.

The use of water from the DHSGS for use in the MSWD Water System is not included in the WMP nor evaluated in this PEIR.

3.3.5 Water Treatment Facilities

3.3.5.1 Introduction

MSWD water supply source is from groundwater, not surface water sources, which requires a lower level of treatment based on Federal and State regulations. MSWD, being a public water supply system, must adhere and meet all Federal and State regulations regarding treatment and distribution of potable water.

The Water Master Plan provides an analysis of existing well water quality and treatment requirements. At this time, MSWD provides water disinfection by chlorination or sodium or calcium hypochlorate at each well head.

3.3.5.2 Water Quality

Water quality for public drinking water systems is regulated by the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (CDHS). The Safe Drinking Water Act has established national primary and secondary drinking water standards for public water systems (CDHS water quality regulations Title 22 standards of the California Code of Regulations). Through primacy the State of California has established more stringent standards than those enacted by EPA. Primary drinking water standards include regulations over the following type of constituents: turbidity, microorganisms, disinfection byproducts, disinfectants, inorganic chemicals, organic chemicals, and radionuclides. Secondary drinking water standards include the following components: aluminum, chloride, color, corrosivity, fluoride, foaming agents, and odor.

Mission Springs, Coachella Valley, and the Desert Water Agency provide water supply to MSWD water systems. For each MSWD well, water quality is tested in accordance with Federal and CDHS requirements.

The Water Master Plan provides water quality testing data received from the respective agencies and has identified water quality parameters that are equal to or exceed the published regulatory standards.

3.3.5.3 Water Treatment for Wells

The District has standardized on providing an injection point at the well discharge for liquid sodium hypochlorite followed by a collection tank or what the District calls a “suction tank” at each new well head or well field discharge. MSWD also can provide adequate retention time by adequately sizing pipes. The collection tank is intended to provide a supply of water for the distribution system booster pumps that pump water from the tank into the water distribution system, then the distribution system pipe after the high service pumping would be sized to provide nine minutes of hydraulic retention prior to the first customer. The suction tank or the distribution system contact time requires plug flow of the water for the contact time of nine minutes.

At the well head, the Water Master Plan recommends the following process or delivery components:

- Liquid sodium hypochlorite 55 gallon drum storage with secondary containment (Note that for a 1,500 gpm production rate and a dosage of 0.5 mg/L of chlorine, the 12.5% liquid sodium hypochlorite feed rate is approximately 9.0 gallons/day. The chlorine demand will add to this amount but probably not significantly unless iron, manganese, or other oxidizable components are present.

- Sodium hypochlorite metering pumps (one duty/one standby per well head).

- Sodium hypochlorite diffuser assembly.

- A plug flow chlorine contact basin or pipeline sized for a chlorine contact (CT) of three, based upon 4-log virus reduction.

- Well start-up pump-to-waste valve.

3.3.5.4 Water Treatment for Wells Pumping from Recharged Aquifers

At this time the District has only limited experience using imported water. However MSWD samples and analyzes all water produced for its system. If the monitoring reveals that there is no direct influence of surface water (i.e., spreading fields) then the process and delivery components as recommended for the other wells will be adequate. If the monitoring indicates the well near the spreading fields is under the influence of surface water then full treatment as required for surface water is likely to be required. The only relief from full treatment will be to negotiate filtration credits for the well and thus delete the need for the coagulation and settling processes. In this case, the direct filtration and disinfection treatment processes would be required. The determination of filtration credits for application to wells under the influence of surface water are subject to a case-by-case evaluation.

3.3.5.5 Water Treatment for Existing Wells

Based on the required CT and hydraulic detention time to achieve an adequate reduction of viruses, the existing wells and connecting distribution piping were evaluated to determine whether or not additional improvements are required.

Based on the well production rates and distribution pipe length and related water volume before the first customer, the Water Master Plan determined there is adequate disinfection contact time in the distribution system piping for all but four wells: Well 22, Well 29, Well 31, and Well 26A. The Water Master Plan provides the following system improvements at these wells to remedy these deficiencies:

Well 22, 8" Pipe along Little Morongo between Acoma Avenue and Desert View Avenue
Well 29, Disconnect 12" pipe with 16" transmission main at Ironwood and Cholla Drive

Well 31, 12" Pipe along Dillon Road between Indian Avenue and Well #31
Well 26A, 8" Pipe along San Pierre between Hacienda Avenue and Well #26A

3.3.6 Existing MSWD System

3.3.6.1 Introduction

The existing MSWD water distribution system serves up to 24 different pressure service zones. In general, the MSWD standard pressure zones are reflective of existing storage tank overflow elevations, hence the term "913 Zone" in which the water storage tank overflow is at 913 feet above mean sea level (amsl). Therefore, pressure zone designations are expressed in terms of the tank overflow elevation and hence the static hydraulic grade line of that particular service zone. As development of the MSWD system occurred over the years, numerous storage tanks were constructed and some at varying elevations, which were not consistent with a primary pressure zone. One of the WMP goals is to consolidate the 24 different pressure service zones into primary pressure service zones.

Based on current and future water distribution system hydraulic requirements, the Water Master Plan is recommending primary pressure service zones in the MSWD System to include 913 Zone, 1070 Zone, 1240 Zone, 1400 Zone, 1530 Zone, 1630 Zone, and 1840 Zone. These designations indicate the ranges for the topographic (ground) elevations, which are used to define the extent of the individual zones. These primary pressure zones have or will in the future contain water storage facilities, if required, to meet peak hour and fire flow demands, groundwater wells to provide a source of supply for MDD within the zone, booster pumping capability to move water to higher service zones, and water transmission mains within the service zone distribution system.

3.3.6.2 Existing Water Facilities

Table 3-23 identifies the existing water production and distribution facilities within each of the respective primary pressure zones. These facilities include supply, storage, booster station, and distribution system components. Because certain facilities are associated with operation of more than one pressure zone, they are listed with each of the applicable zones.

Table 3-23
EXISTING MSWD WATER SUPPLY FACILITIES FOR EXISTING PRESSURE ZONES

Zone	Wells / Capacity	Storage / Capacity	Booster / Capacity	Distribution
913 Reduced Valley View	(2) 32 & 33 / 2,800 gpm	(1) 913 tank / 2 MG	(1) Garnet Booster Station / 1,066 gpm	*PRV-10 PRV-11 from higher zones
1070 Two Bunch and Valley View	(4) 27 & 31 / 3,000 gpm 32 & 33 available Total 5,800 gpm	(3) Valley View , Two Bunch #1 and Two Bunch #2 / 1.76 MG	(3) Valley View #1, Valley View #2 and 1070 Boosters / 1,666 gpm	(1) PRV-13 from Terrace and Two Bunch Zones
1240 Quail, Reduced Overhill and Terrace	(3) 22, 24 & 29 / 4,650 gpm	(4) Terrace West, Terrace Middle, Terrace East, and Quail Road / 7.14 MG	(7) Terrace Boosters 1-6, Two Bunch Booster / 4,771 gpm	(2) PRV's from Annandale, Terrace, and Two Bunch Zones
1400 Overhill, Annandale and Desert View	(5) 22, 24, 27, 28 & 29 / 7,650 gpm	(4) Overhill, Annandale, High Desert View #1 and #2 / 4.2 MG	(4) Overhill #1 and #2, Low Desert View #1 and #2 Boosters / 1,189 gpm	(3) PRV's 9, 14 & 15
1530 Gateway, Mission Lakes, Northridge and Red Bud	(5) 30, 22, 24, 29 & 27 / 6,575 gpm	(4) Gateway, Mission lakes, High Northridge and Red Bud / 3.57 MG	(7) Low Northridge #1 and #2, Red Bud #1 and #2, Gateway Fire and Gateway Hydro #1 and #2 Boosters, pipelines and valves / 1,301 gpm	
1630 Vista and Highland	(3) Well 22, 24 & 29 / 4,650 gpm	(2) Highland and Vista Tanks / 0.36 MG	(2) Vista Hydro #1 and #2 Boosters / 186 gpm	Pipelines, valves and (1) PRV 3
Vista Hydro Tank Zone	None	Vista Tank	None	Pipeline and Vista Booster Station
Woodridge 1840 Palm Crest System	(2) 25, 25A / 575 gpm	Woodridge Tank / 0.12 MG	None	Pipelines
Cottonwood 1630 West Palm Springs Village	(2) 26 & 26A / 520 gpm	(1) Cottonwood Tank / 0.28 MG	None	Pipelines
Note: * PRV (Pressure Reducing Valve)				

As shown in the Table 3-24, the MSWD water system has approximately 1.26 million linear feet of pipeline. This includes the MSWD System, the West Palm Springs System, and the Palm Springs Crest System.

Table 3-24
EXISTING DISTRIBUTION SYSTEM, MODE PIPELINE SUMMARY

Pipe Diameter (inch)	Length (ft)
2	6,174
4	249,658
5	25,132
6	280,362
8	371,228
10	33,932
12	192,553
14	555
16	104,078
Total	1,263,672
Source: MSWD system data	

3.3.7 Distribution System Analysis

Based on the existing water system described in Section 3.3.6, above, the Water Master Plan provides distribution system analysis. The existing water distribution system hydraulic model was calibrated based on fire hydrant flow tests. Once calibration was field verified, the capacity of the MSWD water distribution system to meet 2005 demands for the following scenarios was evaluated: Average Day Demand (ADD), Maximum Day Demand (MDD), Maximum Hour Demand (MHD), and MDD plus fire flow. The results of this analysis are presented below.

3.3.7.1 System Analysis Criteria

The criteria used to evaluate the MSWD water system is based on published standards and current MSWD parameters for supply, storage, and distribution system components. Based on current MSWD records, the ADD was determined to be 8.01 MGD or 5,564 gallons per minute (gpm). The AAD based upon the calculated demand projections contained in the Water Master Plan for 2005 ADD is 6,256 gpm. Table 3-18 describes the peaking coefficients or factors for maximum day and maximum hour.

3.3.7.2 Supply

It is common practice to require sufficient source treatment capacity to meet MDD. Generally, water systems should not rely on storage capacity to provide water to meet the MDD. In addition, systems that are dependent upon groundwater supply should generally be designed to meet the MDD with the largest well out of service. This provides a level of redundancy for system reliability. In some cases inner-connections in the distribution system can be established to provide adequate supply redundancy. Otherwise, it may be advisable to develop additional sources to increase the reliability of water supply for the distributions system.

3.3.7.3 Storage

Terminal Water Storage facilities are vital to the safe and reliable operation of a water distribution system. Water distribution system storage capacity can be divided into three categories: (1) operational storage, (2) fire flow storage, and (3) emergency storage.

Operational Storage is considered the volume of storage required to supply the difference between available day supply (source) and fluctuating system demands. When source capacity is sufficient to meet the MDD, operational storage capacity can be approximated as the volume required to meet the difference between the maximum day and MHDs (storage to meet peak demands).

Fire flow storage is the volume of water required to provide a specific fire flow for a specific duration. These vary from community to community and system to system. Typically, the local Fire Marshall will establish flow and duration requirements based upon the published guidelines in the Uniform Fire Code and recommendations from the Insurance Service Office, which is a non-profit group that evaluates insurance risks for communities. The MSWD standard for fire flow volume requires sufficient storage to provide a fire flow of 1,000 gpm for a duration of two hours, which equates to a storage volume of 120,000 gallons that is added to the operation storage.

Emergency storage is the volume required to meet system demands during emergency situations such as supply failures, pipeline failures, power outages, or natural disasters. Typically, emergency storage is determined, as may be appropriate, by individual systems, and is based upon appropriate levels of risk and desired level of reliability. It is common to provide for reduced demands during emergencies. Based on levels of risks, emergency storage in MSWD is based on the combination of emergency storage and operation storage equaling two days of ADD. Therefore, the emergency storage volume is equal to75 percent of the MDD.

3.3.7.4 Distribution System

The distribution analysis criteria include evaluation parameters for the following four scenarios: ADD, MDD, MHD, and MDD plus fire flow demand. Table 3-25 provides a summary of the distribution analysis parameters that are presented in this section.

Table 3-25
SUMMARY OF DISTRIBUTION SYSTEM PARAMETERS

Minimum Pressures (psi)			Maximum Pressure (psi)	Maximum Velocity (fps)		
MDD	MDD + Fire Flow	MHD	ADD	ADD	MDD	MDD + Fire Flow
40	20	30	120	5	6.5	8

3.3.7.5 Average Day Demand

The ADD scenario was analyzed to evaluate maximum system pressures and maximum velocity. MSWD standards require system pressure to be less than 120 psi and pipeline velocity to be less than 5 fps during an ADD scenario. Although 120 psi is the maximum allowable pressure, pressures over 80 psi (Uniform Plumbing Code) may require pressure-reducing valves at individual services to prevent damage to appliances and fixtures.

3.3.7.6 Maximum Day Demand

The MDD scenario was analyzed according to maximum velocity and minimum pressure requirements. MSWD standards require that system pressures exceed 40 psi and that pipeline velocity be less than 8 fps during a MDD scenario.

3.3.7.7 Maximum Hour Demand

The MHD scenario was analyzed according to minimum pressure. MSWD standards require that system pressures be greater than 30 psi during a MHD scenario.

3.3.7.8 Fire Flow

The fire flow demand scenario consists of the MDD plus fire flow demand. As previously mentioned, the minimum commercial and residential fire flows are 1,500 gpm and 1,000 gpm, respectively. MSWD standards require that velocities be less than 6.5 fps during a fire flow demand scenario. Also, it is common practice to require a minimum system residual fire flow pressure of 20 psi.

3.3.7.9 Water Demands

Table 3-26 shows the demands for the following three scenarios: average day, maximum day, and maximum hour, per the ratios previously established.

Table 3-26
SUMMARY OF PRESSURE ZONE DEMANDS

Pressure Zone	ADD (gpm)	MDD (gpm)	MHD (gpm)
913	43.5	87.0	174.0
1070	954.5	1909.0	3818.0
1240	1860.0	3720.0	7440.0
1400	1314.5	2629.0	5258.0
1530	1407.5	2815.0	5630.0
1630	583.0	1166.0	2332.0
1630-Cottonwood	62.0	124.0	248.0
1840-Woodridge	31.0	62.0	124.0
Total	6,256	12,512	25,024

3.3.7.10 Overall System Analysis

The overall system analysis evaluates (1) supply capacity, (2) storage capacity, and (3) distribution facilities (pressure and velocity). This was completed in two parts in the Water Master Plan. First, the entire system is evaluated. Second, individual zones were considered. It is appropriate to analyze the entire system and individual zones separately. For example, the entire system may have sufficient total storage capacity, but a few individual zones or service zones may not have sufficient storage volume. In this case, future improvements of the distribution system may be configured to better utilize system storage facilities.

3.3.7.11 Summary

Table 3-27 summarizes the existing system ability to meet the hydraulic analysis criteria.

Supply is analyzed in terms of groundwater production into the specific primary pressure zone, and storage is analyzed in terms two days of ADD volume available in storage tanks. Distribution analysis considers whether or not the system meets pressure and velocity criteria. Fire Flow capacity analysis is based upon determining the flow capacity available at model nodes with a minimum pressure of 20 psi. The primary service zones that do not meet the system criteria typically have portions of the system which have an available fire flows lower than the absolute minimum standard of 500 gpm.

Table 3-27 (Table 8-48 of WMP)
SUMMARY OF EXISTING SYSTEM ANALYSIS RESULTS

Zone	Does this entire zone meet system analysis criteria?			
	Supply	Storage	Distribution	Fire Flow
913	No	Yes	Yes	Yes
1070	No	No	No	No
1240	No	Yes	No	No
1400	No	Yes	No	No
1530	No	No	No	No
1630	No	No	Yes	No
Cottonwood	Yes	No	No	No
Woodridge	Yes	No	No	No

The 913 Zone does not have sufficient supply capacity but meets the criteria for fire flow, storage capacity, and distribution system capacity. The 1070 Zone lacks supply, storage, distribution, and fire flow capacity. The 1240 Zone has sufficient storage capacity, but has deficiencies in supply, distribution, and fire flow capacity. The 1400 Zone has sufficient storage capacity, but has deficiencies in supply, distribution, and fire flow capacity. The 1530 Zone lacks supply, storage, distribution, and fire flow capacity. The 1630 Zone has sufficient distribution capacity, but is deficient in supply, storage, and fire flow capacity. The Cottonwood and Woodridge Zones have sufficient supply, but lack storage, distribution, and fire flow capacity.

3.3.8 Recommended System Improvement Plan

The following are the Water Master Plans recommended water distribution facilities improvements required to meet future growth over the next 20 years while maintaining upgrading and enhancing facilities to meet the areas of concern in the existing systems. These future enhancements include supply, storage, booster station, and distribution system improvements. The 20-year Capital Improvement Program (CIP) components are outlined for the combined MSWD water distribution system on 5-year intervals for the following years: 2010, 2015, 2020, and 2025. The proposed improvements are a “snap shot” in time and should be reviewed annually to determine the appropriateness as growth occurs. The CIP improvements for the 5-year intervals 2010 to 2025 are provided on Figures 3-2 through 3-6.

The MSWD has identified two specific CIP improvements for development. These are the Vista Reservoir and the Terrace Reservoir. The location of these two reservoirs are shown on Figure 3-7.

3.3.8.1 Primary Pressure Zones

A major emphasis in the recommended water distribution facilities is based on reconfiguration of primary pressure zone boundaries to resolve concerns over high and low pressures along existing pressure zone boundaries as well as to reduce the number of pressure zones. The Water Master Plan recommends that the system be organized into nine pressure zones shown in Figure 3-8. The range of topographic elevations and static system pressures for each of the primary pressure zones are both shown in Table 3-28. These pressure zone parameters were used to redefine the pressure zones throughout the combined MSWD system. New primary pressure zones have been established for the two highest topographic regions (Zone 1975 and Zone 2155) to meet possible future growth. Figure 3-8 shows the location of the pressure zone outlined below in Table 3-28.

Table 3-28 (Table 9-1 of WMP)
SUMMARY OF PRIMARY PRESSURE ZONES

Primary Pressure Zone	Minimum Topographic Elevation (ft)	Maximum Topographic Elevation (ft)	Minimum Static Pressure (psi)	Maximum Static Pressure (psi)
913	635	800	49	120
1070	800	970	43	117
1240	970	1140	43	117
1400	1140	1300	43	113
1530	1300	1430	43	100
1630	1430	1530	43	87
1800	1530	1700	43	117
1975	1700	1880	41	119
2155	1880	2060	41	119

Future water system demands are divided according to the primary pressure zone boundaries. Thus, water demands are redistributed according to primary pressure zone changes to accurately model the projected future conditions. The MDD for each zone (Table 3-29) is the basis for developing supply, storage, and booster pumping capacity requirements.

Table 3-29 (Table 9-2 of WMP)
PROJECTED MDD FOR PRIMARY PRESSURE ZONES

Primary Pressure Zone	Service Zones	2005 MDD (gpm)	2010 MDD (gpm)	2015 MDD (gpm)	2020 MDD (gpm)	2025 MDD (gpm)
913	Reduced Valley View	87	119	173	173	175
1070	Valley View, Two Bunch	1909	2079	2264	2552	2818
1240	Terrace, Quail, Reduced Overhill	3720	4331	4706	5231	5585
1400	Overhill, Annandale, High Desert View, Reduced High Northridge	2629	7057	10553	12266	13877
1530	Mission Lakes, Gateway, High Northridge, Redbud	2815	3173	4446	4591	4870
1630	Highland, Vista, Gateway Hydro	1166	2400	3295	3295	3295
1800	future development only	0	0	690	690	690
1975	future development only	0	0	0	1124	1124
2155	future development only	0	0	0	0	1021
1800-W	Woodridge	62	99	136	149	174
1630-C	Cottonwood	124	198	261	310	335
Total		12512	19456	26524	30380	33964

The MDD is based upon the high growth scenario provided in the Water Master Plan and in Section 3.3.2.3 of this document. Water system improvements that will serve individual development will undergo separate environmental review in compliance with CEQA prior to approval of the individual projects.

3.3.8.2 Service Zone Improvement Plans

The Water Master Plan identifies system improvements for each planning horizon (i.e. 2010, 2015, 2020, and 2025) to meet future water demands, as well as address current system problems. The 20-year system improvements are intended to represent major system facility improvements required for the specific planning horizon. It is anticipated that these proposed improvements might be either accelerated or delayed based on actual growth conditions but are considered reasonable under the high growth scenario presented earlier. The high-growth scenario was used to provide at worst-case evaluation of the demand for water and water systems.

A discussion of the individual primary pressure zone improvements are provided below. Minor system improvements such as those required to serve specific developments are not within the scope of this Water Master Plan. Although the Water Master Plan does not present minor improvements that will be required for individual development projects, it does provide a guide for MSWD to effectively set requirements for key system components such as large distribution pipelines, storage, and booster pumps, as required.

The Water Master Plan recommends the following system improvements in each pressure zone to meet the projected MDD for each 5-year planning period. Figure 3-2 shows the proposed system for the years 2005-2025. Figure 3-3 through 3-6 show the improvements recommended for the 5-year planning intervals for years 2010-2025.

3.3.8.3 913 Zone

The 913 Zone MDD is expected to more than double (200%) over the next twenty years (2005 to 2025) (Table 3-30).

Table 3-30 (Table 9-3 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 913 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	none	none
Booster Stations	none*	none	none	none
Distribution – Major Pipelines	none	1,300 lf, 12-in or 1,218 lf, 16-in	none	none
Note: * Some appurtenant facilities maybe needed at the Garnet Booster Station.				

3.3.8.4 1070 Zone

The 1070 Zone MDD is projected to increase by approximately 48% during the 20-year period between 2005 and 2025. Table 3-31 shows summarizes the system improvements required in the 1070 Zone to meet future demands between the years 2010 and 2025. The future improvements for the 1070 Zone are expected to occur during 2010 and 2015.

Table 3-31 (Table 9-6 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1070 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 2.50 MG tank	none	none	none
Booster Stations	none	(1) 1.3 MGD	none	none
Distribution – Major Pipelines	3,200 lf, 16-in	none	none	none

3.3.8.5 1240 Zone

The 1240 Zone is expected to increase by 50 percent during the 20 years between 2005 and 2025. As shown in Table 3-32, the only major improvement anticipated for the 1240 Zone between the years 2010 and 2025 is a 20-in diameter pipeline.

Table 3-32 (Table 9-10 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1240 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 1.5 MG	none	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	12,900 lf, 16-in	none	none	none

3.3.8.6 1400 Zone

The 1400 Zone is expected to be the fastest growing zone in the entire MSWD water system. The MDD in the 1400 Zone is expected to increase by over five times (528%) during the 20-year period between 2005 and 2025. Table 3-33 summarizes the system improvements required in the 1400 Zone to meet anticipated future demands between the years 2010 and 2025.

Table 3-33 (Table 9-13 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1400 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(2) 2,000 gpm	(3) 2,000 gpm	(2) 1,500 gpm	(1), 1,500 gpm
Storage – Tanks	(1) 5.0 MG, (1) 1.0 MG	(1) 5.0 MG	none	(1) 5.0 MG
Booster Stations	(1) 0.7 MGD	none	none	none
Distribution – Major Pipelines	9,500 lf, 8-in, 29,300 lf, 24-in	2,600 lf, 12-in or 2,800 lf, 16-in 2,700 lf, 20-in	none	none

3.3.8.7 1530 Zone

The 1530 Zone MDD is expected to increase by 73% during the 20 years between 2005 and 2025. Table 3-34 shows the recommended future improvements for the 1530 Zone.

Table 3-34 (Table 9-18 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1530 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(2) 2,000 gpm	(1) 1,500 gpm	none	none
Storage – Tanks	(1) 1.0 MG	(1) 4.0 MG	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	21,600 lf, 12-in, 19,000 lf, 16-in 19,700 lf, 24-in	2,600 lf, 16-in 2,800 lf, 20-in	2,800 lf, 16-in	none

3.3.8.8 1630 Zone

The 1630 Zone MDD is expected to increase approximately 2.8 times (280%) during the next 20 years from 2005 to 2025. Table 3-35 shows the recommended future improvements for the 1630 Zone.

Table 3-35 (Table 9-23 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1630 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(1) 1,500 gpm	(1) 1,500 gpm	none	none
Storage – Tanks	(1) 1.5 MG (1) 2.5 MG	none	none	none
Booster Stations	(1) 1.5 MGD	none	none	none
Distribution – Major Pipelines	7,600 lf, 12-in,	none	none	none

3.3.8.9 1800 Zone

Table 3-36 shows the system improvements required for the 1800 Zone. The 1800 Zone is primarily a new pressure zone that will be created as growth increases beyond the extent of the existing system. The three wells shown in the 1800 Zone will also provide supply capacity to the 1975 Zone and the 2155 Zone.

Table 3-36 (Table 9-28 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1800 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	(1) 1,500 gpm	(1) 1,500 gpm	(1) 1,500 gpm
Storage – Tanks	none	(1) 1.0 MG	none	none
Booster Stations	none	(1) 7.5 MGD	none	none
Distribution – Major Pipelines	none	8,300 lf, 8-in 19,200 lf, 20-in	none	none

3.3.8.10 1975 Zone

Table 3-37 shows the system improvements required for the 1975 Zone, which primarily occur during 2020. The supply capacity for this zone is provided by well shown in the future 1800 Zone.

Table 3-37 (Table 9-27 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 1975 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	(1) 2.0 MG	none
Booster Stations	none	none	(1) 3.5 MGD	none
Distribution – Major Pipelines	none	none	8,200 lf, 12-in	none

3.3.8.11 2155 Zone

Table 3-38 shows the system improvements required for the 2155 Zone, which exclusively occur during 2025.

Table 3-38 (Table 9-36 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE 2155 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	none	none
Booster Stations	none	none	none	(1) 3.5 MGD
Distribution – Major Pipelines	none	none	none	200 lf, 16-in

3.3.8.12 Cottonwood Zone

Table 3-39 shows the system improvements recommended for the Cottonwood Zone. Most of the future improvements for the Cottonwood Zone are expected to occur prior to 2010.

Table 3-39 (Table 9-40 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE COTTONWOOD ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(1) 1,500 gpm	none	none	none
Storage – Tanks	(1) 1.0 MG	none	none	none
Booster Stations	(1) 2.2 MGD	none	none	none
Distribution – Major Pipelines	none	none	3,500 lf, 20-in	none

3.3.8.13 Woodridge Zone

Table 3-40 shows the system improvements recommended for the Woodridge Zone. The future improvements for the Woodridge Zone are expected to occur prior to 2010.

Table 3-40 (Table 9-15 of WMP)
FUTURE SYSTEM IMPROVEMENTS FOR THE WOODRIDGE ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 0.5 MG	none	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	none	none	none	none

3.3.9 Capital Improvement Plan

Section 10 of the Water Master Plan contains a financial plan for the improvements identified in the Water Master Plan. The purpose of the financial plan is to provide MSWD with a tool to estimate the costs of implementing the various water system improvements identified in the Water Master Plan. In addition to the water system improvements identified, the financial plan also provides for seismic retrofitting of existing water system facilities. The financial plan identifies seismic retrofitting as an ongoing activity for the entire planning period of the Water Master Plan.

3.3.10 Identified Capital Improvement Projects

The MSWD has identified certain facilities identified in the CIP that are considered to be priorities. These facilities are identified by the year they are forecast to be needed and the pressure zone affected.

Of these facilities, three have been specifically located and are scheduled for development. These are the Vista and Terrace reservoirs and the 1400 Zone well, booster pump and pipeline projects.

The Terrace Reservoir will be a 1.5 million gallon storage facility located near existing MSWD facilities southerly of 8th Street and westerly of San Lorenzo Drive in the City of Desert Hot Springs. This reservoir is scheduled to be developed by the year 2010 and will serve the MSWD 1240 Zone. The Vista Reservoir is a 1.5 million gallon reservoir that will be located adjacent to an existing MSWD reservoir near the terminus of Valencia Drive in the City of Desert Hot Springs. This reservoir is scheduled for development by 2010 and will serve the 1630 Zone. The locations of these reservoirs are specifically shown on Figure 3-7.

The 1400 Zone well will be located on District owned property located on the northerly side of Two Bunch Palms Trail between Cholla Drive and Little Morongo Road in the City of Desert Hot Springs. The District anticipates the well will produce about 1500 gpm of water and will serve the District's 1400 Zone. This project will include the installation of a booster pump station and pipeline to connect the well to the District's existing water system. Pipelines will be placed in Two Bunch Palms Trail, Cholla Drive and Little Morongo Road. It is also anticipated that a pipeline will be installed from Little Morongo Road to the existing MSWD Well 24 located southerly of Pierson Boulevard. The locations of the well, booster pump and pipelines are shown on Figure 3-9.

The environmental effects of constructing and operating these reservoirs and the 1400 Zone well, booster pump and pipeline will be evaluated in this PEIR on a site-specific basis. The evaluation provided in this PEIR will be adequate to allow MSWD to utilize this PEIR, if adopted and certified, as the CEQA compliance document for construction and operation of the Vista and Terrace reservoir projects and the 1400 Zone well, booster pump and pipeline project.

The specific locations, timing and other details of other facilities identified in the WMP have not been determined at this time. As with any project being implemented as part of a program extending over many years, a potential exists for plans and policies to change or for a specific project to result in a potentially significant conflict with existing plans and policies. Based on the type of projects envisioned for implementation under the WMP and the measures available to control or avoid such conflicts, the analyses in this PEIR indicate that such potential conflicts, as outlined above, can be managed, or reduced, to below a significant level of conflict. However, the California Environmental Quality Act (CEQA) process does provide a fail-safe mechanism for future projects by ensuring that each proposed specific project will be reviewed in the context of the findings and mitigation measures outlined in this document.

Under the programmatic concept, WMP implementation will be carried out by ensuring that all future specific facility projects, or future WMP modifications, are evaluated under Sections 15162 and 15168 of the State CEQA Guidelines. Under this review process, if a specific project is identified as causing a significant impact in one of the issue categories addressed in this document or as causing a significant conflict with the adopted plans and policies, then a subsequent CEQA document must be prepared. Thus, the combination of the measures identified in this document and the mandatory CEQA procedures discussed above will ensure that no specific WMP project or future WMP amendment or modification will result in significant environmental impacts or conflicts with adopted plans or policies, without this information be made available to the decision-makers prior to a decision being made on such specific projects or amendments. Mitigation measures for specific issues outlined above are identified in the subchapter where the issue is evaluated in this PEIR.

3.3.11 Implementation of the Water Master Plan

Implementation of the Water Master Plan will result in the installation of the identified water facilities. The installation of wells, reservoirs, pipelines, booster stations are relatively small projects that will generally occur at different times throughout the Water Master Plan planning period. Seismic retrofitting of existing facilities is also included in the Capital Improvements Plan. Seismic retrofitting generally occurs as separate projects on an ongoing basis throughout the life of the Water Master Plan. These retrofitting activities will be performed on an as-needed basis and will generally occur at different times and locations within the District. Construction and installation of the water facilities will require the short-term use of construction equipment.

Operation of certain of the facilities identified in the Water Master Plan (wells, booster pumps, etc.) will require the use of pumps and motors that will require the long-term use of electricity. Operation of the new water facilities will also require long-term maintenance activities.

3.4 USES OF THIS ENVIRONMENTAL IMPACT REPORT

As previously stated, the Mission Springs Water District (MSWD) Board of Directors must approve and certify the PEIR before any of the proposed development associated with the WMP will be allowed to proceed and cause the corresponding changes to the physical environment. This PEIR will be used as the information source and CEQA compliance document for the following discretionary actions or approvals by the MSWD. Responsible agencies for this PEIR may include:

- Various agencies of the State of California, including Department of Justice, Department of Fish and Game, Department of Health Services, Regional Water Quality Control Board, and Department of Transportation;

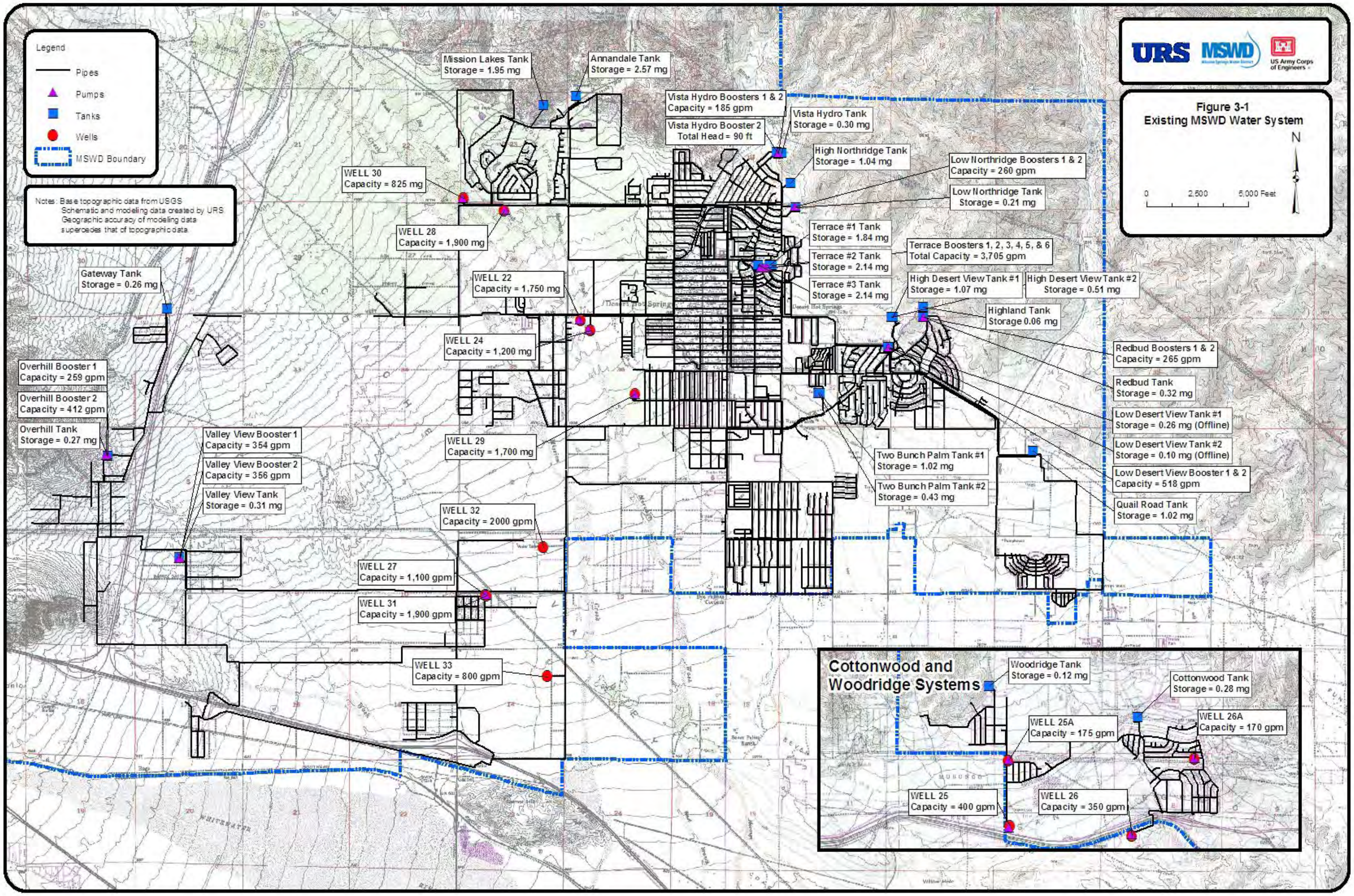
- County of Riverside (including Riverside County Flood and Water Conservation District);

- City of Desert Hot Springs and the City of Palm Springs; and

- Other various cities and water supply agencies.

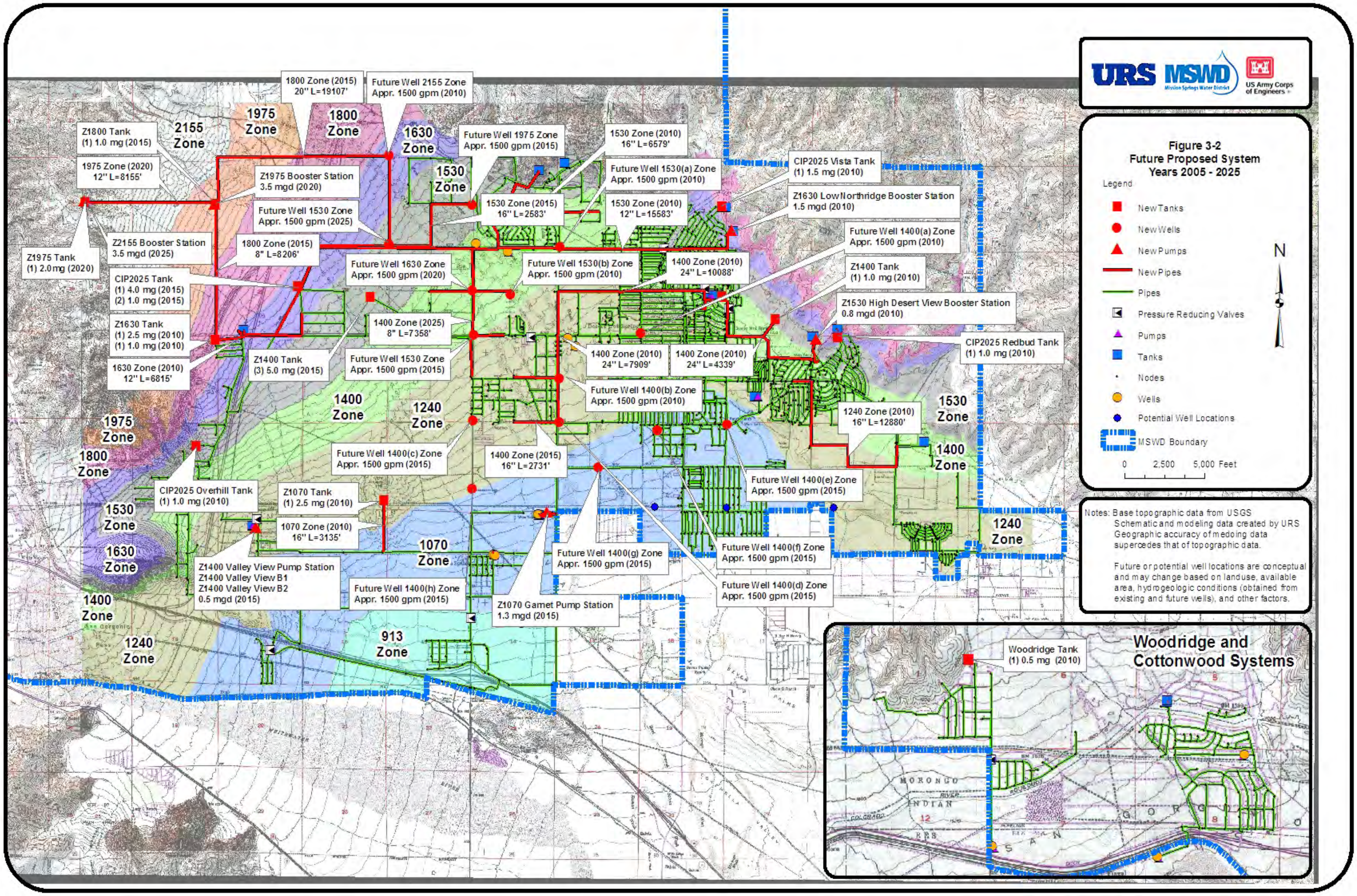
Other public agencies not listed here may also choose to utilize the PEIR to evaluate discretionary actions for compliance with CEQA guidelines and regulations.

FIGURE 3-1
Existing MSWD Water System



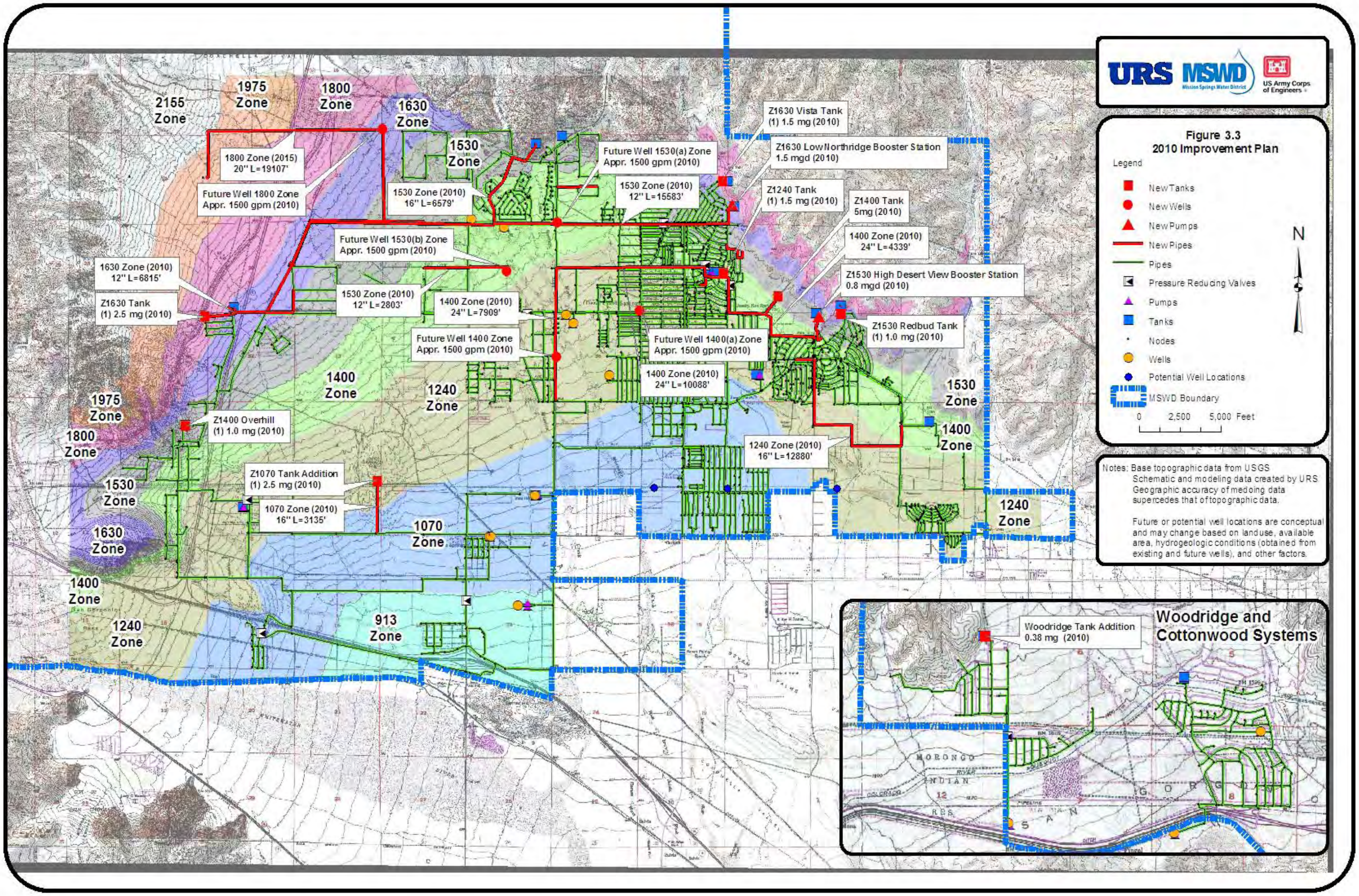
Source: MSWD Final Water Master Plan 2007

FIGURE 3-2
Future Proposed System Years 2005-2025



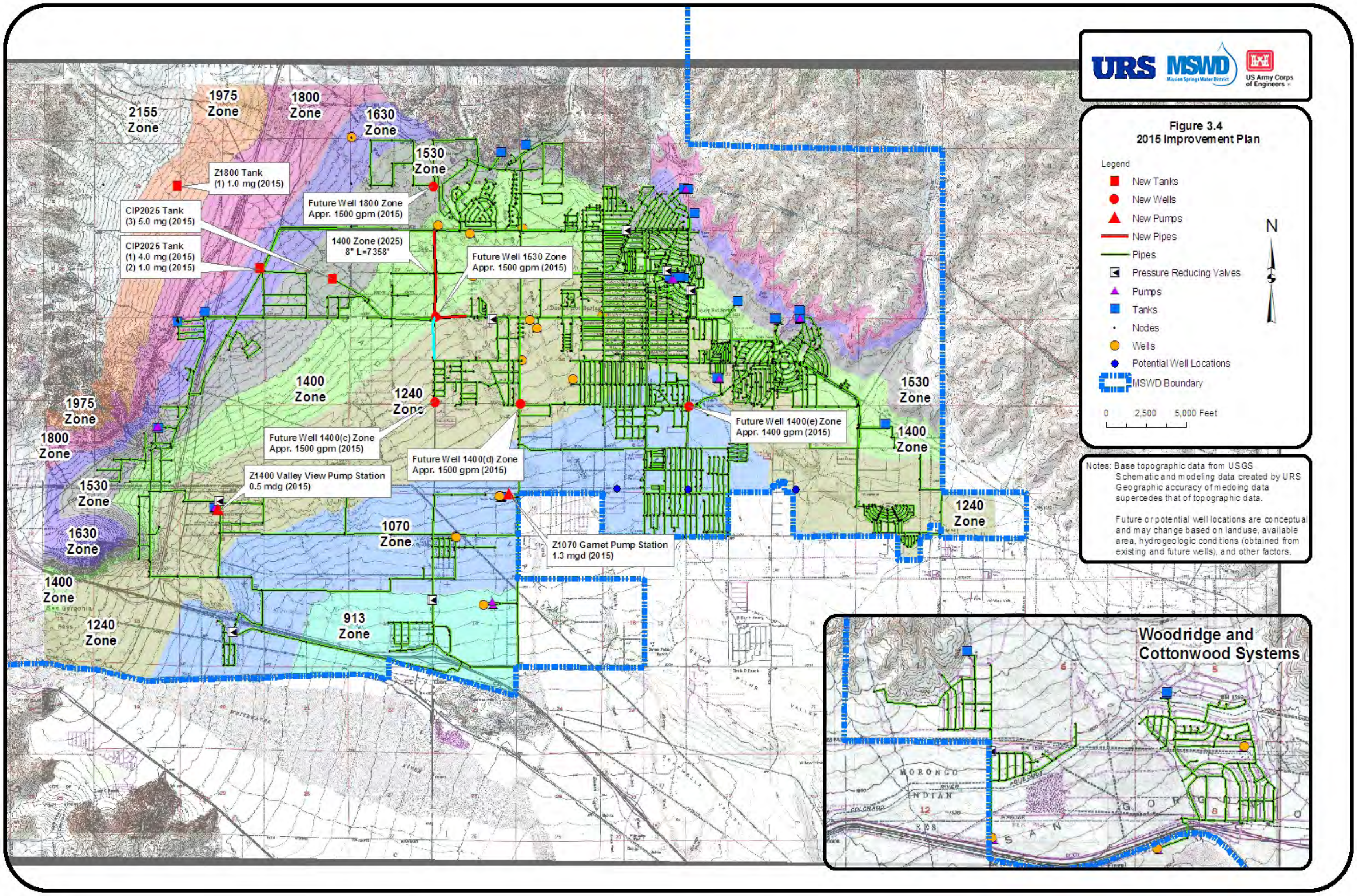
Source; MSWD Final Water Master Plan 2007

FIGURE 3-3
2010 Improvement Plan



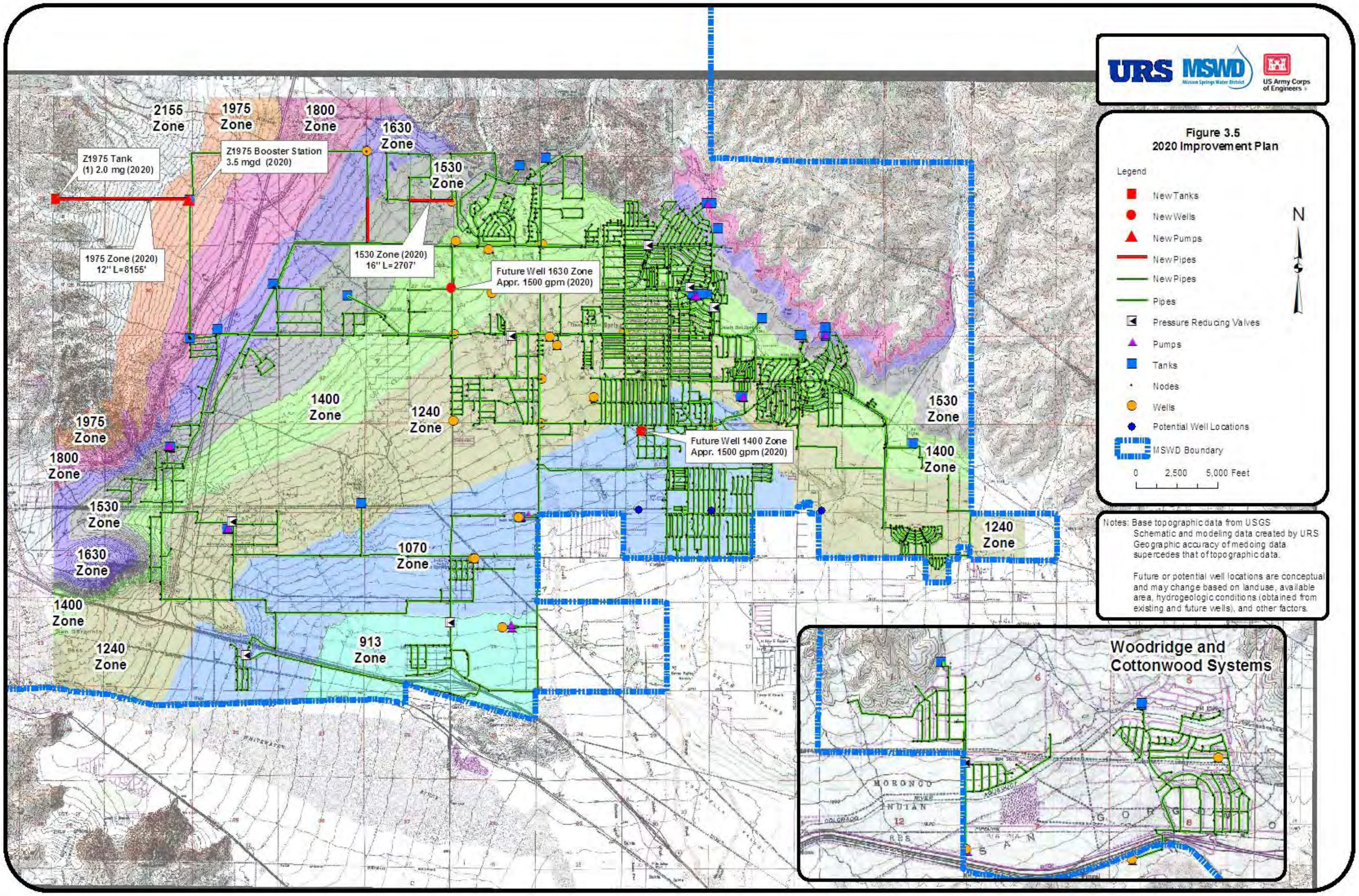
Source: MSWD Final Water Master Plan 2007

FIGURE 3-4
2015 Improvement Plan



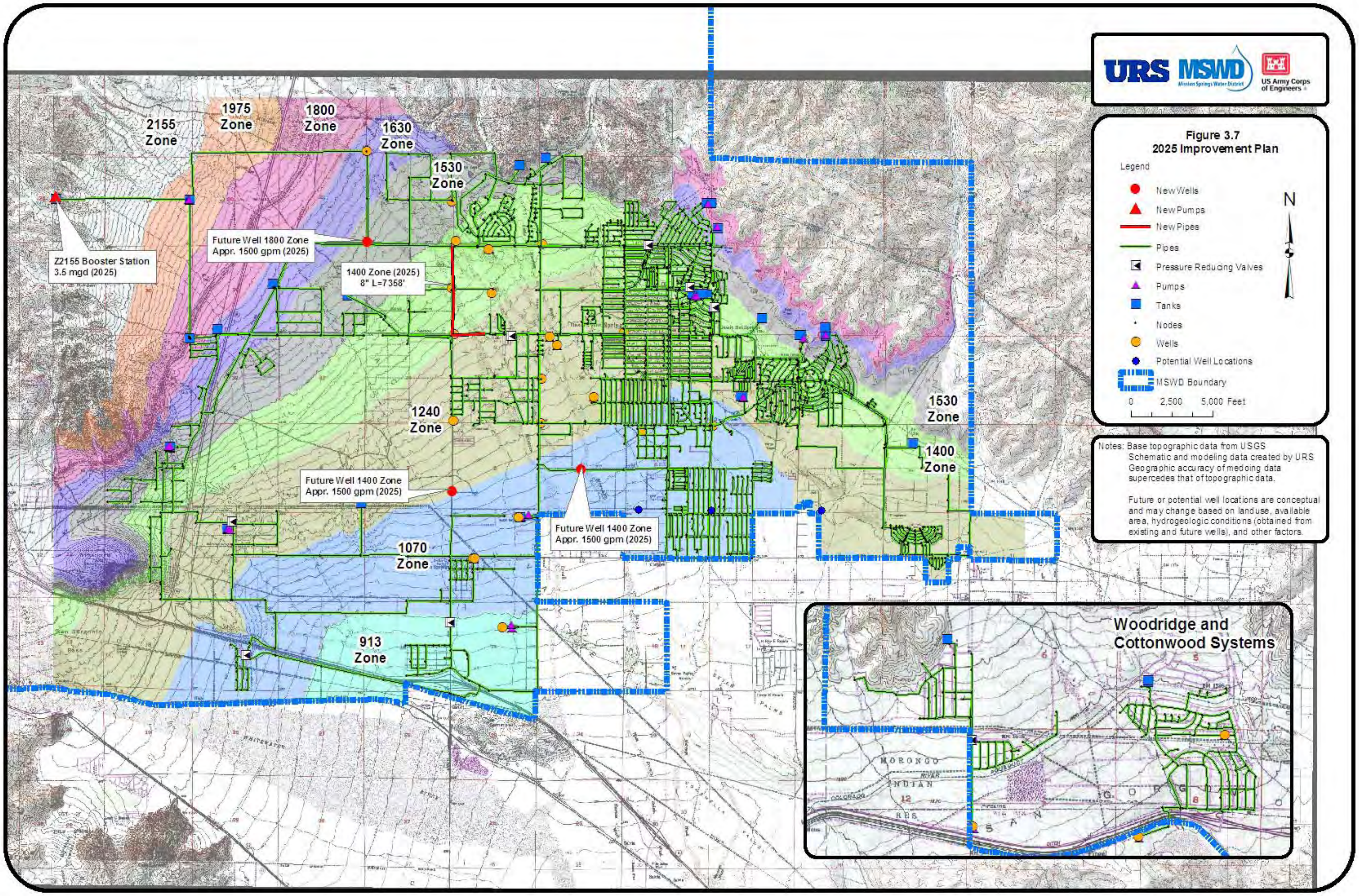
Source: MSWD Final Water Master Plan 2007

FIGURE 3-5
2020 Improvement Plan



Source: MSWD Final Water Master Plan 2007

FIGURE 3-6
2025 Improvement Plan



Source: MSWD Final Water Master Plan 2007

FIGURE 3-7
Location of Vista and Terrace Reservoirs

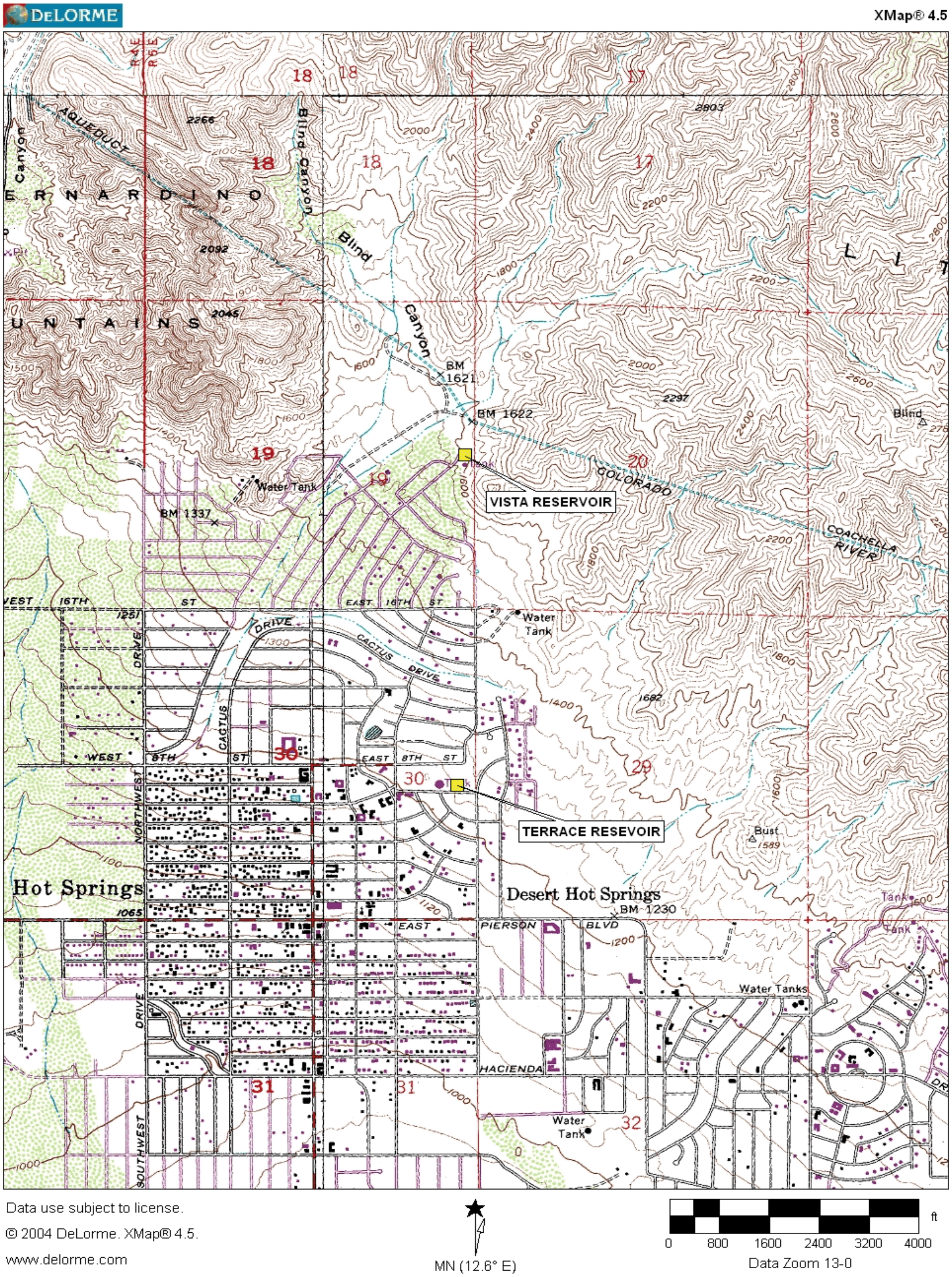
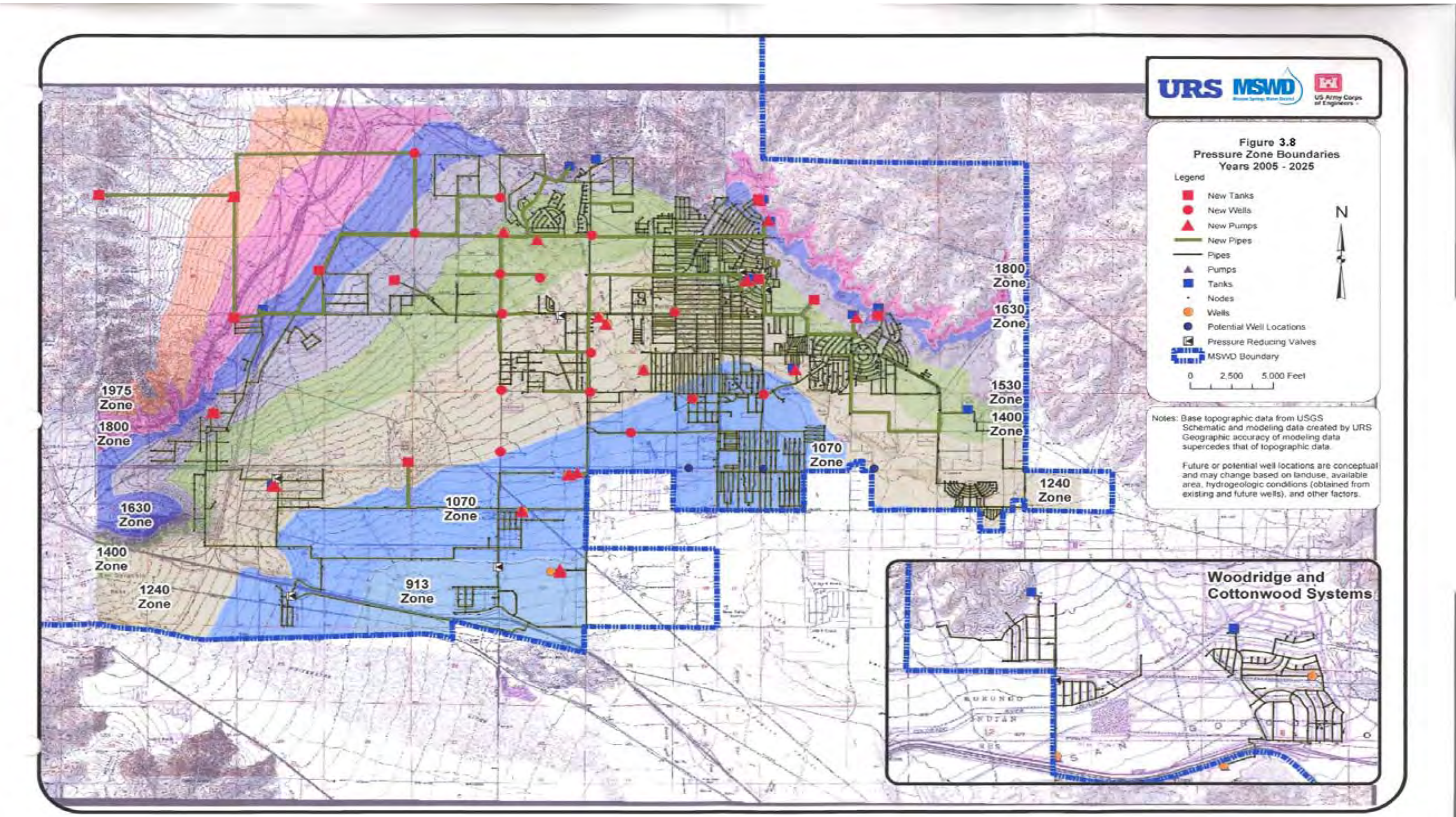
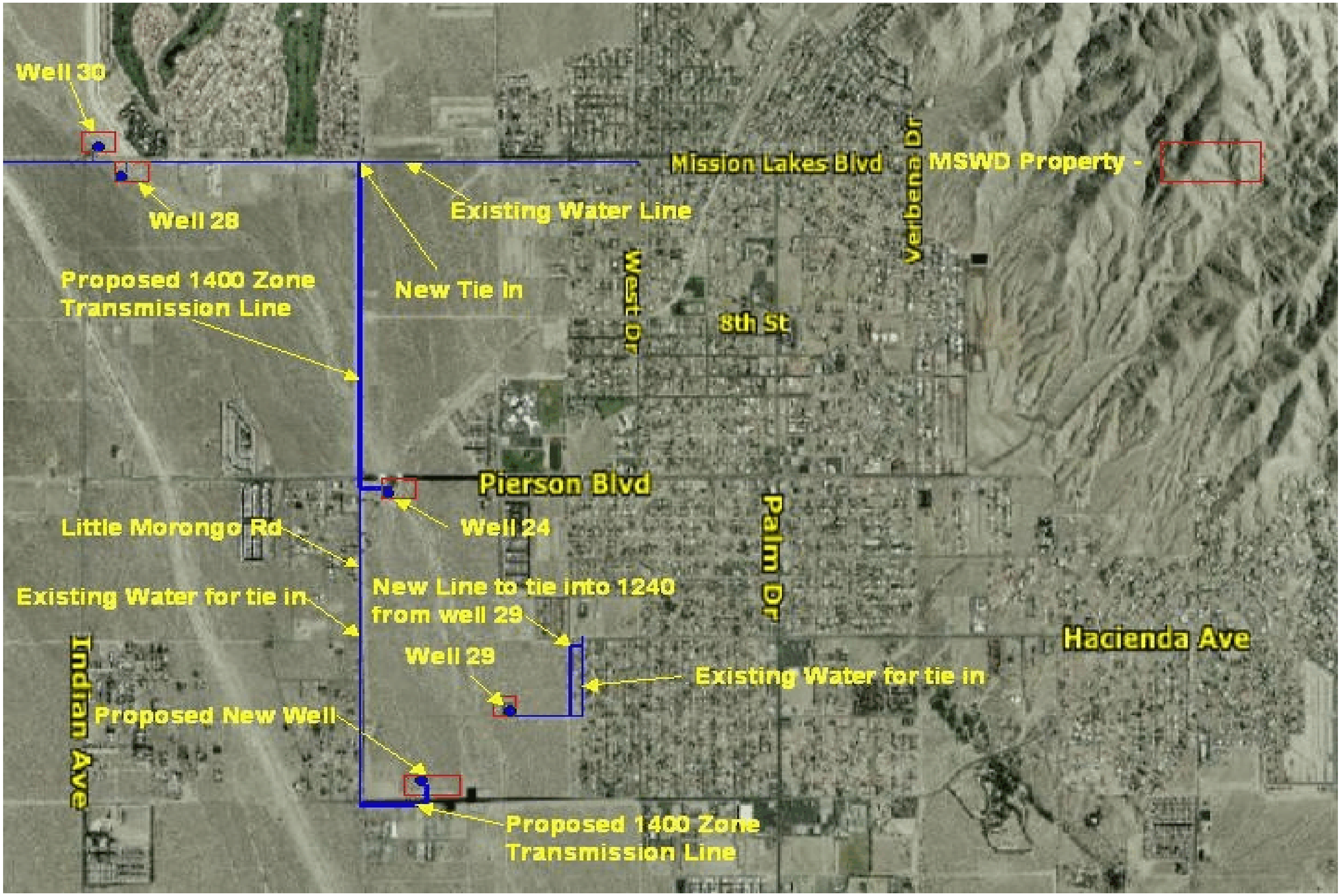


FIGURE 3-8
Pressure Zone Boundaries Years 2005-2025



Source: MSWD Final Water Master Plan 2007

FIGURE 3-9
1400 Zone Well Booster Pump Station and Pipeline



Source: Mission Springs Water District

CHAPTER 4 – ENVIRONMENTAL IMPACT EVALUATION

Note: All Chapter 4 figures are located at the end of their subchapter, not immediately following their reference in text.

4.1 BACKGROUND

This chapter of the Program Environmental Impact Report (PEIR) provides the detailed information used to forecast the type and significance of potential adverse environmental impacts that implementation of Water Master Plan and related approvals may cause if the project is implemented as proposed. In the following subchapters, each of the seven CEQA environmental topics (geology/soils, hydrology/water quality, biological resources, cultural resources, air quality, noise, land use) is evaluated. The environmental impact analysis section for each environmental topic is arranged in the following manner:

a. An introduction that summarizes the specific issues of concern for each subchapter, identified in the Notice of Preparation (NOP) scoping process;

b. A summary of the current or existing environmental setting for each physical resource or human infrastructure system is presented as the baseline from which impacts will be forecast;

c. Based on stated assumptions, the potential impacts are forecast and the significance of impacts is assessed without applying any mitigation using identified criteria or thresholds of significance;

d. Recommended measures that can be implemented to substantially lessen potential adverse environmental impacts are identified, and their effectiveness in reducing impacts to non-significant levels is evaluated;

e. Potential cumulative adverse environmental impacts are assessed under each environmental topic, where applicable; and

f. Unavoidable adverse environmental impacts, including significant unavoidable impacts, are identified, and any adverse impacts that may be caused by implementing mitigation measures are addressed.

To provide the reviewer with a criterion or set of criteria with which to evaluate the significance of potential adverse impacts, this document provides issue specific criteria, i.e., thresholds of significance, for each topic considered in this PEIR. These criteria are either standard thresholds established by law or policy (such as ambient air quality or noise standards) or project-specific evaluation thresholds that are developed and used specifically for this project. After comparing the forecasted physical changes in the environment that may be caused by the proposed project with the significance threshold criterion or criteria, a conclusion is reached on whether the proposed project has the potential to cause a significant adverse environmental impact for the issue being evaluated.

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4.2 GEOLOGY / SOILS

4.2.1 Introduction

The topic of geological/soils constraints and hazards was selected as topics for evaluation in this PEIR based on the evaluation contained in the Initial Study prepared for this project. It was determined that implementation of projects identified in the Water Master Plan have the potential to be affected by or affect geological and soils issues. A single soils constraint issue evaluated in the Initial Study that was determined to have no potential for impact from implementing the WMP was the soils incompatibility to support the use of septic tanks or other alternative wastewater disposal systems. The WMP does not propose the development of any wastewater disposal facilities and the evaluation of this issue is not included in this PEIR.

None of the comment letters received on the NOP identified any additional geological or soils constraints or issues.

In addition to the data provided by MSWD, data used to prepare this subchapter was obtained from City Desert Hot Springs General Plan; Psomas 2007; RBGC 1996, 2001; and TNPR 2000b. (See sub-chapter 7.2 Bibliography for references)

4.2.2 Environmental Setting

4.2.2.1 Geology

The MSWD Service Area is located within varying geologic areas and conditions. The service area includes the western portion of the Coachella Valley, the eastern portion of San Gorgonio Pass, and portions of the San Bernardino and Little San Bernardino Mountains. The Indio Hills are located near the southeasterly boundary of the MSWD service area.

The project area is located at the northwestern extreme of the Salton Trough, which is the landward extension of the East Pacific Rise spreading ridge and transform fault system. This spreading ridge is creating new crust and is responsible for separating Baja California from mainland Mexico and creating the Gulf of California and the Imperial and Coachella valleys. This spreading action is also responsible for moving the Pacific Plate to the northwest relative to the North American Plate at the rate of about 50 millimeters (mm) per year. Movement along these two tectonic plates is responsible for the earthquakes that occur in Southern California, with about 70 percent of this movement being accommodated by the San Andreas Fault Zone.

The Water Master Plan study area straddles two physiographic provinces; the valley floors are part of the Colorado Desert province, and the San Bernardino and Little San Bernardino mountains being in the Transverse Range physiographic province. The valley floor is a tectonic (fault controlled) depression that began forming about 5 million years ago and in the study area has been filled with nearly 5,000 feet of sediment (some of marine origin) eroded from surrounding mountains.

The most westerly portion of the MSWD Service Area contains the Palm Springs Crest System (PSCS or Woodridge) and the West Palm Springs Village System (WPSVS or Cottonwood). These systems are located at the eastern end of the San Gorgonio Pass. This pass forms the boundary between the Transverse Ranges geomorphic province to the north, and the Peninsular Ranges province to the south. The Transverse ranges are characterized by east-west trending mountain ranges which include the San Bernardino and Little San Bernardino mountains which are located to the northerly of the San Gorgonio Pass and Coachella Valley. The Peninsular ranges are characterized by northwest to southeast trending mountain ranges and valleys. The San Jacinto Mountains to the south are part of the Peninsular Ranges province. Locally the San Bernardino Mountains are comprised of Precambrian gneissic and Mesozoic igneous rock complexes, and the San Jacinto Mountains are the Cretaceous aged granodiorite and older metasedimentary rocks.

The Alquist-Priolo Earthquake Fault Zoning Act (previously known as the Alquist-Priolo Special Studies Zone Act adopted in 1972), was developed with the primary purpose of mitigating the hazards associated with fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault and thus potentially subjecting the structure to seismically induced ground rupture. Earthquake fault zones, which are sufficiently active and well defined, have been designated on maps prepared by the State Division of Mines and Geology. Study area boundaries range from 200 to 500 feet on either side of an active fault, depending on whether it is a minor or major fault. The Act defines active faults as those that have evidenced movement during the past 11,000 years (Holocene epoch).

The Coachella Valley portion of the MSWD Service Area contains three Fault-Rupture Hazard Zones or Alquist-Priolo Earthquake Fault Zones. They are the fault zones associated with the Banning Fault, the Devers Hill Fault and the Mission Creek Fault. A third fault, the Garnet Hill Fault, is located in the southerly portion of the MSWD Service Area. The Garnet Hill Fault is not identified as a Fault-Rupture Hazard Zone by the California Department of Conservation, Division of Mines and Geology. All of these faults are part of the San Andreas Fault Zone. These fault locations are shown on Figure 2-2.

Other potentially active faults that are known or suspected to occur within this portion of the MSWD Service Area are:

- The Blind Canyon Fault located in the northeasterly portion of the City of Desert Hot Springs; and

- The White House Fault located in the north-central portion of the City of Desert Hot Springs.

These faults have not been extensively investigated and little data is available.

The Woodridge and Cottonwood systems are located where the San Gorgonio Pass and Coachella Valleys meet. These systems are within and adjacent to the San Andreas Fault Zone complex near the point that the Banning and Garnet Hill faults split and traverse easterly into the Coachella Valley (see Figure 2-2).

Measurement of the Seismic Hazards

Earthquakes are classified by their magnitude and by their intensity. The intensity of seismic groundshaking is a function of several factors, including the magnitude of the quake, distance from the epicenter, and the local geologic and topographic conditions. Analysis of the San Andreas Fault (Banning and Mission Creek Faults) earthquake potential indicates that in a major seismic event the City generally lies within intensity zones IX through XI, as defined in the Modified Mercalli Intensity Scale (see below). This intensity range can result in partial or complete collapse of typical masonry buildings, heavy or total destruction of frame buildings and their foundations, serious to complete destruction of underground pipelines, bending of rail lines, land and rock slides, and damage or destruction of bridges and overpasses.

Richter Scale

The breakage of bedrock and overlying sediments along tectonic plate boundaries is generally termed faulting and ground rupture, are associated with ground acceleration or motion and are the most significant potential geotechnical hazards affecting the Water Master Plan study area. Earthquakes are typically defined as their magnitude as measured on the Richter Scale. Each whole number step is magnitude on the scale represents a ten-fold increase in the amplitude of the waves on a seismogram and about a 31-fold increase in energy released. As an example, a 7.5 Richter magnitude earthquake is 31 times more powerful than a 6.5 magnitude (Richter) quake.

Seismic Intensity and the Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale (MMIS) is more a useful measure of the damage potential of earthquakes, and is based upon people's reaction to a quake, and observed damage to structures and other physical effects. There are twelve levels of intensity in this scale, ranging from I (tremor not felt) to XII (damage is nearly total). The effect of a quake on masonry and other buildings are an important part of characterizing the intensity using this scale.

Major Active Faults and Their Potential Effects in the MSWD Service Area

Earthquakes can cause substantial property damage, the loss of public services and facilities and loss of life. Strong shaking from an earthquake can result in landslides, ground lurching, structural damage or destruction, and liquefaction. Strong shaking can also set in motion other hazards, including fires, disruption of essential facilities and systems (water, sewer, gas, electric, and transportation, communications, irrigation and drainage systems), releases of hazardous materials, and flood inundation as a result of dam or water tank failure.

During an earthquake ground rupture and groundshaking are the most significant seismic hazards that will impact the MSWD Service Area. Critical parameters include whether foundations and/or structures straddle the fault, distance between the fault and structures, the maximum credible earthquake each fault is capable of generating, the intensity of groundshaking expressed as a fraction of the acceleration of gravity (g), and the Modified Mercalli (MM) seismic intensity values that have been calculated for the area. In general, peak ground accelerations and seismic intensity values decrease with increasing distance from the causative fault. However, local site conditions, such as the top of ridges, may amplify the seismic waves generated by an earthquake, resulting in higher accelerations than those discussed below.

San Andreas Fault Zone

The San Andreas Fault Zone is the principal boundary between the Pacific and North American plates and locally has been divided into several segments. The San Bernardino Mountains segment is a structurally complex zone northwest of the City of Desert Hot Springs and is accommodated by several sub parallel fault strands, the most important of these being the Coachella Valley Segment (Mission Creek), San Gorgonio and Banning Faults. It is suggested that fault ruptures along the San Gorgonio branch can cause simultaneous rupture along the Banning Fault. Movement along this segment is estimated at approximately ±5 mm/year, with an average earthquake recurrence interval of 146 years. The most recent surface-rupturing earthquake on this segment is believed to have occurred in 1812. An earthquake of magnitude 8.0 on this segment is estimated to be capable of generating peak horizontal ground accelerations of between 0.48 and 0.66g in the MSWD Service Area.

The Coachella Valley Segment (Mission Creek Fault)

The southernmost portion of the San Andreas Fault Zone capable of impacting the MSWD Service Area is the Coachella Valley segment (Mission Creek Fault) (see Figure 2-2). This fault is currently considered the main trace of the San Andreas Fault in the Coachella Valley. No earthquakes have been recorded on this segment in historic times, and on-going analysis suggests that the last surface rupture on this segment occurred around 1680 A.D. Studies at Indio indicate that prior to 1680, earthquakes on this fault occurred on an average interval of 220 years. There is evidence of simultaneous rupture along the San Bernardino and Coachella segments around 1680 and 1450. The Coachella segment has experienced creep (slow slippage) at the rate of about 4 mm/year An earthquake of magnitude 8.0 on this segment is capable of generating peak horizontal ground accelerations estimated to be between 0.5g and 0.75g in the MSWD Service Area.

Banning Fault

The Banning Fault is considered the southern-most strand of the San Andreas Fault Zone, and consists of three segments with activity appearing to have shifted eastward over time. This fault is believed to be the source of the 1986 North Palm Springs earthquake of magnitude 5.9, which caused secondary ground fractures and landslides and had its epicenter in the western Planning Area. A Magnitude 7.5 earthquake on the Banning Fault is considered capable of generating peak horizontal ground accelerations of up to 0.9g in the City of Desert Hot Springs. Even higher accelerations can be expected on ridgelines and immediately adjacent to the fault.

Blind Canyon Fault

The Blind Canyon Fault was mapped as a generally north-trending fault extending north through Blind Canyon and into the Little San Bernardino Mountains. The fault also extends south and trends southeast from the intersection of Miracle Hill Road and Pierson Boulevard. This fault may connect further south with the Mission Creek Fault. Whether the Blind Canyon Fault is active has not been conclusively established, however evidence supports considering this fault potentially active and the fault may also move in sympathy with movement on the San Andreas Fault.

Pinto Mountain - Morongo Fault

The Pinto Mountain-Morongo Fault is one of several east-west-trending, high-angle strike-slip faults with left-lateral movement, which means it is similar to and may be directly associated with the San Andreas Fault Zone. Traceable for 47 miles from its linkage with the main trace of the San Andreas, the fault extends eastward beyond Twentynine Palms near and along the base of the Sawtooth Mountains, which are evidence of the uplift component in this fault's movement. This fault is active and has recently experienced sympathetic movement and ground ruptures associated with the 1992 Landers earthquake (magnitude 7.6). The Pinto Mountain-Morongo Fault is considered capable of generating a maximum credible earthquake of 7.3 to 7.4. Such an event would generate peak horizontal ground acceleration of up to 0.6g in the northern reaches of the MSWD Service Area.

Secondary Active Fault Zones

In addition to the major active fault branches associated with the San Andreas Fault Zone, there are numerous other active faults in the region that have the potential of impacting the City as a result of a major seismic event along these faults. Each of these secondary faults/zones is briefly discussed below.

Blue Cut Fault

The Blue Cut Fault is a east-west trending fault located along the north flank of the Eagle Mountains, near the southeast corner of the Mojave Desert. This fault appears to be accommodating some of the north-south compression that results from the "big bend" in the San Andreas Fault north of Los Angeles. It is considered one of the major active surface faults in Southern California but with very long recurrence intervals. An earthquake along this fault is estimated to be capable of generating peak horizontal ground accelerations of between 0.1 and 0.3g in the MSWD Service Area.

Johnson Valley Fault

The Johnson Valley Fault, one of several northwest-trending faults in the Mojave Desert not far north of Desert Hot Springs, which collectively appear to be accommodating between 9% and 23% of the motion between the North American Plate and the Pacific Plate. These faults are referred to as the Eastern California or Mojave Shear Zone. The June 1992 Magnitude 7.6 Landers Earthquake occurred on the Johnson Valley Fault and was strongly felt in the Desert Hot Springs area. Trenching indicates that this fault had last ruptured about 9,000 years ago. An earthquake of Magnitude 7.5 on this or nearby faults is estimated to be capable of generating peak horizontal ground accelerations of about 0.2 to 0.3g in the MSWD Service Area.

San Jacinto Fault Zone

The San Jacinto Fault Zone consists of a series of closely spaced faults that form the western margin of the San Jacinto Mountains. The fault zone extends from its junction with the San Andreas Fault in San Bernardino and runs southeasterly to Brawley and on to the U.S./Mexico border as the Imperial Fault. This active fault zone has generated at least ten moderate (Magnitude 6-7) earthquakes in the last 100 years. A maximum credible earthquake of Magnitude 7.0 on any of the three closest segments of this fault is estimated to generate peak horizontal accelerations in the area of about 0.06 to 0.16g.

Other Seismically Induced Geologic Hazards

While direct effects such as ground rupture and ground acceleration are typically associated with earthquakes, there are other seismically induced hazards that can injure people and damage structures. These hazards include liquefaction, dynamic settlement, and ground fracturing or fissuring, lateral spreads, slumps, landslides, and earth or rock falls. Each of these is briefly discussed below.

Liquefaction

When loose, unconsolidated, saturated, sandy soils are subjected to ground vibrations during a seismic event they may liquefy; this phenomenon is called liquefaction. This occurs in areas where the groundwater table is within 50 feet of the ground surface and that are subject to Modified Mercalli Intensity values of VII or greater or about 0.2g. Significant groundshaking can suddenly increase water pressure in the pores between soil particles and cause soils to lose cohesion and to "liquefy". Effects include a loss of bearing strength, ground oscillations, lateral spread and slumping. This hazard is considered low to none in the MSWD area, principally because of the approximate depth to groundwater of well over 50 feet. The exception includes lands located immediately adjacent to and on the north side of the Banning and Coachella Valley (Mission Creek) Faults, which dike groundwater and can allow it to rise within 50 feet of the surface.

Seismically Induced Settlement

Under some circumstances, strong groundshaking can cause densification or compaction of soils resulting in local or regional settlement of the ground surface. This can result in local differential settlement and damage to foundations and structures, as well as damage to water lines. This potential is affected by the intensity and duration of groundshaking and the relative density of the subsurface soils. Windblown sands and other recently deposited sediments are typically loose and, therefore, potentially subject to seismically induced settlement. Such soils occur within limited portions of the MSWD Service Area.

Seismically Induced Slope Instability

Seismically induced landslides and rock falls can be expected to occur in areas within and adjacent to hillsides. It is estimated that ground acceleration of at least 0.10g in steep terrain is necessary to induce earthquake-related rock falls. With several faults capable of generating peak ground accelerations over 0.10g in the study area, there is a high potential for seismically-induced rock falls and landslides to occur in portions of the MSWD Service Area. The 1986 Banning Fault earthquake induced numerous landslides on the sides of steep-walled canyons, while debris slides and rock falls occurred in fractured basement rocks of the San Bernardino and Little San Bernardino Mountains. Fractures and landslides are likely to occur on elevated mountainous terrain in these two ranges, especially where the bedrock is intensely fractured or jointed.

Seismically Induced Inundation

Seiche is the oscillation of the surface of a landlocked water body that varies from a few minutes to several hours. Seiche can be seismically inducted or be the result of material (rocks, landslides, etc.) falling into the water body. No major surface water bodies are present in the MSWD Service Area.

Failure of water tanks, reservoirs, retention basins, recharge basins and other water storage structures can be caused by seismic events, especially in areas susceptible to ground failure. Damage to these tanks could significantly hinder efforts to suppress fires and could greatly limit supply and availability of potable water after a major earthquake.

The Colorado River Aqueduct within the MSWD Service Area. The aqueduct crosses the Coachella Valley (Mission Creek) Fault about one mile north of the city limits, within the floodplain of the Big Morongo Wash. A surface-rupturing earthquake on either the Coachella Valley or San Bernardino Mountains segments of the San Andreas Fault could damage the aqueduct and release large volumes of water.

4.2.2.2 Soils

Coachella Valley

The Coachella Valley portion of the MSWD Service Area is comprised of alluvium eroded from the surrounding mountains which has been deposited in the depression between the Transverse Ranges and the Penisular ranges.

The prevalent geologic formations and structures of the project area are generally considered to be as follows:

Crystalline Bedrock: Geologically ancient formations comprise the basement rock of the region. These basement rocks, as mapped by Proctor (1968), consist of the San Gorgonio Complex of the Little San Bernardino Mountains and metamorphic rocks of the San Jacinto Mountains; both of these groups are of pre-Mesozoic geologic age (Slade 2000). Rocks of the San Gorgonio Complex generally consists of crystalline, metamorphic gneiss that has been intruded by assorted granite-type rocks.

Older Sedimentary: Older sedimentary formations in the region consist of the Coachella Fanglomerate and Split Mountain Formation, the Imperial Formation, the Painted Hill Formation, the Canebrake Conglomerate, and the Palm Springs Formation. The Coachella Fanglomerate and the Split Mountain Formation are exposed in the westernmost portion of the study area and generally consist of non-marine, Miocene-aged conglomerate and arkosic sandstone. The Split Mountain Formation contains interbedded basalt flows. The Imperial Formation is exposed only in limited areas northwest and southeast of the City of Desert Hot Springs and in the Garnet Hill area. This formation generally consists of Pliocene-aged marine sandstone and shale. The Painted Hill Formation generally consists of sandstone and siltstone. These three formations are lower Pleistocene in geologic age and are exposed in the westernmost portion of the MCGS and have limited exposure southeast of the City of Desert Hot Springs.

Younger Sedimentary: Younger sedimentary formations overlying the above (i.e., Older Sedimentary and Crystalline Basement) consist of Upper Pleistocene-aged Cabazon Fanglomerate and the Octillo Conglomerate. The Cabazon Fanglomerate is exposed in the western portion of the MCGS and the Ocotillo Conglomerate is primarily exposed southeast of the City of Desert Hot Springs.

Terrace Deposits: These recent deposits consist of sand and gravel of fluvial origin. They generally overlie all of the older formations in thin beds and are exposed along the hills and in canyons northeast of the City of Desert Hot Springs.

Alluvium: The alluvial deposits generally consists of interbedded clay, silt, sand, gravel and comprise most of the valley floor within the MCGS.

Aeolian Sand: Deposits of aeolian sand are generally comprised of windblown sand and silt. These deposits locally form a thin covering of soil/sand over the Cabazon Fanglomerate, Ocotillo Conglomerate, Terrace Deposits, and the Alluvium.

The depths to bedrock from the ground surface in the project area (thickness of alluvium) ranges from at the surface at the base of the mountain ranges to more than 1,000 feet in the central portion of the Coachella Valley portion of the MSWD Service Area.

Available data from MSWD, Coachella Valley Water District (CVWD), and the Desert Water Agency (DWA) indicates that the depth of groundwater generally exceeds about 100 feet below ground surface (bgs) throughout the subbasins within the Coachella Valley and within the Woodridge and Cottonwood systems.

San Gorgonio Pass

Data on the soils beneath the Woodridge and Cottonwood systems is very limited due to the lack of any extensive investigations of this area. Data contained in the Lithologic Logs for MSWD Well 26A indicates that soils in this area are primarily sandy, gravelly material with some clay content to a depth of over 600 feet. The source of alluvium in the Woodridge and Cottonwood area is material eroded from the San Bernardino Mountains. Therefore, soils in this area are expected to be similar to those identified above. The depth to bedrock in the vicinity of the PSCS and WPSVS is estimated to range from at surface in the foothills to around 1,000 in the valley portion of the San Gorgonio Pass.

Wind Erosion and Blowsand

The MSWD System is located in an area with a susceptibility to wind erosion ranging from “Extremely Severe” to “None”. The most severe conditions occur in the southern portion of the MSWD System. The geomorphology of the Coachella Valley, its extreme aridity and the funneled marine air masses to the west through the San Gorgonio Pass conspire to create strong and persistent winds in the valley. These strong winds have been blowing and redistributing sand deposits in the area for thousands of years. Lands disturbed by flooding, grading or agricultural activities are, therefore, subject to significant erosive forces that suspend fine dust and transport sand over great distances.

Collapsible and Expansive Soils

Soil collapse typically occurs in recently (Holocene) deposited sediments laid down by wind or water, which typically contain minute pores and voids. When saturated, collapsible soils undergo a rearrangement of their grains and a loss of cohesion or cementation, resulting in a substantial and rapid settlement even under relatively low loads. The alluvial and aeolian sediments in the project area are prone to collapse. This is not an unusual condition in desert areas; a mitigation can be accomplished through the implementation of standard design and construction methods.

Expansive soils are those, which include a significant amount of clay and are subject to swelling. Expansive soils can change in volume and can exert significant pressure on loads (such as buildings) that are placed on them. In the MSWD Service Area, expansive soils are not generally considered a hazard because of the relatively minor amount of clay present in the soils. Expansive soils may occur northerly of the Mission Creek Fault and in the vicinity of Whitewater Hill. Potential impacts associated with this hazard can be mitigated through standard design and construction practices.

Ground Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. This phenomenon is usually associated with the extraction of oil, gas or groundwater from below the ground surface, but it may also occur as a result of an earthquake. Subsidence can result in the disruption of surface drainage, reduction of aquifer storage, the formation of earth fissures, and damage to wells, buildings, roads and utility infrastructure. To date, no substantial subsidence of ground surfaces are known to have occurred in the MSWD Service Area.

4.2.3 Project Impacts

The Water Master Plan proposes both above and below-ground facilities. The construction and operation of these facilities have a potential to affect or be affected by geological and soil conditions that occur in the project area. This subsection of the PEIR evaluates the potential impacts associated with geological and soil conditions that could affect or be affected by implementation of the Water Master Plan.

4.2.3.1 Thresholds of Significance

The following criterion will be used to determine the significance of impacts associated with Geologic and Soil issues. Will the project result in:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic groundshaking;
  - Seismic-related ground failure, including liquefaction; and
  - Landslides.

- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil creating substantial risks to life or property.

4.2.3.2 Impact Analysis

a. Will the facilities proposed by this project be subject to fault rupture, groundshaking, ground failure, liquefaction or landslide?

Fault Rupture – The MSWD Service Area contains several Alquist- Priolo Earthquake Fault Zones. These fault zones are generally located northerly and southerly of the areas which have been identified for development of new water facilities in the WMP. The MSWD has selected two sites for development of water storage reservoirs identified in the WMP. These are the Vista and Terrace Reservoirs. These reservoirs are located within the northeasterly portion of the City of Desert Hot Springs and are both located several hundred feet from the nearest fault zone which is associated with the Mission Creek Fault. Therefore, ground rupture is not considered to have a potential for adverse impact to the proposed Terrace and Vista Reservoirs.

The 1400 Zone well, booster station and pipeline are located about 3/4 of a mile southwesterly and westerly of the Mission Creek Fault. Therefore, ground rupture is not considered to have a potential for adverse impact on these facilities.

Some potential does exist for other WMP facilities to be affected by ground rupture. Potential impacts to such facilities can be avoided by siting the new facilities outside of identified earthquake fault zones and by implementing the mitigation measures provided below.

Groundshaking – The MSWD service area is located within an area identified by the Uniform Building Code as Seismic Zone 4. This includes the proposed Terrace and Vista reservoirs. As previously stated, the project area could experience substantial seismically induced groundshaking with peak horizontal ground acceleration as high as 0.90g. All proposed WMP facilities and structures, including the Terrace and Vista reservoirs shall be constructed in a manner that meets current building code seismic standards and safety requirements. This includes the seismic retrofitting of existing MSWD facilities. (See Mitigation Measures provided subsection 4.2.4.)

It should be anticipated that the facilities proposed by this WMP will be subjected to severe seismically induced groundshaking during the life of the various facilities. This severe groundshaking has the potential to result in adverse impacts to the structures and the MSWD's ability to provide its customers water. However, adequate building codes and regulations have been developed to reduce the potential for damage, destruction and harm to humans to an acceptable level of risk. Compliance with all applicable building codes and standards and the following mitigation is considered adequate to reduce potential impacts associated with seismically induced groundshaking to a less than significant level.

The purpose of any seismic retrofitting is to bring existing structures up to current seismic building codes. Therefore, no potential for these activities to result in significant adverse impacts from seismically induced groundshaking can be identified.

Ground Failure / Liquefaction – The only known or suspected areas near the MSWD Service Area with a potential for liquefaction and ground failure are areas immediately north of the Banning and Mission Creek faults. These conditions exist because of the potential presence of groundwater within 50 feet of the ground surface. Some potential for seismically induced ground failure exists within and adjacent to active drainage channels or other areas where unconsolidated recent alluvium deposited by water occur. The majority of the MSWD System is located within areas considered to have a high to moderate potential for seismically induced ground settlement.

Both the Terrace and Vista reservoirs are located a substantial distance from high groundwater occurrences or active drainage channels. The Vista Reservoir will be situated within the foothills of the Little San Bernardino Mountains. This site contains a minimal soil cover situated atop the bedrock formations of the mountains. The depth to groundwater is well in excess of 50 feet. Therefore, only minimal potential for the Vista Reservoir to be adversely affected by ground failure/liquefaction can be identified with implementation of the following mitigation measures.

The Terrace Reservoir will be located on recent alluvium. The depth to groundwater at this site exceeds 50 feet. Implementation of the mitigation measures provided in the following subsection will reduce the potential for impact associated with the constraints to a less than significant level.

The 1400 Zone well, booster pump and pipeline will also be located on recent alluvium. The depth to groundwater in this area also exceeds 50 feet. Wells, booster pump stations and pipelines are not generally susceptible to the effects of liquefaction and ground failure. Implementation of the following mitigation measures will further reduce the less than significant impacts associated with development and operation of these facilities.

The remainder of the MSWD Service Area has varying degrees of susceptibility to ground failure and liquefaction. Projects proposed immediately up gradient of earthquake faults have a greater potential due to the possible occurrence of high groundwater levels. Sites near active drainage channels have the potential to contain recently deposited, loosely compacted alluvium. However, the potential adverse effects of these conditions can be mitigated through the proper engineering and construction methods such as the excavation and recompaction of loose soils. Implementation of applicable building codes and regulations and the mitigation measures provided below is considered adequate to reduce the potential for adverse impact to the proposed facilities to a less than significant level.

Landside / Rockslide

The potential for impact associated with landslides or rockslides is related to the steepness of the terrain in the project area. The majority of the MSWD Service Area covered by the WMP is located on relatively flat terrain (less than 10% grade). Within these areas, no potential for rock or land slides to affect the proposed facilities can be identified. The northerly and westerly potions of the MSWD System is adjacent to or within the foothills of the San Bernardino and Little San Bernardino mountains which present a landslide rockfall potential. Garnet Hill is also located within the central portion of the MSWD System and is identified as a potential landslide/rockslide area.

The portions of the Woodridge and Cottonwood systems within and adjacent to the foothills also have a high to moderate potential for rock or land slide. The remainder of these systems are located upon recent alluvium that has a low to moderate potential for seismically induced ground settlement and presents a low potential for land and rockslides.

The Terrace and Vista reservoirs are located within areas that are designated as having moderate and high potentials ,respectively, for rockfall (Figure V-2, City of Desert Hot Springs General Plan). These reservoir sites have low or no known potential for adverse effects associated with seismically induced ground failure or settlement (Figure V-3, CDHS General Plan). Adequate standard engineering and construction methods including the applicable mitigation measures provided below are available to reduce the potential for impact associated with these hazards to a less than significant level.

The 1400 Zone well, booster pump and pipeline project is located within an area designated as having a low rock fall and landslide susceptibility (Figure V-2 of the City of Desert Hot Springs General Plan). These facilities have a low or no known potential for adverse effects associated with seismically induced ground failure or settlement (Figure V-3, CDHS General Plan). Adequate standard engineering and construction methods including the applicable mitigation measures provided below are available to reduce the potential for impact associated with these hazards to a less than significant level.

b. Would implementation of the WMP projects result in substantial erosion or the loss of topsoil?

None of the proposed WMP project areas, including the Vista and Terrace Reservoir sites and 1400 Zone Well and pipeline project, would be subject to significant erosion or unstable soil conditions due to grading activities, nor would any of the proposed WMP projects cause significant changes in topography. In general, the majority of project area is topographically compatible with all of the proposed project facilities described in the WMP. All ground-disturbing activities, such as trenching for pipelines or foundations would affect small areas that can be designed to minimize the amount of ground disturbance. During construction, removal of vegetative cover and disturbance of existing topography by the exposure of cut slopes and grading activities could increase the potential for erosion by wind and water. During construction, appropriate watering for fugitive dust control and water erosion control measures to address non-point source water pollution would be necessary.

After the construction phase, long-term erosion control can be accomplished by keeping soils under impervious cover or vegetative cover or by designing exposed areas to prevent accumulation of surface runoff with subsequent erosion. Soil underlying newly constructed facilities and pavement would not be subject to erosion. With implementation of all measures, erosion and unstable slope impacts attributable to future WMP projects would be reduced to a less than significant level.

c. Are Water Master Plans projects located on a geologic unit or soil that is unstable or would become unstable as a result of the project and potentially result in onsite or offsite lateral spreading, subsidence or collapse?

None of the proposed WMP activities, including the Vista and Terrace reservoirs and the 1400 Zone well, booster pump and pipeline projects, would cause unstable conditions. Natural geological processes, such as landslides and liquefaction was discussed above. Natural geological processes of lateral spreading and collapse are not identified as potential impacts to WMP projects with implementation of identified mitigation measures. Except possibly for pipelines connecting MSWD, none of the proposed WMP facilities are located within the areas susceptible to ground fractures.

Pipelines could either be rerouted to avoid ground rupture areas or be designed to withstand predicted flexure due to ground fracture, subsidence or liquefaction due to seismic shaking if groundwater levels are within 50 feet of the ground surface.

Potential impacts are considered to be less than significant.

d. Are the Water Master Plan projects located on expansive soil, creating substantial risks to life or property?

The soil associations (low clay content) present within the project area, including the Vista and Terrace reservoir sites and the 1400 Zone well, booster pump and pipeline projects, do not have any significant expansive soil characteristics. The relative shrink-swell potential for the soils in the project area is low and does not pose a significant hazard or major constraint related to WMP projects. Potential impacts associated with expansive soils are not forecast to pose any significant constraint in developing future facilities, however, mitigation is provided herein to maintain potential impacts to a less than significant level.

4.2.4 Mitigation Measures

The following mitigation measures would be implemented for the WMP projects. Implementation of these measures can reduce all potential geotechnical impacts to a level that is considered to be less than significant with respect to the proposed thresholds.

4.2.4.1 Construction Impacts

Risks from geological hazards shall be mitigated through a combination of engineering construction, land use, and development standards. All projects shall include a detailed geological, geotechnical, and soils engineering study that will address potential hazards associated with the geological processes discussed in the following sections. All construction shall conform to appropriate building codes, standards, and requirements.

Fault Rupture, Groundshaking, Ground Failure, Liquefaction and Landslides

Several of the proposed construction projects are in locations with identified or potential geological hazards. Before design of proposed construction projects, the following mitigation measures shall be implemented.

4.2-1 A site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Special Publication 117, Guidelines for Evaluation and Mitigating Seismic Hazards in California.

4.2-2 If evidence of faulting is identified, a site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Note 49, Guidelines for Evaluating the Hazard of Surface Fault Rupture. Facility location and design will be adjusted as necessary to provide structural setbacks. Additional measures may include strengthened foundations, other engineering design, and flexible utility connections.

4.2-3 Apply appropriate design and construction criteria to all structures subject to significant seismic groundshaking.

4.2-4 If evidence of liquefaction is identified, project design mitigation may include:

- ***In-situ densification of susceptible soil.***
- ***Ground improvements such as removal and replacement of susceptible soils or dewatering.***
- ***Deep foundations designed to accommodate liquefaction.***
- ***Shallow foundation design to accommodate vertical and lateral ground displacement.***

4.2-5 Comprehensive geotechnical investigations shall be required prior to engineering and design development or structural and/or substantial rehabilitation of structures identified under Risk Class I & II, e.g., public facilities, as identified below:

Risk Class I & II, Structures Critically Needed after Disaster: Structures that are critically needed after a disaster include important utility centers, fire stations, police stations, emergency communication facilities, hospitals, and critical transportation elements such as bridges and overpasses and smaller dams.

<u>Acceptable Damage</u>: Minor non-structural; facility should remain operational and safe, or be suitable for quick restoration of service.

Risk Class III: High occupancy structures; uses are required after disasters (i.e., places of assembly such as schools and churches).

<u>Acceptable Damage</u>: Some impairment of function acceptable; structure needs to remain operational.

Risk Class IV, Ordinary Risk Tolerance: The vast majority of structures in urban areas; most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.

<u>Acceptable Damage</u>: An "ordinary" degree of risk should be acceptable. The criteria envisioned by the Structural Engineers Association of California provide the best definition of the "ordinary" level of acceptable risk. These criteria require that buildings be able to:

a. Resist minor earthquakes without damage;
b. Resist moderate earthquakes without structural damage, but with some non-structural damage; or
c. Resist major earthquakes, of the intensity or severity of the strongest experienced in California, without collapse, but with some structural, as well as non-structural damage.

Risk Class V, Moderate to High Risk Tolerance: Open space uses, such as farms, ranches and parks without high occupancy structures; warehouses with low intensity employment; and the storing of non-hazardous materials.

<u>Acceptable Damage</u>: Not applicable.

4.2-6 All structures previously identified in categories III through V shall be designed in accordance with the applicable multiplier factor seismic design provisions of the Seismic Safety Report to promote safety in the event of an earthquake.

4.2-7 The direct impacts of faults upon proposed projects shall be considered during preliminary planning processes, and the engineering design phases.

4.2-8 ***All rehabilitation and new development projects implemented as a result of the proposed Project shall be built in accordance with current and applicable Uniform Building Code (UBC) standards and all other applicable laws, regulations and guidelines.***

Implementation of the above mitigation measures will lower the impact of seismic safety to that of less than significant. Impacts, however, must be considered significant and not mitigated until such time when these measures are implemented through a final Mitigation Monitoring and Reporting Program.

Soil Erosion

Mitigation measures are available to minimize erosion problems associated with wind and water, especially during the construction phase when the ground surface is exposed. During construction, the following measures may be used individually or in conjunction to control potential erosion at locations where construction activities expose the ground surface to wind and water erosive forces:

4.2-9 ***Utilize silt-fencing, protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).***

4.2-10 ***Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After pipeline installation, soil shall be compacted to a level similar to pre-construction conditions.***

4.2-11 ***Construct diversion dikes and interceptor ditches to divert water away from construction areas.***

4.2-12 ***Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.***

4.2-13 ***Construction of facilities and structures areas with high liquefaction potential shall be limited without further geologic and hazard-related studies conducted by a qualified geologist or geotechnical firm. Such studies will provide guidelines to minimize the risks to humans and to capital-intensive facilities.***

After the construction phase, long-term erosion control can be accomplished by keeping soils under vegetative cover, hardscape (pavement, gravel, or other hard cover) and planting windbreaks. The type of vegetation used as windbreaks must comply with SCAQMD's standards. After construction, soils underlying facilities and pavements will not be subject to erosion.

Unstable Geologic Unit or Soil Resulting in Landslide, Lateral Spreading, Subsidence, Liquefaction, Collapse, and Expansive Soils

None of the proposed WMP construction activities would in cause unstable conditions. Natural geological processes of landslide and liquefaction were discussed above. Natural geological processes of lateral spreading and collapse are not identified as potential impacts to WMP construction projects. Subsidence and ground fracture due to groundwater withdrawal have been identified as an active man-induced process. However, the WMP only proposes to extract a substantial amount of groundwater from one subbasin, the Mission Creek Groundwater Subbasin. An existing groundwater recharge program is functioning for that subbasin. A more detailed discussion of groundwater recharge is provided in subchpater 4.3, Hydrology and Water Quality of this PEIR.

4.2-14 ***Any pipelines crossing the western portion of the Prado Basin and facilities at the CCWRF, RP-5, RP-2 and several OMMP facilities could be subject to subsidence and ground rupture associated with the subsidence. Any construction of facilities in or pipelines crossing this zone is required to have detailed geotechnical and structural engineering studies to ensure designs that can safely accommodate, per building code requirements, the described ground movement(s).***

4.2-15 ***Continue to identify and study subsidence hazards and susceptible areas, and propose mitigation technology that is appropriate to the findings of the monitoring study. The implementation of WMP facilities shall not contribute to subsidence conditions in pre-existing subsidence zones. Implementation of the WMP will not cause or contribute to any new, significant subsidence impacts greater than a total of 6 inches in magnitude over the planning period. Impacts less than 6 inches in new areas are considered to be less than significant.***

4.2.5 Cumulative Impact

Future development in accordance with the WMP will not cause any significant adverse cumulative geologic or soil impacts. With implementation of the mitigation measures outlined above, the proposed project would not contribute to cumulative exposure of humans in occupied structures to seismic, liquefaction, or subsidence hazards. Therefore, no additional mitigation measures are required to ensure that cumulative geologic and soil impacts remain below a significant impact threshold.

Potential impacts associated with geology and soil constraints are considered cumulatively less than significant.

4.2.6 Unavoidable Adverse Impact

This geologic and soil resource impact evaluation indicates that the proposed implementation of the WMP projects has a potential to be exposed to significant geotechnical impacts or constraints, but with proposed mitigation, implementing the WMP will not cause any significant unavoidable adverse geologic and soil resource impacts or be exposed to significant geotechnical constrains. Therefore, no significant unavoidable adverse geologic or soil impacts are forecast to occur if the proposed project is implemented.

4.3 HYDROLOGY AND WATER QUALITY

4.3.1 Introduction

The Initial Study prepared for this project determined that implementation of the Water Master Plan has the potential to result in adverse effects to hydrology and water quality for all the issues evaluated except: placing housing within a 100-year flood hazard area; and result in possible inundation by seiche, tsunami or mudflow. The Initial Study determined that no potential for adverse effects from these issues would result and that these issues are not topics of evaluation in this PEIR. All other issues were determined to have potentially significant impacts and are evaluated in this document. None of the current letters received on the Notice of Preparation (NOP) specifically addressed the issue of hydrology and water quality. However, a letter received from the California Department of Fish and Game (CDFG) identified potential effects on biological resources from implementing the Water Master Plan. These issues are evaluated in detail in Section 4.4 of this PEIR.

The California Regional Water Quality Control Board, Colorado River Region, responded to the NOP that is had no comments at this time.

Data used to prepare this section of the PEIR was obtained from Gsi 2002; GTC 1979; HLW 1985; MWH 2002; Psomas 2007, 2004b; RBGC 1996, 2001; RSA 2000; TDA 2003, 2004; TNPR 2000b; and URS 2001, 2005. (See sub-chapter 7.2 Bibliography for references)

4.3.2 Environmental Setting

4.3.2.1 Groundwater

The MSWD Service Area overlays two primary groundwater basins and five groundwater subbasins. The most westerly portion of the District which contains the Palm Springs Crest (Woodridge) and West Palm Springs Village (Cottonwood) systems overlay the San Gorgonio Pass subbasin (SGPGS) of the Cabazon Groundwater Basin. The remainder of the District is located atop the Upper Valley portion of the Coachella Valley Groundwater Basin or Hydrologic Unit which includes the Desert Hot Springs Groundwater subbasin (DHSGS), the Mission Creek Groundwater subbasin (MCGS), the Garnet Hill Groundwater subbasin (GHGS), and the Whitewater River Groundwater subbasin (WRGS). These subbasins are shown on Figure 4.3-1. The primary source of water for the District is the MCGS. The District also extracts water from the SGPGS and the GHGS. The District does not extract any water from the DHSGS or the WRGS. Data on the geology of the MSWD Service Area is provided in Section 4.2 of this PEIR.

All of the subbasins are generally comprised of alluvium eroded from the adjacent mountains which has been deposited on the bedrock which comprises the floor of the basins. The subbasins are separated by earthquake faults which extend through the MSWD Service Area. The DHSGS is located in the northerly portion of the MSWD Service Area and extends from the San Bernardino and Little San Bernardino Mountains southerly to the Mission Creek Fault. The MCGS is located between the Mission Creek Fault on the north and the Banning Fault to the south. The San Bernardino Mountains and the Indio Hills generally form the westerly and easterly boundaries respectively of this subbasin. The GHGS is located between the Banning Fault on the north and Garnet Fault to the south. The WRGS is located southerly of the Garnet Hill Fault and contains the active channel of the Whitewater River as well as the inactive portion of the fan to the southwest and southeast within the MSWD. All of these faults are part of the San Andreas Fault Zone which traverses southern California.

The SGPGS is located westerly of these subbasins within the Cabazon Groundwater Basin. This subbasin is generally bounded by the San Bernardino Mountains to the north and the San Jacinto Mountains to the south. This subbasin is also located within the San Andreas Fault Zone and is separated from the Coachella Valley Groundwater Basin by a constricting bedrock divide that projects northerly from the flank of San Jacinto peak. Groundwater flows easterly from this subbasin toward the Coachella Valley.

Presently, the MSWD has four water production wells in the SGPGS, one production well in the GHGS, and 16 wells in the MCGS. The District has no water production facilities in the DHSGS or the WRGS. In addition to the MSWD, the Coachella Valley Water District (CVWD) extracts water from these basins.

The following is a description of each of the groundwater subbasins within the MSWD Service Area.

San Gorgonio Pass Groundwater subbasin (SGPGS)

Little data is available on the SGPGS. This subbasin is not adjudicated and has not been the subject of in depth study. The land atop this subbasin is primarily undeveloped with few water users. The primary use of groundwater from this subbasin has been the Morongo Band of Mission Indians whose reservation overlies the subbasin, various sand and gravel operations within the San Gorgonio River channel and the community of Cabazon. Water use on the reservation has increased substantially over recent years with development including the opening of a large casino on the reservation. The Morongo Band is not required to publish water usage or other data that could provide an indication of the status of the groundwater basin. Little data is available from the mining operations that could be used to evaluate this subbasin.

The U.S. Geological Survey (USGS) is performing a study on the Cabazon Groundwater Basin. However, at this time, no data is available from the USGS.

The primary source of data available on this subbasin is from MSWD which performed hydrogeologic investigations within the Woodridge and Cottonwood service areas when developing wells to provide water service to these areas. Data from these studies and more recent operations data is provided in this PEIR.

Aquifer Characteristics

The region consists of the east to west trending San Gorgonio Pass Valley which has formed at the junction of the Transverse and Peninsular Mountain systems. Along the southern edge of the valley, exists the San Gorgonio River which drains to the east. The northern side is bordered by the San Bernardino Mountain Range portion of the Transverse Range system, and has risen to an elevation of 11,499 feet at the San Gorgonio Peak. The southern valley portion is bordered by the San Jacinto Mountain Range which rises to an elevation of 10,804 feet at San Jacinto Peak.

The mountains to the north and south are relatively steep flanked, tectonically uplifted blocks. The central valley primarily contains unconsolidated alluvial deposition derived from the neighboring mountains.

Consolidated rock (pTb) of igneous and metamorphic petrologies comprise the mountains and basement complex. The San Bernardino Mountains consist chiefly of igneous rock, predominately quartz monzonite and metamorphic rock, predominately gneiss and schist. The San Jacinto Mountains are comprised of chiefly igneous and metamorphic rock with some smaller areas volcanic and nonmarine sedimentary rocks.

Consolidated crystalline rocks are commonly termed “non water-bearing”, although it is understood that usable quantities of water can obtained from secondary porosity features (i.e., bedrock fractures). For the purpose of an alluvial filled (unconsolidated) basin analysis, these rocks are considered generally impermeable, forming the boundaries of the groundwater basin. Depths to bedrock beneath the eastern end of the basin are estimated to be in excess of 600 feet, based on geologic logs of the region. Further west, the basin is believed to be about 1,200 feet deep.

Unconsolidated deposition is generally termed “water-bearing” formation in which groundwater is contained in primary (interstitial) porosity and migrates from areas of high to areas of low hydraulic head. Limited geologic logs from the region indicate predominately sandy and bouldery materials in the upper 600 feet of deposition.

San Gorgonio Pass is a valley created by complex faulting and erosion over geologic time. A number of faults can be seen in the watershed and other are buried under the sediments in the basin. One of the major faults that shaped the basin is the Banning Fault, which crosses along the north boundary of the groundwater basin along the base of the San Bernardino Mountain range.

Faults in unconsolidated deposits sometimes form lower permeability barriers or dams to groundwater flow. Thus, water is at a higher elevation on one side of the fault that on the other. The existence of several faults in the valley alluvium have been postulated using both static groundwater level differences and projections of mapped faults in bedrock formation.

The Cabazon Groundwater Basin is separated from other basins to the north, south and west by faults barriers. The Coachella Valley Hydrologic Unit lies directly to the east and is separated by a constricting bedrock divide. Groundwater gradients are substantially steeper easterly of this constriction, which tends to act as a subsurface spillway, discharging groundwater into the Coachella Valley Hydrologic Unit.

Groundwater flow within the subbasin is generally from west to east. The gradient of flow is estimated using limited water level data from existing wells. The average hydraulic gradient is about 70 feet per mile (1.4%), with a trend of decreasing gradient as the eastern boundary is approached.

As previously stated, little historic data is available on this subbasin. The USGS is investigating groundwater in the basin but has not made its data available.

The primary source of information on the depth to groundwater in this basin is data from MSWD wells. Four MSWD wells exist within this subbasin. These are Wells 25, 25A, 26 and 26A. The depth to groundwater in MSWD wells has varied over the last 30 years depending on rainfall and pumping rates. The depth to groundwater in Well 25 has ranged from 321 feet below-ground surface (bgs) in 1972 to about 255 feet bgs in 1987 to about 269 feet bgs in 1995. More recently, the depth to groundwater in Well 25 has ranged from about 266 feet bgs in 2001 to about 286 feet bgs in 2007. The depth to groundwater in Well 26 has ranged from above 224 feet bgs in 1975 to about 166 feet bgs in 1989 to about 175 feet bgs in 1995. More recently, the depth to groundwater in Well 26 has ranged from about 175 feet bgs in 2001 to about 189 feet bgs in 2007. While water levels have declined in both wells below known historic highs, they are currently above known historic lows.

Since 2001, the depth to groundwater in Well 25A has remained about 430 feet bgs. The depth to groundwater in Well 26A has varied from about 290 feet bgs in 2001 to about 315 feet bgs in 2007. The data for these seems to correspond with the data provided for Wells 25 and 26 regarding the fluctuation of groundwater levels.

DWR (1989) estimated the total estimated storage capacity of the Cabazon Storage Unit of the SGPGS to be 1,152,000 acre-feet (acre-ft), and the groundwater in storage at that time to be 640,000 acre-ft. Due to insufficient data in this area, the amount of groundwater in storage within this subbasin is not known. As previously stated, the USGS is currently studying the Cabazon Storage Unit to more clearly define the geohydrologic characteristics of the area. MSWD is one of eight agencies financially participating in the USGS studies. At this time, the USGS has not released any data from its investigation.

Water Quality

All available data show that, the quality of groundwater in the Cabazon Groundwater Basin is well within the California Department of Health Services (CDHS) Drinking Water Standards of 45 ppm of nitrate, 1.4 to 2.4 ppm for fluoride (temperature dependent), and 1,000 ppm for TDS. Thus, groundwater from the Cabazon Groundwater Basin is suitable for drinking water purposes.

Well 26A has experienced uranium levels in the range of 25 to 35 pico curries per liter. This uranium level has been attributed to natural occurring sources most likely associated with the presence of the San Andreas Fault System. MSWD has installed a treatment unit on Well 26A and is presently serving water that meets all water quality standards.

Mission Creek Groundwater subbasin (MCGS)

The MCGS is the primary source of water to the MSWD water system. The MCGS underlies the northwest portion of the Coachella Valley and is bounded by the crystalline rocks of the San Bernardino Mountains on the west and the Banning Fault on the south. The Mission Creek Fault bounds the northern, northeastern, and eastern edge of the Indio Hills bound the subbasin on the southeast. Both the Mission Creek and Banning faults are right-lateral strike-slip faults of the San Andreas system and are considered subsurface barriers that limit groundwater flow in and out of the MCGS.

The primary water-bearing deposits in the MCGS are relatively unconsolidated late Pleistocene, Holocene alluvial fan, and terrace deposits. Pleistocene deposits consist of formations such as: (1) the Ocotillo Conglomerate, which is a thick sequence of poorly bedded coarse sand and gravel; and (2) the Cabezon Fanglomerate, which is a boulder conglomerate with abundant sand, silt, along with some clay as described by Proctor. More recent geophysical surveys have suggested that water-bearing formations may extend a few thousand feet to crystalline in some parts of the basin. The volume of available water from such depths is still largely unknown, but existing well data indicates that the aquifer extends below 1,000 feet.

Aquifer Characteristics

Available data indicates that groundwater flow in the MCGS is northeast toward the Mission Creek Fault in the northwestern portion of the subbasin. However, due to the gouge created by the strike slip nature of the Mission Creek fault, it is not believed that water flows north through the fault into the DHSGS. The apparent flow direction may be a function of localized pumping cone depressions.

In the eastern portion of the MCGS, groundwater flow generally trends toward the southwest. Available data suggest the primary groundwater flow is parallel to the fault in these areas and the faults are acting as effective groundwater barriers. Groundwater across the Banning Fault is more pronounced in the area adjacent to the Indio Hills, but appears to occur across a wider area of the fault.

The MCGS provides water to water agencies and private users and is the most heavily pumped subbasin in the MSWD Service Area. According to the WMP, regional groundwater levels in the MCGS have been declining since the early 1950s due to scarce annual precipitation and groundwater extractions. Groundwater level data indicate that since 1952, water levels have declined at a rate of 0.5 to 1.5 feet per year. The estimated rate of withdrawal has varied from 3,900 AFY to as high as 12,884 AFY, depending upon the author and the time period studied. Slade (2000) calculated the loss of groundwater from the subbasin as 5,340 AFY between 1978 and 1997. This calculation was based on a previous GTC (1979) report and an evaluation of historical water records for CVWD Well No. 3407, which showed a 1.5 feet of water level decline per year. Krieger and Stewart (2005) used the Slade/GTC assumptions and more recent water levels between 1998 and 2004 and estimated a rate of withdrawal of 9,700 AFY for the northwesterly three-quarters of the MCGS and 12,884 AFY for the entire subbasin.

Because of continued concerns over the persistent drop in water levels, MSWD retained the consulting firms of Psomas and GSI to further evaluate the loss of groundwater in storage by conducting independent studies of the basin. Psomas (2004) identified the two analytical methods used: (1) developing a hydrologic budget for the MCGS, taking into account inflows, consumption and outflows from the MCGS; and (2) analyzing long-term hydrographs and historical changes in groundwater storage in the sub-basin. .

Method 1, utilized by Psomas, assumed that inflows include direct precipitation, surface water inflow, subsurface inflow, imported waters, and wastewater deliveries and return flows. Outflows from the subbasin include surface water outflow, subsurface outflow, evapotranspiration, and groundwater extraction and concluded that the subbasin was in an overdraft condition (3,900 AFY).

Method 2, utilized by GSI, used available static and pumped water level data between the years 1991 and 2004 to develop contours showing the drop in water level over that time period. The estimated decrease of groundwater storage over the 13-year period was 57,500 acre-ft. This translates to an average decrease of 4,423 AFY.

The results of the two independent approaches compare favorably. The two methods suggest that the MCGS was being over-drafted at a rate of 3,900-4,400 AFY at that time.

It should be noted that Psomas did not include any imported water in its water balance calculation (Method 1), such as the 4,700 AFY that was recharged in November and December of 2002 via the Mission Creek recharge facility. Including this water in the calculation would have reduced the estimated overdraft for that year to about 2,000 AFY. However, because the recharge occurred at the end of the study time period used in Method 2, recharge would not have made a significant change in the decline as averaged over the 13 year study period. Therefore, the approaches used in performing the two methods of analysis are considered compatible.

GTC (1979) estimated that actual groundwater in storage in the MCGS (within the MSWD boundaries) was 1.44 million acre-ft in 1978. The subbasin was separated into two zones: Zone A (western portion of the subbasin) contains 558,576 acre-ft while Zone B (eastern portion of the subbasin) contains 890,130 acre-ft. Currently, all of MSWD's wells are located in Zone B. Assuming the amount of available groundwater was 1.44 million acre-ft in 1978 and using an over-drafting rate of 4,400 AFY (which does not include any recharge) results in an estimated 2005 groundwater in storage of 1.32 million acre-ft.

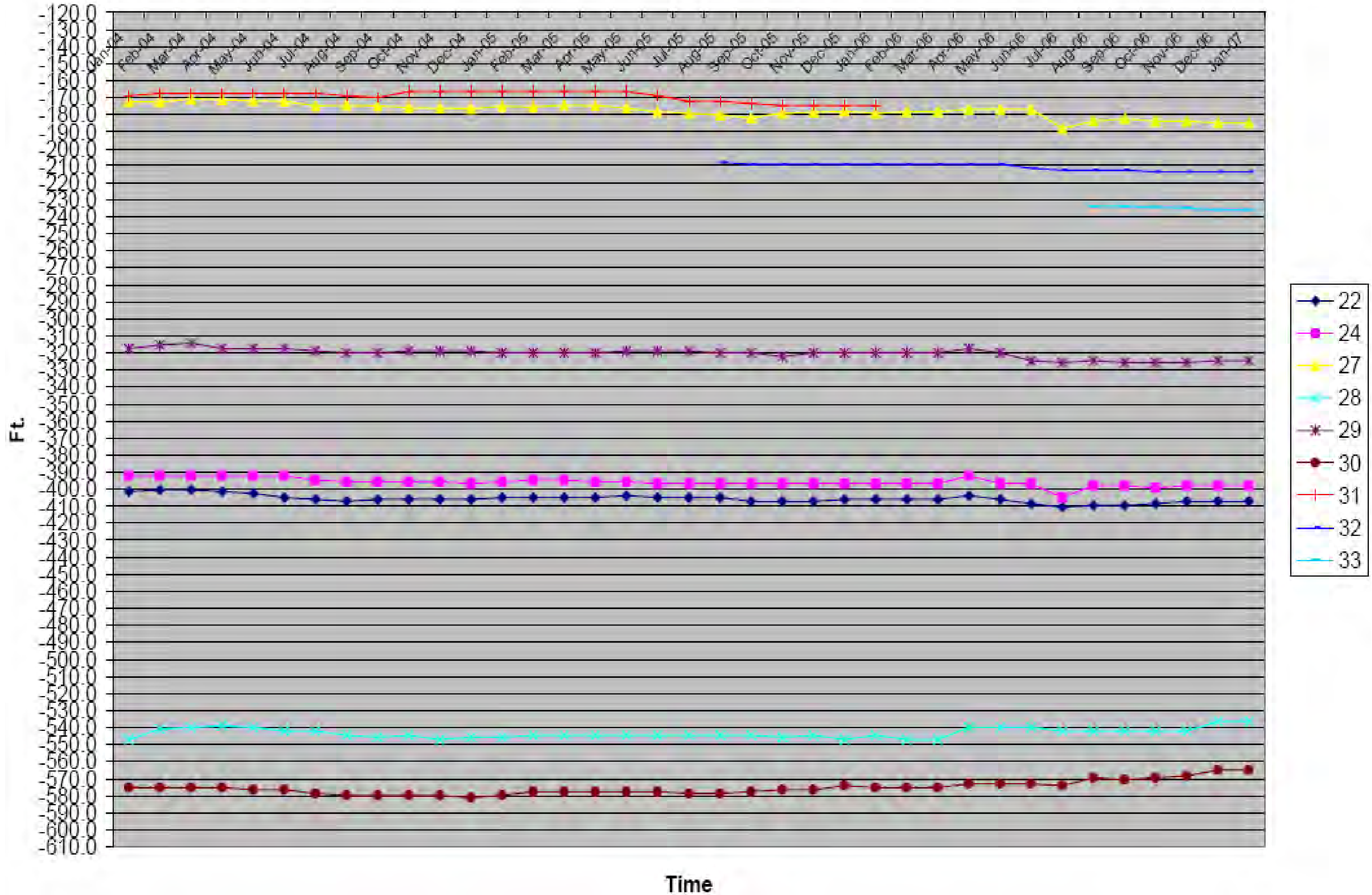
Assuming that the rate of over-drafting stays constant at about 4,400 AFY, the expected lifetime for the aquifer is about 300 years. If only Zone B is considered, the expected lifetime reduces to about 200 years at the current rate of extraction. Water levels would continue to drop and eventually impact existing wells resulting in the need to either re-set pumps at a lower elevation or re-drill the wells.

The previous discussion assumes that the rate of over-drafting remains constant into the foreseeable future. Slade (2000) predicated that the rate of water level decline would increase (assuming no recharge of imported water) from 1.5 feet per year between 1978 and 1997 to 3 feet per year between 1998 and 2018, and to an even greater rate of 6 feet per year between 2018 and 2048. The actual drop in water level (and rate of over drafting) will depend upon the general health of the economy, rate of population growth in the area, quantity of pumping required to meet the demands, amount of recharge water imported from MWD, success of conservation incentives, and development of alternative water supplies such as recycled water.

MSWD monitors water levels in its wells monthly. Data from years 2001 through March 2007 indicates that generally static water levels in MSWD wells have continued to decline. The decline averages about 2-3 feet per year in the MCGS. These declines are consistent with the declines identified in the GTC 1979 and Slade 2000. Data provided in Table 4.3-1 reflects the static water levels in existing MSWD wells from January 2004 to March 2007.

Subsequent to the preparation of the WMP, MSWD retained Psomas to perform a more in-depth evaluation of the MCGS. Psomas utilized previous data, more recent data on the MCGS, and developed new data to prepare a more extensive evaluation of the current and projected future conditions of the MCGS (Psomas 2007). The Psomas 2007 evaluation relied on growth and water system needs projections contained in the WMP. Additionally, based on recent groundwater recharge activities and commitments for ongoing groundwater recharge activities, Psomas 2007 determined that the existing and near future average annual drawdown of groundwater in the MCGS is about 3 feet per year.

Table 4.3-1
MSWD STATIC LEVELS



In 2005, recharge of the MCGS began using imported water from MWD. Data provided in Table 4.3-1 indicates that water levels in the wells nearest the recharge basins (Wells 28 and 30) began to rise as water was recharged into the MCGS. Table 4.3-2 provides a summary of the subbasin inflows (including recharge) and subbasin outflow (including pumping) for the years 1961 through 2006. Table 4.3-2 also shows the estimated change in water in storage in the MCGS for those years.

The WMP includes a water conservation program that it has and will continue to implement to reduce the amount of water utilized by its customers.

It is important to note that while recharge of the MCGS using Colorado River water is included in this analysis, the recharge program is not a component of the WMP. Recharge of the MCGS using Colorado River has and can continue to occur with or without adoption and implementation of the WMP.

Table 4.3-2
GROUNDWATER BUDGET SUMMARY (in acre-ft)

Year	Inflow			Outflow			Storage Change
	Boundary Inflow	Spreading Basins	Total	Boundary Outflow	Pumping	Total Outflow	
Steady State	6313	0	6313	6313	0	6313	0
1961	6294	0	6294	6333	0	6333	-39
1962	6276	0	6276	6352	0	6352	-76
1963	6260	0	6260	6370	0	6370	-110
1964	6244	0	6244	6387	0	6387	-143
1965	6229	0	6229	6403	0	6403	-174
1966	6214	0	6214	6419	0	6419	-205
1967	6199	0	6199	6433	0	6433	-234
1968	6185	0	6185	6446	0	6446	-261
1969	6171	0	6171	6459	0	6459	-288
1970	6158	0	6158	6449	85	7434	-1276
1971	6147	0	6147	6434	1060	7494	-1347
1972	6137	0	6137	6411	1633	8044	-1907
1973	6130	0	6130	6372	2692	9064	-2934
1974	6126	0	6126	6325	2768	9093	-2967
1975	6124	0	6124	6260	3890	10150	-4026
1976	6126	0	6126	6188	3965	10153	-4027
1977	6129	0	6129	6108	4042	10150	-4021
1978	6132	0	6132	6023	4119	10142	-4010
1979	6135	0	6135	5933	4194	10127	-3992
1980	6139	0	6139	5836	4675	10508	-4369
1981	6143	0	6143	5732	5040	10772	-4629
1982	6147	0	6147	5623	5264	10887	-4740
1983	6153	0	6153	5511	5306	10817	-4664

Year	Inflow			Outflow			Storage Change
	Boundary Inflow	Spreading Basins	Total	Boundary Outflow	Pumping	Total Outflow	
1984	6158	0	6158	5393	5796	11189	-5031
1985	6165	0	6165	5268	6257	11525	-5360
1986	6173	0	6173	5134	6765	11899	-5726
1987	6183	0	6183	4994	7214	12208	-6025
1988	6194	0	6194	4846	7608	12454	-6260
1989	6207	0	6207	4690	7980	12670	-6463
1990	6221	0	6221	4522	8972	13494	-7273
1991	6236	0	6236	4354	8514	12868	-6632
1992	6251	0	6251	4179	9017	13196	-6945
1993	6268	0	6268	3895	10284	14179	-7911
1994	6286	0	6286	3786	10599	14385	-8099
1995	6305	0	6305	3576	10762	14338	-8033
1996	6326	0	6326	3352	11694	15046	-8720
1997	6346	0	6346	3141	10673	13814	-7468
1998	6366	0	6366	2937	10944	13881	-7515
1999	6387	0	6387	2723	12084	14807	-8420
2000	6409	0	6409	2498	12427	14925	-8516
2001	6430	0	6430	2282	11756	14038	-7608
2002	6451	0	6451	2059	12938	14997	-8546
2003	6459	91	6550	1831	13316	15147	-8597
2004	6508	0	6508	1604	14624	16228	-9720
2005	5442	5564	11006	1378	15686	17064	-6058
2006	3125	18778	21903	1965	16547	18512	3391

Source: Psomas 2007 Report

Water Quality

The quality of groundwater in the MCGS is generally very good quality. Water produced from this subbasin is placed within the MSWD System with only required disinfection.

Slade 2000 provides historic groundwater quality data for MCGS. Slade 2000 utilized groundwater data from MSWD and CVWD wells and a Desert Water Agency (DWA) groundwater monitoring well. Due to the potential anticipated future use of Colorado River waters to recharge the MCGS, water quality data from the Colorado River Aqueduct was obtained from Metropolitan Water District of Southern California (MWD). These data include the data provided by MWD in its 2006 Water Quality Report to member agencies. Table 4.3-3 summarizes the historic general water quality constituents obtained from MSWD. The following summarizes the data in Table 4.3.3 including data for the year 2005 where available.

Table 4.3-3
SUMMARY OF SELECTED GENERAL WATER QUALITY CONSTITUENTS
HISTORIC WATER QUALITY DATA
MISSION CREEK GROUNDWATER SUBBASIN

Well Number	Sample Date(s)	TDS (mg/l)	Total Hardness (mg/l)	pH	Nitrate (as NO_3) (mg/l)	Iron (Fe) (mg/l)	Manganese (Mn) (mg/l)	Character of Water
District Well No. 22	4/93, 2/96, 1/97	412 to 452	219 to 240	7.2 to 7.8	3.1 to 6	ND	ND	$CaHCO_3$ to $NaHCO_3$
District Well No. 24	4/93, 1/97	462 to 470	243 to 246	7.9 to 8.0	4.4 to 4.7	ND	ND	$CaSO_4$ to $CaHCO_3$
District Well No. 27	12/80, 12/82, 4/93, 2/96	271 to 292	110 to 134	7.83 to 8.13	ND to 5.9	ND	ND	$NaHCO_3$
District Well No. 28	4/93, 2/96	394 to 417	220 to 236	7.6 to 7.8	2 to 6	ND	ND	$CaHCO_3$
District Well No. 29	5/92, 7/93, 2/96, 1/97	420 to 483	160 to 202	8.0 to 8.15	2 to 3	ND to 0.242	ND	$NaSO_4$
District Well No. 30	2/96	436	267	7.9	ND	ND	ND	$CaHCO_3$
District Well No. 31	7/94, 2/96	278 to 293	56 to 91	8.1 to 8.3	1.6 to 2.5	ND	ND	$NaSO_4$
CVWD Well No. 3405	10/66, 9/96	395 to 415	164 to 183	7.6 to 7.8	4 to 7.6	ND	ND	$CaHCO_3$ to $CaSO_4$
CVWD Well No. 3406	12/61, 2/76	389 to 424	120 to 130	7.8 to 7.85	2 to 7.4	ND to 0.01	ND	$NaSO_4$
CVWD Well No. 3407	1/63, 12/73	400 to 490	136 to 165	8.1	5 to 6.5	ND to 0.069	ND	$NaSO_4$
CVWD Well No. 3408	4/78, 9/96	395 to 404	146 to 200	7.5 to 8.4	2.8 to 4.7	ND to 0.088	ND to 0.010	$NaSO_4$
CVWD Well No. 3409	4/93, 9/96	371 to 429	127 to 192	7.96 to 8.0	2.32 to 5.4	ND to 0.120	ND to 0.006	Ca- to $NaSO_4$
Desert Water Agency Monitoring Well	5/97	412	251	7.8	2	0.19	ND	$CaHCO_3$
Colorado River Water Samples	2/98	604 to 666 (average+627)	291 to 316 (average=304)	8.12 to 8.43 (average=8.33)	0.66 to 1.5 (average=0.84)	0.022 to 0.038 (average=0.030)	ND	$NaSO_4$

Notes: ND = Not detected

- The character of the groundwater in the samples have historically ranged from calcium bicarbonate ($CaHCO_3$) type water to a calcium sulfate ($CaSO_4$) and sodium sulfate ($NaSO_4$) type water. This includes the DWA groundwater monitoring well sample which also has a $CaHCO_3$ character whereas the Colorado River water sample (average sample value) exhibits a $NaSO_4$ character. The water sample from the DWA groundwater monitoring well may be representative of naturally occurring recharge water entering the basin.

- Total dissolved solids (TDS) concentrations in groundwater samples from municipal-supply water wells in the MCGS have ranged from 271 mg/l in District Well No. 27 to 490 mg/l in CVWD Well No. 3407. In 2005, the average TDS concentrations in MCGS water was 424 mg/l which is consistent with historic concentrations. All of the listed TDS concentrations are below the State Secondary recommended MCL of 1,000 mg/l for that constituent. The DWA groundwater monitoring well sample shows a TDS concentration of 412 mg/l, whereas the Colorado River water samples have TDS concentrations ranging from 604 to 666 mg/l. In 2006, the average concentration of TDS in Colorado River water was 672 mg/l. The Colorado River water samples generally have TDS concentrations higher than those for samples from all municipal-supply wells in the subbasin.

- Total hardness (TH) concentrations for subbasin have historically ranged from 56 mg/l in District Well No. 31 to 267 mg/l in District Well No. 30. These concentrations indicate moderately hard to hard water. The DWA groundwater monitoring well has a TH concentration of 251 mg/l, which is considered to be moderately hard water. In 2005, the average hardness of MCGS water was 203 mg/l. The Colorado River water samples were recorded as having TH concentrations ranging from 291 mg/l to 316 mg/l, indicating moderately hard to hard water. In 2006, the TH of Colorado River water averaged 325 mg/l Generally, Colorado River water tends to be harder than that documented for samples from municipal-supply water wells in the subbasin.

- The pH concentration of groundwater from the wells has generally ranged from 7.2 to 8.3 units. The pH of the DWA groundwater monitoring well sample is 7.8 units, whereas those for the Colorado River water samples are documented as ranging from 8.12 to 8.43, with a 2006 average of 8.2. The Colorado River water samples appear to be generally higher in pH compared to groundwater samples from the municipal-supply water wells in the Subbasin.

- Nitrate (as NO_3) concentrations in the MCGS have ranged from not detected (ND) to a high of 7.6 mg/l in CVWD Well No. 3405. The DWA groundwater monitoring well sample reveals a nitrate concentration of 2 mg/l. In 2005, the average concentrations of nitrates in MCGS water was 2.8 mg/l. All concentrations are below the MCL of 45 mg/l. Colorado River water samples have had nitrate concentrations ranging from 0.66 to 1.15 mg/l. In 2006, nitrate was ND in Colorado River water. Generally, the Colorado River water samples have lower nitrate concentrations than samples from wells in the Subbasin.

- Iron (Fe) concentrations have ranged from ND to 0.242 mg/l. Manganese (Mn) concentrations have generally ranged from ND to 0.010 mg/l. These Fe and Mn concentrations are each below their respective State Secondary MCLs of 0.300 mg/l for Fe, and 0.050 mg/l for Mn. In some cases, the highest concentrations were associated with slightly turbid to turbid water samples. Therefore, the detected Fe and Mn concentrations are likely due to the analysis of turbid water samples. In 2006, Fe and Mn were ND in Colorado River water.

Slade 2000 utilized a Piper Diagram Analysis to spatially illustrate the compositional relationship of the water samples. Piper Diagrams are generally utilized to perform gross analysis of water quality data where data is numerous. Based on that diagram, Slade 2000 provides the following evaluation:

- The water samples have similar water quality characteristics except for the Colorado River sample which has compositional differences from the other water samples.

- The DWA groundwater monitoring well sample is slightly distinct from the main MCGS group. The composition of that sample indicates that the sample may be representative of groundwater influenced by rainfall recharge in the area of the DWA groundwater monitoring well.

- Groundwater quality may be changing in character from the northern portion of the basin to the southern portion of the basin. Data appears to show a gradual progression in water quality from a more Ca-Mg-HCO_3 and Ca-Mg-SO_4-type groundwater (as illustrated by District Well Nos. 30 and 28) to the northwest to a more NaCl-SO_4-type groundwater (District Well No. 31) to the south.

These data imply that water is becoming more “degraded” in a north to south direction and that the “freshest” water may be obtained in the northernmost portion of the MCGS. It should be noted that the southernmost wells are also the shallowest. Thus, the compositional differences between the northernmost wells and the southernmost wells may also be due to the southernmost wells obtaining their water from shallower aquifer zones and/or from shallower water levels resulting from the groundwater barrier effect of the nearby Banning Fault.

Data appear to indicate that the DWA groundwater monitoring well water sample appears to represent a relatively “fresher” water (higher in bicarbonate) in comparison to the MWD Colorado River Aqueduct “average” water sample (which is higher in sulfate and chloride).

- If Colorado River water is used for spreading and recharging the basin, the overall water-quality blend of groundwater in the MCGS is likely to exhibit more characteristics of the MWD water sample by some unquantifiable degree over time.

Analysis of water samples from District wells confirms that no substantial change in water quality has occurred over the period of analysis. Therefore, historic data indicate that, while overdraft of the MCGS has resulted in a substantial decline in groundwater elevations, no significant change in the quality of groundwater has occurred.

Garnet Hill Groundwater subbasin (GHGS)

Until recently, no major production wells and little exploration had been carried out in the GHGS. In 2001, a major water production well was developed to support the water demand of the Indigo Power Plant located in North Palm Springs. Available data indicates that the basement rock and alluvium of the GHGS is essentially the same as the MCGS. Basement rock is comprised of the same material as the San Bernardino and San Jacinto mountains, and the primary water production zone is comprised of Pleistocene Cabazon Fanglomerate sediments. In 2003, MSWD began producing water from its first and only production well in the GHGS (Well #33). Development of that well included preparation of the "Preliminary Assessment of the potential of Ground Water Development in the Garnet Hill Subbasin 2002" prepared by GSI/water (GSI 2002). The GSI 2002 estimated that recharge of the GHGS ranged from 14,300 afy to 84,000 afy. This wide range was due to the lack of historic data on the GHGS. Well #33 produces about 800-900 gpm of water from the GHGS.

As can be seen on Figure 4.3-1, the GHGS is a relatively small basin and it is questioned if it has a sufficient amount of water to be a reliable, long-term source of water. Well #33 has been in operation since August 2006 and groundwater levels have ranged from 233 to 245 bgs since that time (see Table 4.3-2).

The WMP does not propose to develop any new water production facilities within the GHGS primarily due to the small size of the basin, the lack of data on the basin and the energy required to lift the water into the portion of the MSWD System which requires water service. Should development occur in the lower portion of the MSWD System, it is possible that the WMP could be amended to include development of water production facilities in the GHGS.

Water Quality

The quality of water within the GHGS is of good quality and similar to that contained in the MCGS. As with data in general on the GHGS, there is limited data on the quality of water within the GHGS. The most reliable data is from MSWD's Well #33 which reveals that water produced from Well #33 has shown no noticeable decline in quality and meets all state water quality standards for potable water.

Desert Hot Springs Groundwater subbasin (DHSGS)

This subbasin is located in the northerly portion of the MSWD Service Area. It is situated between the Mission Creek Fault and the San Bernardino and Little San Bernardino mountains. Smaller faults (the Blind Canyon Fault and the Long Canyon Fault) are located along the base of the San Bernardino Mountains. This subbasin contains alluvium eroded from the adjacent mountain range. Groundwater in the portion of the DHSGS within the MSWD Service Area is generally derived from a geothermal reservoir created by deep circulation of groundwater into the earth's crust. Water infiltrating into bedrock is heated and rises to the earth surface by convection through fractures in the bedrock. The alluvium above the bedrock acts as a large aquifer for the geothermal fluid. As the hot water rises and reaches the alluvium, it spreads laterally and the Desert Hot Springs Fault serves to confine the water and it rises toward the ground surface. It is estimated that the DHSGS has a storage capacity of about 2.3 million acre-ft. The natural sources of recharge for the DHSGS are Little Morongo and Long Canyons with minor contributions from other smaller drainages.

Groundwater in the DHSGS is generally "hot" (up to 300°F) and its mineral concentrations far exceed drinking water standards. The primary use of water from this subbasin is for spa resort uses. The use of water from this subbasin as potable water would require extensive treatment prior to use in the MSWD supply system. Due to these limitations and the general lack of detailed information on this subbasin and its water bearing characteristics, the WMP does not propose the development of any water production facilities within the DHSGS.

Whitewater River Groundwater subbasin (WRGS) (GSI 2002)

The MSWD Service Area extends south of the Garnet Hill Fault, and includes a large alluvial fan below the mouth of the Whitewater River. This alluvial fan contains the active channel of the Whitewater River as well as the non-active portion of the fan to the southwest within the service area. This part of the service area is thus recharged directly from the Whitewater River, and also from the drainages out the San Gorgonio Pass.

As with the GHGS, little data is available on the quantity and quality of water within the upper portion of the WRGS. Due to the lack of data on the WRGS and the energy that would be required to lift the water into the portion of the MSWD Service Area which requires water service, the development of water production facilities in the WRGS is not proposed by the WMP.

4.3.2.2 Surface Water

MSWD System

The Coachella Valley enjoy a subtropical desert climate. Mean annual rainfall is very low from the desert floor into the foothills, ranging from 4 to 6 inches per year and averaging about 5 to 6 inches along the Little San Bernardino foothills. In some years no measurable rainfall has been reported within the planning area. Summer daytime temperatures can occasionally exceed 125°F and winter temperatures seldom fall below freezing. The surrounding mountain slopes generally receive rainfall that increases with elevation. The mountains and upper elevations of the planning area are also generally cooler, with an approximate 5°F drop with every 1,000-foot increase in elevation.

The major drainages of Mission Creek, Big and Little Morongo Creeks, Blind Creek, Long Creek and its tributaries, other mountain canyons and their alluvial fans, and runoff associated with the foothills of the San Bernardino and Little San Bernardino mountains comprise areas of potential flooding in the project area. Most of the rainfall occurs during the cooler months of November through March, but occasional high-intensity thunderstorms and tropical storms occur in late summer and early fall. Although the ground may be generally dry at the beginning of a storm, sufficient amounts and intensities of rainfall can saturate the surface, substantially reducing percolation and increasing runoff. Development also increases runoff by creating large areas of impervious surfaces. Increased runoff upstream can be a significant contributor to downstream damage.

Major historic storm events are used to gauge the potential for future flooding. Benchmark storms used by the Army Corps of Engineers to calculate the most intense credible storm include the storm of September 24, 1939. Centered over Indio and consisting of a thunderstorm preceding a major storm off the west coast of Mexico, this intense storm generated 6.45 inches of rain in a period of 6 hours. As further example of the storm runoff potential in the area, the tropical storm Kathleen of September 9-11, 1976 generated very heavy general rainfall over a three county area, with Desert Hot Springs receiving 3 inches. The surrounding hills and mountains received as much as 14 inches, with rainfalls generally increasing with elevation.

Cottonwood and Woodridge Systems

The Cottonwood and Woodridge systems are located adjacent to the easterly boundary of the Coachella Valley at the foot of the San Bernardino Mountains. Weather patterns are similar to those described above for the MSWD System. The primary drainages in the Woodbridge and Cottonwood Systems are associated with Stubbe Canyon and Cottonwood Canyon.

Local and Regional Flood Control

The generation and management of stormwater runoff are typically divided into two separate categories, local and regional drainage, which are ultimately interrelated. Local drainage is either defined by the limited size of the drainage area or to the generation of runoff in association with urban development. Regional drainage consists of large-scale runoff and facilities capturing and conveying runoff from over a larger geographic area. Regional drainage ultimately picks up and conveys local drainage through the careful integration of these two systems.

Regional Flood Control and the Riverside County Flood Control District

The Riverside County Flood Control District is responsible for the management of regional drainage within and in the vicinity of MSWD Service Area, including rivers, major streams and their tributaries, and areas of significant sheet flooding. The District is empowered with broad management functions, including flood control planning and construction of drainage improvements for regional flood control facilities, as well as watershed and watercourse protection related to those facilities. To carry out its mandate, the District (Riverside County) also has powers of taxation, bonded indebtedness, land and water rights acquisition, and cooperative partnerships with local, state and federal agencies. The Riverside County Board of Supervisors acts as the official decision-making body of the District.

Local Drainage Management. The County has the primary responsibility, in close cooperation and coordination with the cities, for managing regional drainage in and around the MSWD Service Area, and has also played a key role in the management of local drainage.

The preservation of lands constrained by topography or drainage, including steep slopes, areas rich in vegetation and cover, and alluvial plains and drainage channels greatly reduces runoff and preserves the capacity of downstream facilities. The planned integration of on-site stormwater detention facilities, where possible and appropriate, also significantly reduces the needed size of downstream facilities, while frequently creating opportunities for enhanced open space and/or recreation areas.

FEMA and the Federal Flood Insurance Rate Maps

Many of the areas of the United States subject to flooding from 100-year storms have been mapped by the Federal Emergency Management Agency. The resulting documents are the FEMA Flood Insurance Rate Maps (FIRMs), which serve as the basis for determining the need for and availability of federal flood insurance. Exhibit V-4 of the City of Desert Hot Springs General Plan is a compilation of the data presented in three corresponding FIRM Community Panels (maps). The FEMA maps for the project area indicate that much of the MSWD Service Area within the Coachella

Valley is within 100-year floodplain zones. These areas include washes, channels and areas subject to sheet flow flooding.

Major and Minor Flood Control Facilities

Capital projects such as dikes, levees, channels, and debris and detention/retention basins have been constructed to manage project-specific, community and regional drainage systems in the community. Designing, financing and constructing these facilities are significant challenges and important opportunities. Methods of flood control and their costs are weighed against the economic impacts likely to result from major flooding. In some areas, flood control improvements are frequently necessitated by development itself, which creates its own runoff management problems.

The Mission Creek, Big and Little Morongo Creeks, Blind Creek, Long Creek, Stubbe Canyon, and Cottonwood Canyon are the main drainages in the MSWD Service Area. These drainages are substantial in area and are discharged onto relatively steep alluvial fans and generate high velocities. These flows in major storms of several thousand cubic feet of water per second have tremendous force and scouring potential.

A small portion of the southwesterly part of the MSWD Service Area is located within the Whitewater River floodplain.

Surface Water Quality

Surface water runoff in the northerly portion of the MSWD is generally of good quality due to the lack of urban development. These channels contain native soil and the primary contaminant is sediments in the runoff. The volume of sediments is dependent on the velocity of the runoff and the length of time the erosive flows occur. As these surface flows travel through urban areas, they acquire urban pollutants such as fertilizers, pesticides, petroleum products, etc.

Water Quality Regulation

A number of federal and state laws have been established to assure adequate planning, implementation, management, and enforcement of water quality control efforts. Federal water quality legislation includes the Clean Water Act and the National Environment Policy Act (NEPA). California statutes and administrative laws that are applicable to water quality include, but are not limited to the California Water Code, California Environmental Quality Act (CEQA), California Code of Regulations, and other codes such as the Health and Safety Code, Fish and Game Code and Public Resources Code.

The California Regional Water Quality Control Board (RWQCB) implements federal and state laws pertaining to water quality. The primary issues addressed by the RWQCB in the Coachella Valley are agricultural drainage, geothermal power impacts, the New River, Salton Sea, Tahquitz Creek and other sources of surface water. Other locations monitored by the RWQCB includes sites where inappropriate disposal of hazardous and toxic materials have threatened to contaminate groundwater. These include leaking fuel storage tanks, illegal discharges or human or animal waste, and the dumping of waste oils and other hazardous liquids.

National Pollutant Discharge Elimination System (NPDES)

The NPDES implements the federal Clean Water Act and was adopted in 1990. Under the NPDES plans and program for stormwater management must be developed, adopted and implemented to assure that municipalities "effectively prohibit non-stormwater discharge into the storm drain and require controls to reduce the discharge of pollutants from stormwater systems to waters of the United States to the Maximum Extent Possible." This includes stormwater generated by construction activities for which permitting may be required.

4.3.3 Project Impacts

The MSWD Water Master Plan proposes a variety of water system improvements to better serve existing needs and to provide an adequate supply of water to meet anticipated future demand. These improvements include new water production wells, storage reservoirs, booster stations, pipelines, and other appurtenant facilities. The water resources/water quality issues in this evaluation are examined as they relate to constraints imposed on the WMP and as implementation of the WMP will affect water resources. The potential impacts include those associated with the quantity and quality of groundwater and surface water resources.

At this time, the only facilities identified in the WMP for which specific sites have been selected are the Vista and Terrace reservoirs and the 1400 Zone well, booster pump and pipeline projects. These facilities were identified because the provision of additional water supple and storage capabilities at the higher elevations in the service area is the first priority of the WMP. The WMP forecasts the need for a specific amount of water that will be needed to provide an adequate supply to various locations within the MSWD Service Area based on existing demand and growth projections. The primary sources of water identified in the WMP is groundwater obtained from the MCGS. The WMP also identifies the need for an additional well within the Cottonwood Zone. This well will extract water from the SGPGS. The WMP does not propose any new facilities that will produce water from any of the other groundwater basins within the MSWD Service Area (DHSGS, WMP, and GHGS).

Operation of new wells is the primary source of potential impacts to groundwater. This will result from the extraction of additional amounts of water to supply the increased demand. These additional extractions not only have the potential to reduce the volume of water within the basins, but could also affect the quality of groundwater. The remaining proposed facilities will only distribute and store water and will not result in any direct withdrawal of water from the basins. At this time these other facilities can only utilize the water provided to the system by the wells.

The WMP does not propose the direct treatment and use of imported water. The only use of imported water identified in the WMP is for percolation into the MCGS to recharge that groundwater basin. The only available source of imported water identified in the WMP is water acquired from the Colorado River aqueduct. The percolation of imported water will benefit the quantity of water in storage, but has some potential to adversely affect the quality of groundwater in that subbasin. Generally, Colorado River water is not of as high a quality as naturally occurring water in the project area. However, basin recharge is not a component of the WMP. The basin recharge program has and can continue without adoption and implementation of the WMP. While basin recharge is a condition that affects the MCGS, it is not a component of the WMP that is being evaluated in this PEIR.

Implementation of the WMP also has the potential to affect the quantity of surface water discharged from a WMP site. Construction activities and hard-surfacing of a site with structures and pavement could affect surface runoff from the site. The extent of additional runoff will be dependent on the size of the site and the extent of hard surfacing. However, due to those type of facilities proposed by the WMP, none of the sites appear to be of sufficient size (about 0.5 acre to about 5 acres) to have a potential to substantially increase surface water. The storage of chemicals at a new facility also has some potential to affect the quality of surface water runoff. However, the only chemical use proposed by this project is chlorine or sodium hypochlorite. This chemical is similar to household bleach and is used to disinfect water. The storage and use of these chemicals strictly regulated by state and local codes and regulations which are considered adequate to prevent significant risk of hazard. In the short term, the construction of the WMP facilities also will have the potential to affect the quality of surface water discharged from the site. Soil eroded from the site or chemicals such as petroleum products used to construct the facilities have some potential to result in an adverse affect on surface water quality.

4.3.3.1 Significance Criteria/Threshold of Significance

The MSWD has not established any specific CEQA significance thresholds for water resource and water quality impacts. However, using the criteria provided in Appendix G of the State CEQA Guidelines, the following thresholds are proposed for assessing and determining significant drainage or water quality impacts from implementing the proposed project.

a. Violate any water quality standards or waste discharge requirements.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

c. Substantially alter the existing drainage pattern of the area in a manner which would result in substantial erosion or sedimentation within or downstream of the proposed Project Area.

d. Substantially alter the existing drainage pattern of the area or substantially increase the rate or amount of surface runoff in a manner which would result in flooding within or downstream of the Master Plans facilities.

e. Create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems.

f. Substantially degrade water quality.

g. Place structures within a 100-year flood hazard area, which would expose people or structures to significant risk of loss, injury or death.

Each of the above criteria will be applied to the potential water resource and water quality impacts forecast to occur from implementing the WMP and a decision regarding the significance of potential hydrology impacts will be clearly presented in the following analysis.

4.3.3.2 Impacts Analysis

a. Violate any water quality standards or waste discharge requirements?

<u>Construction Phase</u>

Impacts associated with construction activities are temporary, lasting only as long as the construction phase. The potential impacts associated with construction for the WMP facilities including the Vista and Terrace reservoirs and the 1400 Zone well, booster pump and pipeline projects are discussed below.

Construction of the new facilities would involve excavation, grading, paving, structure construction, and landscaping. In the case of well sites, the drilling of new wells will require the use of well drilling and development equipment, the use of water and clay material to line the well, and test pumping of the well. The movement of soil, and the exposure of soil to wind and storm runoff increases the erosion potential. Construction site wastes, such as accidental spills of construction materials, petroleum products, and wash water can be picked up by storm runoff and transported offsite. Construction of the new facilities would cause an overall decrease in ground surface available for absorption of rainfall, increasing the volume of storm runoff. The introduction of polluted storm runoff to surrounding waters could cause some short-term degradation of water resources/water quality and designated beneficial uses. However, this potential is considered minimal due to the small size of the projects and the relatively short-term nature of construction activities.

If the overall construction area for a project under the WMP is greater than one acre, a NPDES General Permit (General Permit) for stormwater discharges associated with construction activities will be required. The General Permit program is administered and enforced by the RWQCB. The objectives of the General Permit are: (1) to identify pollutant sources that may affect the quality of discharges of stormwater associated with construction activity from the construction site; and (2) to identify, construct, and implement stormwater pollution prevention measures (best management practices (BMPs)) to reduce pollutants in stormwater discharges from the construction site both during construction and after construction is completed.

MSWD is required to ensure that a Storm Water Pollution Prevention Plan (SWPPP) and Monitoring Plan is prepared and implemented prior to and during construction activities. For a SWPPP to be effective it must include the following: erosion and sediment control; non-stormwater management; post-construction stormwater management; waste management and disposal; maintenance, inspection and repair of best management practices (BMPs); employee training to perform inspections of the BMPs at the construction site; sampling and analysis plan for contaminated storm runoff. The SWPPP shall describe both structural and non-structural BMPs to minimize or eliminate the potential for spills and leakage of construction materials and erosion of disturbed areas by water and wind. To facilitate the stormwater permitting process, it may be possible that the General Permit could be a project-wide permit to cover all activities associated with the WMP. Site-specific SWPPPs would be prepared for each project site to address site-specific conditions. With the implementation of the SWPPP and the mitigation measures provided in this PEIR, potential impacts to water resources/water quality can be reduced to a <u>less than significant level</u>.

During well development, water is used during the drilling process and discharged during test pumping. The District discharges water from well test pumping to temporary percolation ponds or conveys the water to developed or natural drainage facilities. The water discharged ultimately reaches natural, soil lined channels. The water discharged by well test pumping is of high quality and has minimal potential to adversely affect the quality of surface water flow from the site. Mitigation is provided in this PEIR to reduce the potential for impact to a less than significant level.

The issues of accidental releases of petroleum products and construction of WMP facilities on sites containing hazardous materials was evaluated in Section VII, Hazards and Hazardous Materials of the Initial Study prepared for this project. Potential impacts associated with these issues was determined to be less than significant with implementation of the mitigation measures provided. These measures are incorporated into the measures provided below in subchapter 4.3.4 of this PEIR.

Operation Phase

The operations phases of the facilities proposed by the WMP have minimal potential to violate water quality standards or waste discharge requirements. This includes the operation of the Vista and Terrace reservoirs. The purpose of the WMP is to identify and develop the facilities needed to supply an adequate supply of water that meets water quality standards for potable uses. No treatment of water, other than disinfection, is proposed and no wastes will be generated. The only chemicals used by the facilities proposed are chlorine and sodium or calcium hypochlorate to disinfect the water. These chemicals are similar to household bleach and have minimal potential to adversely affect water quality or any waste discharge requirements. The transport, use and storage of these chemicals are controlled by state and local regulations that are mandatory to implement and are considered adequate to reduce the potential for the accidental release of these chemicals to a less than significant level.

None of the facilities proposed by this project require waste discharge requirements (WDRs) or orders nor will they affect any facilities that do. Therefore, it is concluded that implementation of the WMP will not result in the violation of any WDRs or water quality standards.

Some potential for the contamination of stormwater discharged from the developed site may result. However, adequate regulations exist and adequate mitigation are provided in this PEIR to reduce this potential to a less than significant level.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Construction Phase

The construction phase of implementing the activities proposed by the WMP will utilize a minimal amount of water. The primary use of water during construction of the identified facilities, except well development, is for dust control during site grading/development. The sites required for reservoirs including the Vista and Terrace reservoirs, booster stations, and wells are relatively small (generally from 1 to 3 acres and less than 5 acres) and will require minimal land leveling or grading. The amount of water needed for dust control is minimal and considered to be less than significant.

Well development, such as the 1400 Zone well, will require the use of water during drilling to line and seal the drill hole. It is forecast these activities will require several hundred gallons of water. This water used will be recycled during drilling and then decanted and percolated and will not result in the use of a substantial amount of groundwater onsite. Well test pumping can result in the extraction of several hundred thousand gallons of water. The District discharges this water to percolation basins or ultimately to natural drainage courses for percolation. The potential for impact to quantity of groundwater during the construction phase is considered less than significant when considered in relation to the amount of water available from the SGPGS and the MCGS.

Operation Impacts

Operation of the Vista and Terrace reservoirs and other non-water production facilities will not of themselves deplete groundwater supplies or interfere with groundwater recharge activities. These reservoirs do not produce water, only store water produced by MSWD. Water can continue to be produced from the groundwater basins whether or not these reservoirs or other facilities are constructed. Without these reservoirs, MSWD could alter or increase existing and future well pumping schedules to supply water to the system. The purpose of the reservoirs is to allow for the required storage of water to meet the maximum demands for water within the MSWD system. Without the reservoirs, it should be anticipated that MSWD and other water producers could construct additional wells to produce an adequate amount of water to meet demand without increasing storage capacity. Other non-water production facilities such as pipelines, booster stations, and other reservoirs will have similar, less than significant effects on groundwater. None of these facilities will have an identifiable adverse effect on any groundwater recharge efforts being implemented in the MSWD Service Area.

Implementation of the wells proposed in the WMP do have the potential do deplete groundwater resources. This includes the 1400 Zone well. The only basin affected by the WMP for which a groundwater recharge program has been implemented is the MCGS. A groundwater recharge program for the Cabazon Unit of which the SGPGS is a part, is currently being planned using of State Water Project water. While plans have been developed for delivery of this water to the San Gorgonio Pass area, it is anticipated that actual delivery of water is several years away.

The pumping of groundwater has some potential for an adverse effect on the groundwater recharge program. The purpose of these programs is to reduce the overdraft of the basin(s) due to past and anticipated future groundwater extractions. Therefore, the water extraction programs proposed by the WMP are considered to be consistent and compatible with the reasons the recharge program(s) were or will be implemented. However, while implementation of the WMP will not interfere substantially with any groundwater recharge programs, it will contribute to the depletion of groundwater in the MCGS.

The WMP does not propose the extraction of water from any basins other than the MCGS and the SGPGS.

San Gorgonio Pass Groundwater Subbasin (SGPGS)

As previously discussed, little data is available on this subbasin. The USGS is performing studies of the Cabazon Unit but has not made any data available to date. The primary users of water form this subbasin are the Morongo Band of Mission Indians, the mining industry, individual users, and MSWD. Virtually no data are available from these sources on the amount of water being extracted or the drawdown of groundwater levels at the individual wells. The primary source of data is from existing MSWD wells which dates from the mid-1970s. In the mid-1970s to the early 1980s, the water levels in MSWD Wells #25 and #26 rose dramatically. In Well #25, water levels rose about 65 feet during that period. Since the mid-1980s water levels have generally declined. Currently, the water level in Well #25 is about 30 feet below the known historic high, but about 35 feet above the known historic low.

In Well #26, water levels rose about 60 feet between 1975 and 1989, but have generally declined since 1989 and are currently about 20 feet below the known historic highs but about 40 feet above the known historic low. The water levels in MSWD Wells #25A and #26A have also continued to decline over the recent years.

These wells are located at the extreme eastern lower end of the SGPGS. In addition to the pumping by MSWD, additionally pumping by the Morongo Band of Mission Indians at the expanded hotel/casino facility and the mining industry are considered factors in the decline of groundwater levels. The WMP identifies the need to develop an additional 1,500 gpm well in the Cottonwood Zone to meet future demand. This new well will contribute to what appears to be a general decline in groundwater levels below historic highs. At this time, the only mitigation available to MSWD is implementation of the water conservation program identified in Mitigation Measure 4.3-6 of this PEIR. Implementation of the WMP will result in an increase in the amount of water extracted from the SGPGS. However, available data indicates that this increase will not result in a substantial depletion of groundwater in the subbasin and potential impacts are considered less than significant.

At this time, there are no groundwater recharge programs for the SGPGS. Therefore, implementation of the WMP has no potential to adversely effect a groundwater recharge program in the SGPGS.

Mission Creek Groundwater subbasin (MCGS)

Available data indicates that the MCGS is and will continue to be in overdraft. To determine the potential extent of overdraft in the MCGS associated with implementation of the WMP, the Psomas 2007 Report was prepared. Psomas 2007 relied on previous studies and data on the MCGS including estimated boundary inflows and outflows, the type of water bearing deposits in the subbasin, the transmissivity (ability of the aquifer material to transmit water through pore spaces), historic groundwater production and groundwater elevation, the location and amount groundwater recharge anticipated and other pertinent data. The complete list of assumptions utilized in developing the model is provided in Psomas 2007. These data were utilized to develop conceptual models to characterize the groundwater system. Psomas developed four conceptual models to evaluate the MCGS. Due to the complexity and importance of this issue, the following provides a detailed summary the Psomas 2007 Report upon which the conclusions on the MCGS were determined. The complete Psomas 2007 Report is provided as Appendix B, Volume 2 of this PEIR.

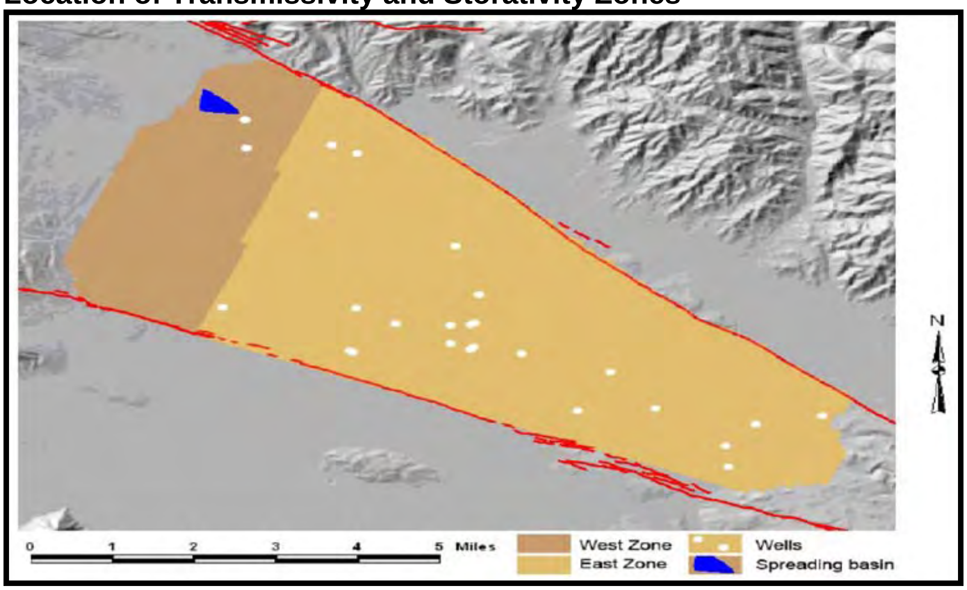
The four alternative conceptual models evaluated were:

1. One Transmissivity and Storativity Zone, Istropic
2. Two Transmissivity and Storativity Zone, Istropic
3. One Transmissivity and Storativity Zone, Anisotropic
4. Two Transmissivity and Storativity Zone, Anisotropic

An aquifer is considered to be isotropic when the parameters that govern groundwater flow are essentially the same in all directions (e.g., homogeneous). An anisotropic aquifer is one where parameter values are a function of direction.

For the purpose of this report, a one zone conceptual model assumes that the transmissivity and storativity are the same for the entire Subbasin (i.e., the same in both areas shown below). A two zone conceptual model assumes that transmissivity and/or storativity in one zone will be different in ore or more directions than the corresponding values in the other zone. Two distinct zones within the Subbasin were developed by Psomas and are presented in Figure 4.3-2, Location of Transmissivity and Storativity Zones, Groundwater Elevation, Wells and Spreading Basin.

Figure 4.3-2
Location of Transmissivity and Storativity Zones



The conceptual model validation phase focused on the spatial distribution of transmissivity and storativity within the MCGS. Variation in the distribution of these two aquifer parameters were originally suspected when field data revealed large differences in groundwater elevations collected in the northwest portion of the MCGS.

In a perfect model the measured and modeled groundwater elevation data will follow a single straight line when plotted on an x-y graph. The sum of the squares errors each data point is away from this ideal straight line is used to measure the accuracy of modeled results. In model development, the objective is to minimize uncertainty (i.e., have data points close to the line) so that more confidence can be placed in the results of simulations run after final development.

A summary of parameters, including the sum of the squared errors between model-estimated and actual groundwater elevations, are presented in Table 4.3-4.

Table 4.3-4
SUMMARY OF PARAMETER ESTIMATES AND SUM OF SQUARED ERRORS

Conceptual Model Description	Transmissivility (ft^2/day)				Storativity		Sum of Squared Errors (ft^2)
	West		East		West	East	
	x	y	x	y			
One Zone - Isotropic	7010	7010	7010	7010	0.15	0.15	74470
One Zoneo - Anisotropic	6260	41800	6260	41800	0.13	0.13	92294
Two Zones - Isotropic	516	516	37500	37500	0.028	0.17	20041
Two Zones - Anisotropic	212	4047	44100	48400	0.003	0.22	4153

From Table 4.3-4 above, the Two-Zone Anisotropic alternative has the lowest sum of squared error and therefore was determined to best characterize the MCGS.

Numerical Flow Model Calibration

The model calibration process consists of adjusting values of initial model input parameters and model geometry in an attempt to reasonably match field conditions.

The numerical model calibration process involved calibrating to both steady state and transient conditions. In steady-state simulations, there are no observed changes in hydraulic head with time while transient simulations involve a change in hydraulic head with time (e.g., an aquifer stressed by a well-field).

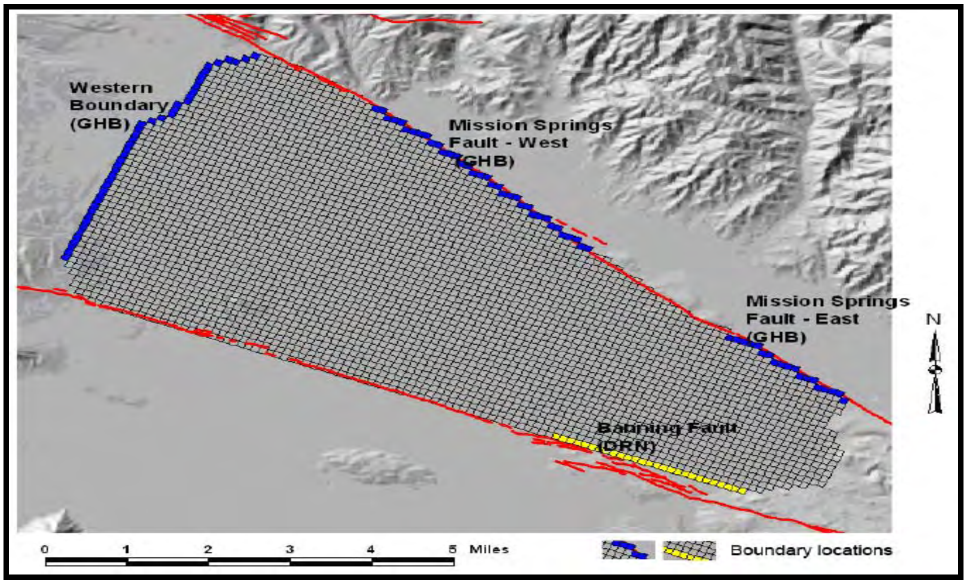
The steady state calibration was used to assess model geometry, confirm the conceptual model of groundwater flow, and test the appropriateness of simulated boundary conditions. The transient calibration was then used to fine-tune the model hydraulic properties through a period of prolonged aquifer stress.

Calibration of the model was completed with PEST (Parameter ESTimation), an industry standard software package that solves inverse problems and is considered a general purpose, model independent, parameter estimation and model predictive error analysis package.

The subbasin's western boundary and the two boundaries of the Mission Springs Fault were simulated with MODFLOW's General Head Boundary package (GHB), and the flow across the Banning Fault was simulated with MODFLOW's Drain package (DRN). The model accuracy was calculated using the root mean square (RMS) error between actual measurements of hydraulic head and model-generated hydraulic head simulations at the end of each model run. Model accuracy is increased by minimizing the RMS error. The RMS error measures the absolute value of the variation between measured and simulated hydraulic heads.

The location of the boundary parameters are shown in Figure 4.3-3.

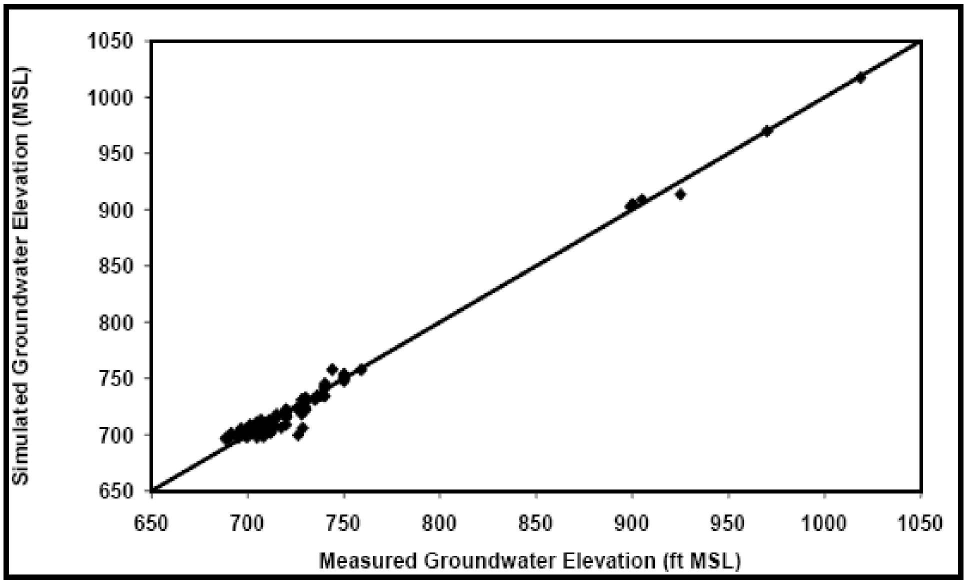
Figure 4.3-3
Location of Basin Boundaries



The parameters estimates for the numerical model have transmissivity values that are consistent with previous models and published literature. The parameters exhibit an exceptional "fit" to actual groundwater elevations due to the low sum of squared errors identified. Furthermore, anisotropy in the western zone is more pronounced than in the eastern zone and estimates for boundary heads and conductance are consistent with published literature.

Figure 4.3-4 presents the comparison of actual groundwater elevations with model-estimated groundwater elevations for two zones anisotropic conceptualization.

Figure 4.3-4
Measured vs. Model Estimated Groundwater Elevation



Calibration - Hydrographs

Model efficacy is confirmed by duplicating a historical period of operation. This analysis uses the traditional "historical-matching method" in which a period of historical data is compared to model-predicted water levels.

The comparison between modeled and actual groundwater elevations demonstrates that the model simulated past conditions well and may be used with confidence to estimate future conditions under various stress conditions.

Initial Groundwater Budget Summary

Groundwater pumping has increased over the years, reaching a current level of about 16,000 AFY. This pumping has resulted in changes to the boundary flows and resulted in groundwater storage declines that were about 8,000 AFY during the late 1990s and early 2000s. The spreading of Colorado River water initially resulted in a reduction of the storage decline, and, in 2006, resulted in a recovery of groundwater storage, even under the estimated reduced amounts. In response to the release of spreading basin water into the MCGS in 2006, the model indicates that the boundary inflow was reduced from previous years and reversed a trend of increases. This is likely a result of the spreading groundwater mound's hydrostatic pressure against the downgradient side of the Mission Creek Fault immediately adjacent to the recharge ponds.

Figure 4.3-5, summarizes the boundary inflow for the simulation period.

Figure 4.3-6 summarizes the boundary outflow and Figure 4.3-7 summarizes groundwater pumping. Figure 4.3-8 summarizes the groundwater storage change.

Figure 4.3-5
Boundary Inflow

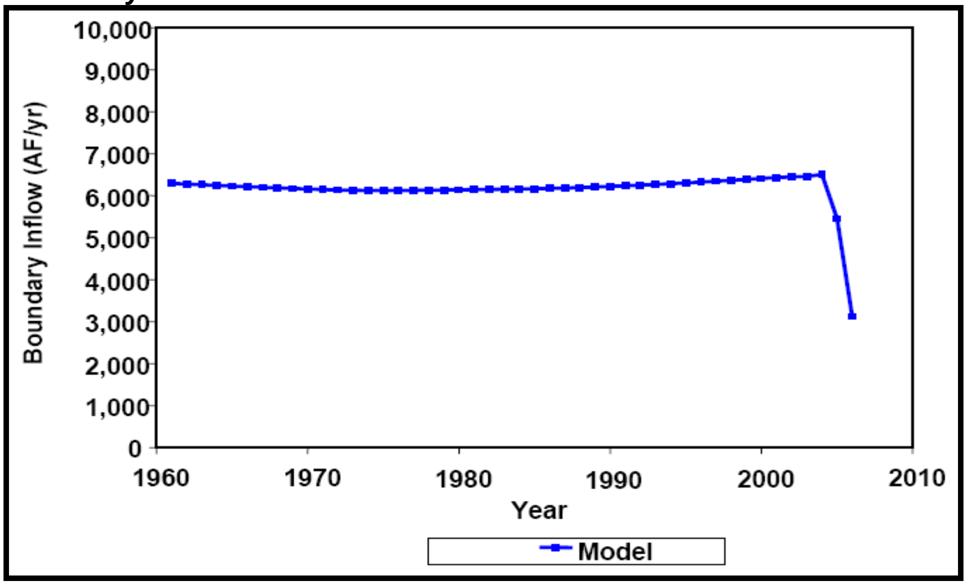


Figure 4.3-6
Boundary Outflow

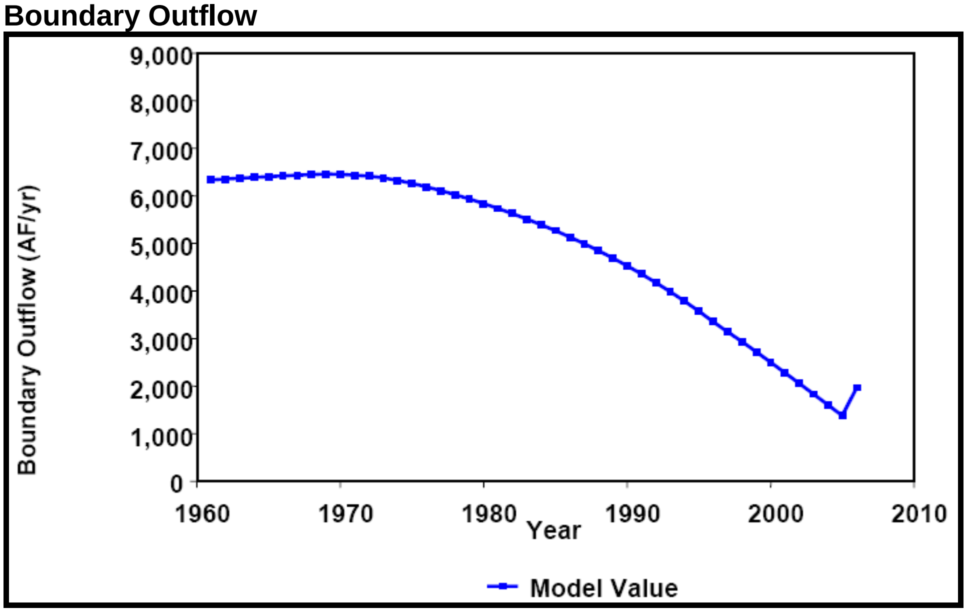


Figure 4.3-7
Groundwater Pumping

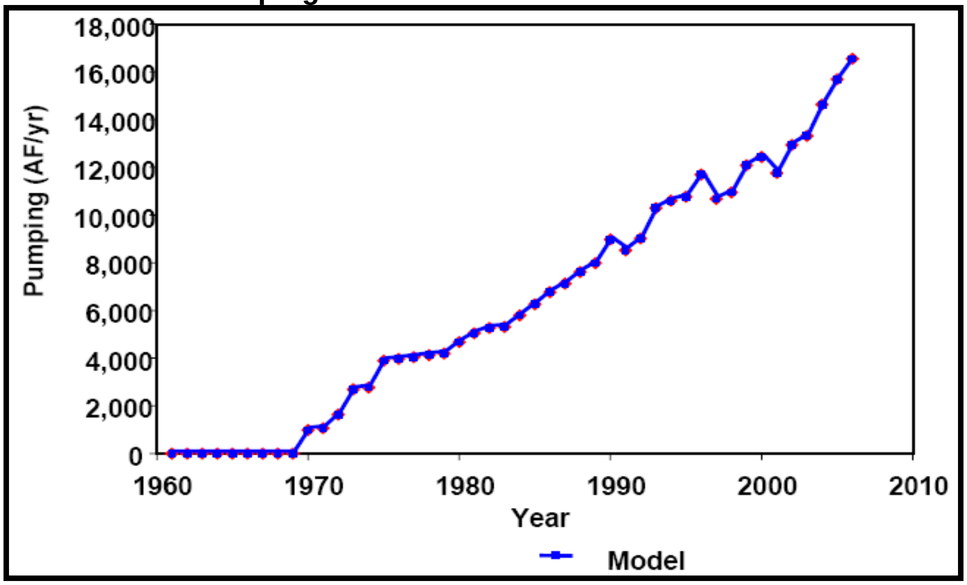
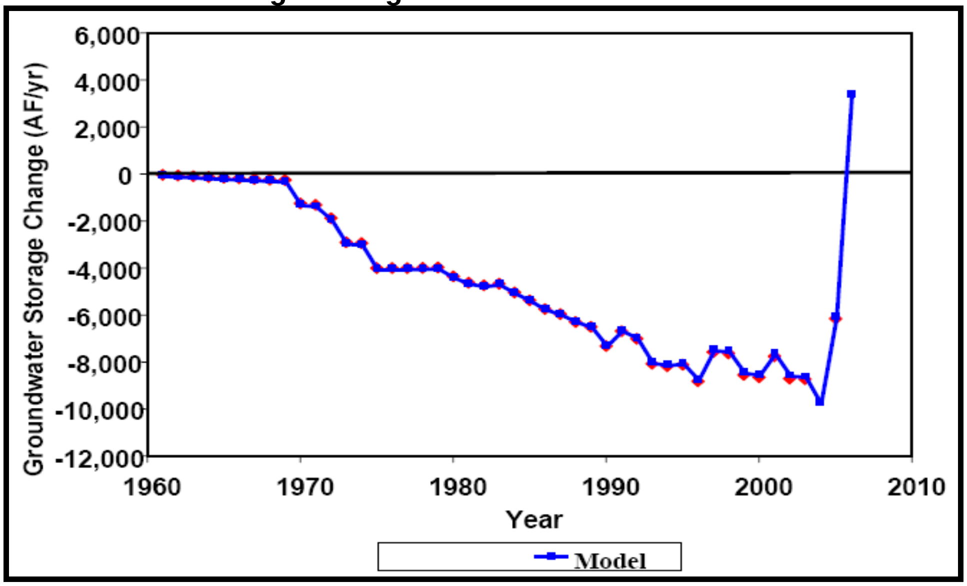


Figure 4.3-8
Groundwater Storage Change



The numerical groundwater flow model was developed using MODFLOW – 2000 (Harbaugh et al. 2000), an industry-standard finite-difference code developed by the USGS. The model was divided into 47 stress periods and the first stress period was simulated as steady state. Each subsequent stress period (2-47) were 365 days long and simulated the period between July 1961 and June 2006. The next step in model development was to incorporate the water budget components and prepare for future simulation runs.

Components of the water budget used in the model are described in the following sections.

Groundwater Extraction

Estimates of future pumping projections are summarized in Table 4.3-5, Summary of Anticipated Future Groundwater Pumping, and were derived from data provided by MSWD, CVWD, and DWA. Detailed annualized pumping for each well is presented in Table 4.3-6, Assumed Future Groundwater Pumping.

Table 4.3-5
SUMMARY OF ANTICIPATED FUTURE GROUNDWATER PUMPING (MCGS)

Year	MCGS Existing Wells	MCGS Future Wells	Recycled Water Production*	Total MCGS Well Production	CVWD Pumping	Private Pumping	Total Pumping
2007	12,017	0	0	12,017	3,400	1,566	16,983
2008	11,119	1,740	0	12,859	3,600	1,566	18,025
2009	10,221	3,480	0	13,701	3,800	1,566	19,067
2010	10,903	3,640	0	14,543	4,000	1,566	20,109
2011	10,387	5,200	0	15,587	4,200	1,566	21,353
2012	10,931	5,700	0	16,631	4,600	1,566	22,797
2013	10,375	7,300	0	17,675	4,900	1,566	24,141
2014	10,719	8,000	0	18,719	5,200	1,566	25,485
2015	10,963	8,800	2,000	19,763	5,500	1,566	26,829
2016	11,207	9,600	2,000	20,807	5,900	1,566	28,273
2017	11,451	10,400	2,000	21,851	6,300	1,566	29,717
2018	11,695	11,200	2,000	22,895	6,600	1,566	31,061
2019	11,939	12,000	2,000	23,939	6,900	1,566	32,405
2020	8,700	8,080	5,350	16,780	7,100	1,566	25,446
2021	8,758	8,800	5,350	17,558	7,600	1,566	26,724
2022	8,756	9,600	5,350	18,356	8,000	1,566	27,922
2023	8,744	10,400	5,350	19,144	8,200	1,566	28,910
2024	8,732	11,200	5,350	19,932	8,600	1,566	30,098
2025	9,120	11,600	6,070	20,720	8,900	1,566	31,186
2026	9,120	11,600	6,070	20,720	9,000	1,566	31,286
2027	9,120	11,600	6,070	20,720	9,400	1,566	31,686
2028	9,120	11,600	6,070	20,720	9,800	1,566	32,086
2029	9,120	11,600	6,070	20,720	10,200	1,566	32,486
2030	9,120	11,600	6,720	20,720	10,700	1,566	32,986

Table 4.3-6
ASSUMED FUTURE GROUNDWATER PUMPING

Year	MSWD Wells											
	22	23	24	27	28	29	30	31	32	New Well (Sec1)	New Well (Sec 1)	New Well (Sec 2)
2007	2,477	0	1,097	443	1,923	2,301	901	1,102	1,773	0	0	0
2008	2,400	0	1,100	419	1,800	2,000	800	1,000	1,600	0	0	0
2009	2,100	0	1,000	421	1,800	1,900	800	900	1,300	0	0	0
2010	2,200	0	1,150	453	1,850	2,100	850	1,000	1,300	0	0	0
2011	2,000	0	1,150	437	1,750	2,100	850	900	1,200	800	0	800
2012	2,000	0	1,250	431	1,850	2,100	900	1,000	1,200	950	0	950
2013	2,000	0	1,150	435	1,750	2,000	900	1,000	1,140	950	800	950
2014	2,050	0	1,200	429	1,800	2,100	900	1,100	1,140	1,000	1,000	1,000
2015	2,100	0	1,200	423	1,800	2,100	900	1,100	1,340	1,100	1,100	1,100
2016	2,200	0	1,200	457	1,800	2,100	900	1,100	1,450	1,200	1,200	1,200
2017	2,250	0	1,200	451	1,800	2,100	900	1,100	1,650	1,300	1,300	1,300
2018	2,250	0	1,200	450	1,800	2,150	900	1,295	1,650	1,400	1,400	1,400
2019	2,250	0	1,200	450	1,800	2,150	900	1,500	1,689	1,500	1,500	1,500
2020	1,300	0	1,200	400	1,300	1,300	900	1,100	1,200	1,080	1,000	1,000
2021	1,358	0	1,200	400	1,300	1,300	900	1,100	1,200	1,100	1,200	1,100
2022	1,356	0	1,200	400	1,300	1,300	900	1,100	1,200	1,200	1,300	1,200
2023	1,344	0	1,200	400	1,300	1,300	900	1,100	1,200	1,300	1,400	1,300
2024	1,332	0	1,200	400	1,300	1,300	900	1,100	1,200	1,400	1,450	1,400
2025	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2026	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2027	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2028	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2029	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2030	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450

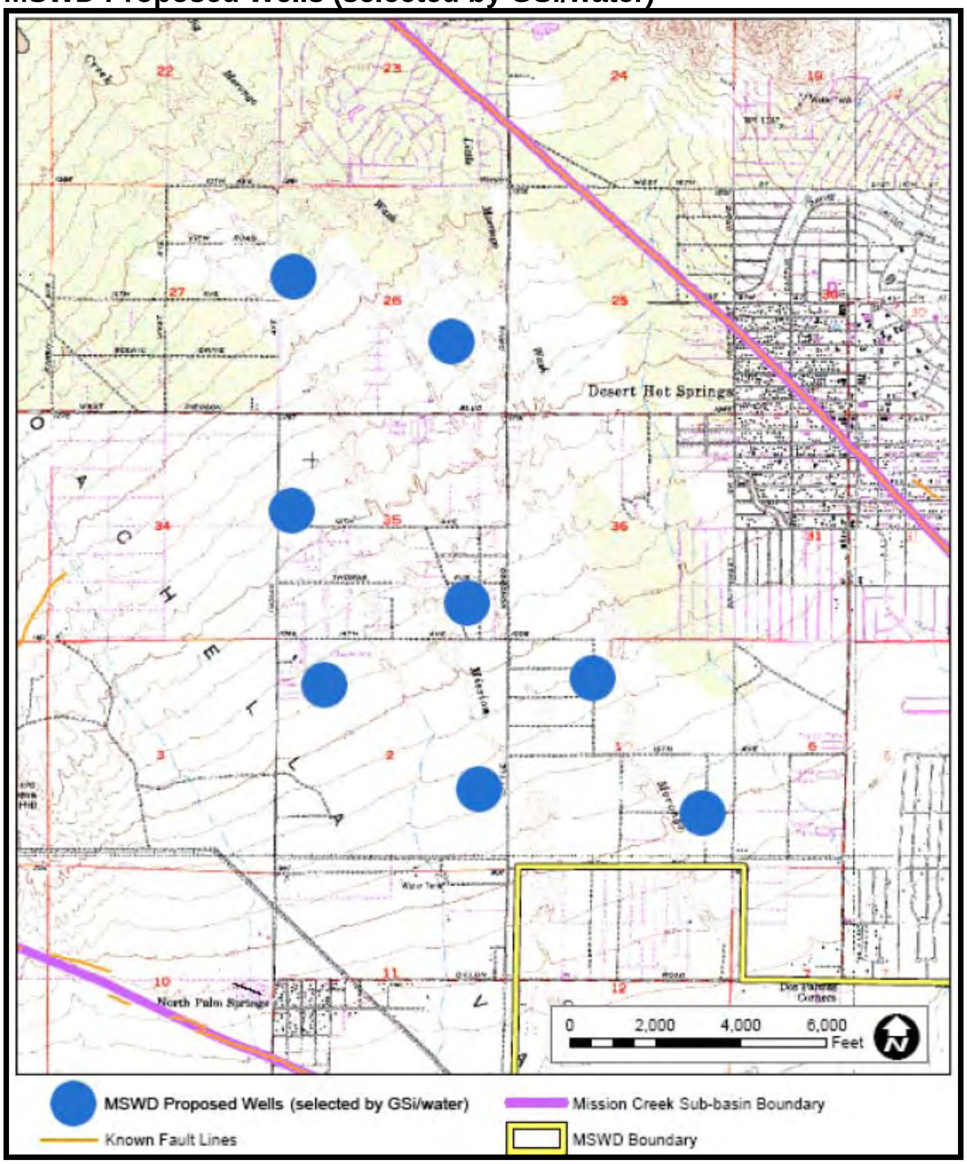
Table 4.3-6 (continued)
ASSUMED FUTURE GROUNDWATER PUMPING

Year	New MSWD Wells					CVWD Wells				Private Wells		
	(Sec 2)	(Sec 35)	(Sec 35)	(Sec 26)	(Sec 26)	3405	3408	3409	3410	Hidden Springs CC	Mission Lakes CC	Sands RV
2007	0	0	0	0	0	536	817	1,126	1,327	234	1,045	287
2008	0	870	0	870	0	536	817	1,126	1,327	234	1,045	287
2009	0	870	870	870	870	536	817	1,126	1,327	234	1,045	287
2010	0	910	910	910	910	536	817	1,126	1,327	234	1,045	287
2011	0	900	900	900	900	536	817	1,126	1,327	234	1,045	287
2012	0	950	950	950	950	536	817	1,126	1,327	234	1,045	287
2013	800	950	950	950	950	536	817	1,126	1,327	234	1,045	287
2014	1,000	1,000	1,000	1,000	1,000	536	817	1,126	1,327	234	1,045	287
2015	1,100	1,100	1,100	1,100	1,100	536	817	1,126	1,327	234	1,045	287
2016	1,200	1,200	1,200	1,200	1,200	536	817	1,126	1,327	234	1,045	287
2017	1,300	1,300	1,300	1,300	1,300	536	817	1,126	1,327	234	1,045	287
2018	1,400	1,400	1,400	1,400	1,400	536	817	1,126	1,327	234	1,045	287
2019	1,500	1,500	1,500	1,500	1,500	536	817	1,126	1,327	234	1,045	287
2020	1,000	1,000	1,000	1,000	1,000	536	817	1,126	1,327	234	1,045	287
2021	1,100	1,100	1,100	1,100	1,100	536	817	1,126	1,327	234	1,045	287
2022	1,200	1,200	1,200	1,200	1,200	536	817	1,126	1,327	234	1,045	287
2023	1,300	1,300	1,300	1,300	1,300	536	817	1,126	1,327	234	1,045	287
2024	1,400	1,400	1,400	1,400	1,400	536	817	1,126	1,327	234	1,045	287
2025	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2026	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2027	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2028	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2029	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2030	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287

All Values in AF/yr
Mission Creek Subbasin

The general location of proposed future wells is presented in Figure 4.3-9. It was assumed that the new wells proposed in Section 26 and Section 35 would be online in 2008. Additional new wells in Section 26 and 35 would be online in 2009. Furthermore, a new well in Section 1 and a new well in Section 2 are assumed to come online in 2011. Finally, additional new wells in Sections 1 and 2 are assumed to come online in 2013.

Figure 4.3-9
MSWD Proposed Wells (selected by GSi/water)



Boundary Conditions

It was assumed that boundary heads would continue to decline during the analysis period. Therefore, the decrease in head each year was estimated in order to simulate the general condition of lowering groundwater during simulation runs. Although it is recognized that recent spreading of Colorado River water in the western area of the model domain caused a recovery of groundwater levels in 2005 and 2006, the declining boundary head represents a worst-case scenario.

Groundwater Recharge

Average annual spreading basin water delivery volumes were derived from the 2005 Coachella Valley Water District and the 2005 Mission Springs Water District Urban Water Management Plans. It is anticipated that CVWD and DWA intend to recharge an annual average of almost 16,000 AFY during the years covered in this analysis.

It is recognized that some spreading water will not recharge the underlying groundwater basin but will be lost to evaporation and the initial wetting of the unsaturated zone. Although future losses to wetting the unsaturated zone are expected to be minimal after several years of operation, evaporative losses are probable but will depend upon seasonal conditions and daily temperatures at the time spreading water is released. For the purposes of the analysis, it was assumed that an average of 15,000 acre-ft of spread water will reach the groundwater basin annually.

Water Budget Summary

Table 4.3-7, Summary of Groundwater Budget, summarizes the storage change anticipated in the declining boundary head scenario described above.

Table 4.3-7
SUMMARY OF GROUNDWATER BUDGET

Scenario	Inflow			Outflow			Storage Change
	Spreading	Boundary Inflow	Total Inflow	Pumping	Boundary Outflow	Total Outflow	
Declining Boundary Head	15,000	5,978	20,978	26,961	3,218	30,179	-9,202
Note: All values represent average of 2007-2030 Simulation and are in AFY.							

Drawdown Results

Anticipated drawdown in the MCGS was estimated by subtracting the groundwater elevations estimated by the model in 2006 from the groundwater elevations estimated by the model at the end of each simulation period. Simulations were run in 5-year increments from 2006 through 2030 and the average model estimated drawdown is presented below in Table 4.3-8, Model Estimated Drawdown. Figure 4.3-10 shows the drawdown in each model cell after the end of the simulation period (i.e., 2030). In addition, 5-year incremental groundwater elevation contours are presented graphically in Figures 4.5-11 through 4.5-16.

Table 4.3-8
MODEL ESTIMATED DRAWDOWN

Year		Model Estimated Average Drawdown (ft)
Year 5	2011	14
Year 10	2016	32
Year 15	2021	50
Year 20	2026	67
Year 25*	2030	82
Note: The final simulation is 24 years.		

Sensitivity

The sensitivity analysis was performed to assess the response of the model results to changes in various input parameter values. The model is sensitive to a parameter when a change of the parameter value changes the distribution of simulated hydraulic head. When the model is sensitive to an input parameter, the value and distribution of that parameter within the model are more accurately determined during model calibration because small changes to the parameter values cause large changes in hydraulic head. If a change of parameter value does not change the simulated hydraulic head distribution, the model is insensitive to that parameter. When the model is insensitive to in input parameter, the value and distribution of that parameter within the model are more difficult to accurately determine from model calibration because large changes to the parameter do not cause large changes in hydraulic head. These values of these parameters may not represent actual values.

It is recognized that annual future spreading basin water will affect the groundwater level decline simulated in this analysis. Several simulations were run to test the sensitivity of spreading basin water to MCGS water level decline. The five scenarios used in the evaluation are presented below:

1. Spreading of 5,000 AFY
2. Spreading of 10,000 AFY
3. Spreading of 15,000 AFY
4. Spreading of 20,000 AFY
5. Spreading of 25,000 AFY

To simulate the full range of potential conditions, two sets of simulations were run for each spreading scenario: (1) the annual decline in boundary heads continued from 2007 to 2030 at the same rate as in the calibration period, and (2) there is no continued annual decline in boundary heads - assigned equivalent to 2006 heads.

Table 4.3-9, Summary of Groundwater Budget for Ten Simulations, summarizes the groundwater budget for each of the ten simulations. Note that the boundary inflow and outflow are relatively constant across spreading scenarios and between the two alternative boundary head assumptions. Boundary outflow increases as spreading increases and the change in total outflow is relatively small as compared to boundary inflow and to storage changes. This observation is significant to future groundwater management activities in that future investigations that resulted in refinement of boundary heads would be a lower priority than investigations related to the spreading operations or the geologic features between the spreading basins and the production wells.

Summary

Implementation of the WMP, including the 1400 Zone well, is forecast to result in a significant lowering of groundwater in the MCGS. Based on data provided in the Psomas 2007 Report, it is forecast that groundwater levels within the MCGS will decline on an average of about 2.8 to 3.2 feet per year for the 25-year planning period. The total estimated average drawdown will range from about 14 feet by year 5 to about 82 feet by year 25 (see Table 4.3-8). This average annual drawdown is based on an assumed average groundwater recharge of 15,000 AFY.

The delivery of recharge water to the MCGS via the recharge basins is subject to annual allocations from the California Department of Water Resources (DWR) administered through the Desert Water Agency (DWA), the State Water Contractor, in compliance with an agreement between DWA, the Coachella Valley Water District (CVWD and the Metropolitan Water District of Southern California (MWD) for the exchange of State Water Project water for Colorado River Water.

As can be seen on Table 4.3-9, the decline in water in storage in the MCGS is primarily dependent on the amount of water percolated and the amount extracted. Years that more than 15,000 AFY enters the subbasin, the decline in water levels will be less. In years that less than 15,000 AFY is percolated, the decline will be greater. Regardless of the feasible scenario used, implementation of the WMP in conjunction with other pumping of the MCGS will result in a substantial decline in the volume of water in storage and a substantial lowering of the groundwater table within the MCGS. Figures 4.3-17 and 4.3-18 illustrate the projected decline in groundwater levels along the Banning Fault within the MCGS.

Implementation of the water production programs identified in the WMP will result in a significant impact on the volume of water stored in the MCGS and the effects of the current groundwater recharge program. Based on data provided in the Psomas 2007 Report, the only method of mitigating these potential impacts would be to substantially increase the amount of water recharged annually into the MCGS to offset the amount of water extracted from the basin (see Table 4.3-9).

Table 4.3-9
SUMMARY OF GROUNDWATER BUDGET FOR TEN SIMULATIONS

Scenario	Inflow			Outflow			Storage Change
	Spreading	Boundary Inflow	Total Inflow	Pumping	Boundary Outflow	Total Outflow	
2006 Boundary Heads & 5K Spreading	5,000	6,936	11,936	26,961	1,335	28,296	-16,360
2006 Boundary Heads & 10K Spreading	10,000	6,458	16,458	26,961	2,117	29,078	-12,620
2006 Boundary Heads & 15K Spreading	15,000	6,198	21,198	26,961	3,117	30,078	-8,880
2006 Boundary Heads & 20K Spreading	20,000	5,995	25,996	26,961	4,175	31,136	-5,141
2006 Boundary Heads & 25K Spreading	25,000	5,834	30,835	26,961	5,276	32,237	-1,402
Declining Boundary Heads & 5K Spreading	5,000	6,676	11,676	26,961	1,394	28,356	-16,680
Declining Boundary Heads & 10K Spreading	10,000	6,230	16,231	26,961	2,210	29,171	-12,940
Declining Boundary Heads & 15K Spreading	15,000	5,978	20,978	26,961	3,218	30,179	-9,202
Declining Boundary Heads & 20K Spreading	20,000	5,785	25,785	26,961	4,288	31,249	-5,464
Declining Boundary Heads & 25K Spreading	25,000	5,631	30,631	26,961	5,396	32,357	-1,726

All values represent average of 2006-2030 Simulation and are in AF/yr.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?

Construction Phase

The project sites, including the Terrace and Vista reservoirs and the 1400 Zone well and booster pump stites are relatively small (about 0.5 to 5 acres). Drainage within the MSWD Service Area generally occurs as sheet flow. MSWD typically does not place any of its aboveground structures within the course of a river or stream. Sites are leveled for construction of the proposed facilities with positive drainage around or away from the structures. These flows are directed to existing downstream drainage for discharge in a manner similar to pre-development conditions. Implementation of the required SWPPP and compliance with the NPDES permit and the mitigation measure provided is considered to reduce potential impacts to a less than significant level.

This is true for the Terrace and Vista reservoirs and the 1400 Zone well and booster pump sites. These sites will be leveled and runoff directed toward the adjacent roadways and drainage courses. Installation of the pipelines will result in minimal disturbances at any given time. Once installed, the pipe alignments will be returned to essentially their pre-project condition. Due to the small size of the sites, the ability to direct flows toward existing drainage facilities and the ability to control erosion through proper site design and development, the potential for the project to result in substantial erosion or siltation on or offsite is considered less than significant with implementation of the SWPPP and mitigation measures contained in this PEIR.

Operational Phase

Operation of the WMP facilities, including the Terrace and Vista reservoirs and the 1400 Zone well, booster pump and pipeline sites, will not result in impacts greater than those identified for the Construction Phase. Potential impacts will remain less than significant with implementation of the mitigation measures identified in this PEIR.

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of the stream or river, or substantially increase the rate of amount of surface runoff in a manner which would result in flooding onsite or offsite?

Construction Phase

See issue “c” above. Some minor alterations of existing drainage patterns will result on the sites including the Terrace and Vista reservoir sites. Compliance with the SWPPP and any NPDES permits issued will be adequate to mitigate potential impacts to a less than significant level.

Operation Phase

See issue “c” above. Hard-surfacing of the sites will primarily be limited to the new structures (well, reservoirs, booster pumps, etc.). Due to the small size of the sites and the minimal amount of hard-surfacing proposed, potential impacts associated with increased surface water runoff from WMP facilities including the Terrace and Vista reservoirs and the 1400 Zone well and booster pump sites are considered less than significant with implementation of identified mitigation.

e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Construction Phase

See items "c" and "d" above.

As previously discussed, implementation of the projects proposed by the WMP including the Terrace and Vista reservoirs and the 1400 Zone well and booster pump sites, will result in minimal land disturbances or site hard-surfacing. Adequate mitigation is provided to reduce the potential for impact to stormwater drainage systems to a less than significant level.

Operation Phase

Operation of the WMP facilities, including the Terrace and Vista reservoirs and the 1400 Zone well and pipeline, will not result in impacts greater than those identified in the Construction Phase. Potential impacts to stormwater drainage will remain less than significant with implementation of the mitigation measures provided in the PEIR.

f. Substantially degrade water quality.

Construction Phase

See issues "c", "d" and "e" above. Compliance with the terms of the SWPPP's and NPDES required for the individual projects, including the Terrace and Vista reservoirs and the 1400 Zone well, booster pump station and pipeline, will reduce potential impacts to surface water quality during construction to a less than significant level. Construction activities will utilize a minimal amount of groundwater and potential impacts are considered less than significant.

Operation Phase

See issues "c", "d" and "e" above. The Operations Phase will not result in impacts to surface water quantity that are greater than those evaluated for the Construction Phase. This includes the Vista and Terrace reservoirs and the 1400 Zone well, booster pump and pipeline. Implementation of the mitigation measures provided in this PEIR will reduce potential impacts to a less than significant level.

Operation of the water production facilities identified in the WMP have some potential to degrade groundwater quality by overdraft of the basin. This issue is evaluated in subsection 4.3.2.1 above.

Data provided in subsection 4.3.2.1 indicates that even with the current overdrafting of the MCGS, there has not been a substantial degradation of water quality. Water extracted from the MCGS, the GHSB and the SGPGS is tested on a regular basis and continues to meet the water quality standards for potable water. It is possible that water extractions proposed by the WMP could eventually result in a substantial degradation of groundwater quality, however, the water supplied must meet state drinking water standards. Regulations require that when contaminants in drinking water reach specified concentrations, that MSWD implement remediation or treatment programs to reduce the level of contaminants to levels that meet state health standards.

The WMP does not include any specific water treatment facilities because water in the MSWD has not shown signs of substantial degradation nor approached action levels. Therefore, while implementation of the water production activities in the WMP has some potential to degrade the quality of water within the MSWD Service Area, this potential is considered to be less than significant based on available data. It should be noted that before any future water treatment activities are implemented, they must undergo project-specific environmental review in compliance with CEQA.

It should also be noted that the use of Colorado River water to recharge the MCGS has some potential to degrade water quality within the basin. This groundwater recharge program is an existing program that is separate from the WMP and is not a part of the proposed WMP which is being evaluated in this PEIR. The DWA currently monitors groundwater near the recharge ponds to evaluate the effects of recharge on the quality of groundwater. Should the use of Colorado River water to recharge the MCGS result in a substantial degradation of groundwater quality in the MCGS, the treatment of Colorado River water could be implemented to reduce potential adverse effects of basin recharge.

g. Place structures within a 100-year flood hazard area which would expose people or structures to significant risk of loss, injury or death.

Construction Phase

The only structures proposed by the WMP for which specific locations have been selected are the Terrace and Vista reservoirs and the 1400 Zone well, pump station and pipeline. Neither of these sites are within a 100-year flood hazard area. The remaining facilities are generally located and, therefore, it is not possible to determine if they are located within a 100-year flood hazard area. The MSWD generally does not locate aboveground structures within flood zones. The facilities proposed in the WMP are not human occupancy structures but, it is possible that some structures (wells, booster pump stations, etc.) could be located within a flood hazard area. However, adequate standard design and construction techniques such as elevating the structures or other flood proofing methods are available to reduce the potential for impacts associated flooding to a less than significant level.

Operation Phase

Operations impacts will not be any greater than those less than significant impacts identified in the Construction Phase.

4.3.4 Mitigation Measures

4.3.4.1 Construction

4.3-1 For each Water Master Plan project construction site, regardless of size, a SWPPP will be prepared and implemented. Each plan shall identify the BMPs that will be used for that site to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality, including solid waste and require that any spills be cleaned up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. At a minimum, BMPs shall achieve a 60 percent removal of sediment and other pollutants.

4.3-2 Prior to authorizing contracts for drilling wells under the WMP, MSWD will require the well driller to identify all chemicals that will be used at the drilling site and require the submittal of a SWPPP for review and approval before allowing the drilling to commence. The SWPPP shall also address the proper use and disposal of water obtained from well test pumping. A performance bond shall be provided by the driller to ensure that any residual contamination from will drilling can be corrected.

4.3-3 If the facilities are constructed in a flood-zone, the facility will be brought to a level above flood hazards, or hardened against flood related impacts. Additionally, if facilities must be located within flood plains or hazard areas, a flood management program to minimize impacts to people and surrounding property shall be created and implemented for each facility that may occur within these hazards areas.

4.3-4 Prior to implementation of a WMP facility at a specific site, MSWD shall evaluate the potential for the site to contain hazardous substances or wastes.

The following are the mitigation measures contained in the Initial Study:

VII-1 If petroleum products are accidentally released to the environment during any phase of construction, MSWD shall require the area of contamination to be defined; shall require the removal of any contaminated soil or material from the contaminated area; and ensure that any area exposed to accidentally released contaminants are remediated to a threshold that meets regulatory requirements established by law or agencies overseeing the remediation.

VII-2 Prior to initiating construction on any future District facility, the District will ensure that the various computer data bases are checked to determine whether any contaminated locations are known to occur within the construction footprint of the facility. If a known location with contamination is identified, the District shall proceed with construction only after conferring with a licensed professional (such as an industrial hygienist) and identifying any specific construction and employee protection measures that will be observed if the contamination is encountered during construction activities. The performance standard shall be the protection of all employees involved in construction from health hazards associated with the type of contamination that may be encountered.

4.3.4.2 Operation

4.3-5 Design and construction of WMP facilities shall include the methods of reducing the amount of surface water discharged from the developed sites to as near pre-project conditions as possible. This shall include minimizing hard surfacing and the use of infiltration basin where feasible. This will also serve to improve the quality of water discharged from the developed site.

4.3-6 MSWD shall continue to implement water conservation plans provided in the WMP, including public education.

4.3-7 MSWD shall continue to percolate treated wastewater into the groundwater basin subject to future water reclamation plans and/or projects for the beneficial use of tertiary treated wastewater.

4.3-8 Delivery of recharge water to the MCGS via the recharge basins is subject to annual allocations from the California Department of Water Resources (DWR) administered through Desert Water Agency (DWA) our state contractor and according to an agreement between DWA, Coachella Valley Water District (CVWD), and Metropolitan Water District (MET) for exchange of State Water Project water for Colorado River water. Historically the range of recharge has varied from 0-to 25,000 AFY, with an average close to 15,000 AFY. Based on the historical record, future deliveries are anticipated to be on average 15,000 AFY subject to the availability of actual allocations. MSWD will support and promote to the best of its abilities the continued possibility for maximum recharge to the MCGS available.

4.3.5 Level of Significance After Mitigation is Applied

4.3.5.1 Groundwater Quantity

MSGS

Data provided in this PEIR indicates that implementation of this project as identified in the WMP will result in an overdraft of the MCGS. The timing and amount of overdraft will be dependent on when and how much water is extracted from the basin and the amount of inflow (including recharge) of water into the MCGS occurs. However, available data indicates that the amount of inflow (including recharge) and the affects of mitigation will not be adequate to offset the amount of water extraction proposed by the WMP. Therefore, it is concluded that implementation of the WMP will result in a substantial reduction in the amount of groundwater stored in the MCGS. This reduction is considered a significant adverse impact.

SGPGS

Limited available data provided in the PEIR indicates that implementation of the WMP will result in a less than significant impact on the quantity of water the SGPGS.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

4.3.5.2 Groundwater Quality

MCGS

The continued overdraft of the MCGS has the potential to result in the substantial degradation of the quality of water in this basin. However, available data indicates that past and ongoing overdraft has not resulted in any substantial degradation. Water extracted from the MCGS is tested regularly and continues to meet state standards for drinking water quality. Therefore, based on available data the potential for substantial impact is speculative and potential impacts are considered individually less than significant.

The use of groundwater for human consumption is considered a beneficial use of the water. Should water quality degrade substantially in the future, MSWD will be required to implement water treatment activities to ensure that its water supply meets state public health standards. The need to implement such treatment activities are speculative at this time and beyond the scope of this PEIR.

SGPGS

Data provided in this PEIR indicates that implementation of the WMP will result in a less than significant impact on the quality of groundwater in the SGPGS.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

4.3.5.3 Surface Water Quantity and Quality

Implementation of the WMP has the potential to result in some increase in surface water runoff and some degradation of that runoff both during the construction and operation phases. Implementation of the mitigation provided in this PEIR is considered adequate to reduce potential impacts to a less than significant level.

4.3.6 Cumulative Impacts

4.3.6.1 Groundwater Quantity

MCGS

Implementation of the proposed WMP when combined with other water extractions will contribute to an increased overdraft of the MCGS. The timing and amount of overdraft will be dependent on when and how much water is extracted from the basin and the amount of inflow (including recharge) of water into the MCGS occurs. However, available data indicates that the amount of inflow (including recharge) and the affects of available mitigation will not be adequate to offset the cumulative amount of water extraction forecast to occur. Therefore, it is concluded that implementation of the WMP will contribute to a substantial reduction in the amount of groundwater stored in the MCGS. This reduction is considered a cumulatively significant adverse impact.

SGPGS

Limited available data provided in this PEIR indicates that implementation of the WMP will result in a less than significant cumulative impact on the quantity of water in the SGPGS.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

4.3.6.2 Groundwater Quality

MCGS

The continued overdraft of the MCGS has the potential to result in the contribution to a substantial degradation of the quality of water in this basin. However, available data indicates that past and ongoing overdraft has not resulted in any substantial degradation. Water extracted from the MCGS is tested regularly and continues to meet state standards for drinking water quality. Therefore, based on available data the potential for substantial impact is speculative and potential impacts are considered individually less than significant.

The use of groundwater for human consumption is considered a beneficial use of the water. Should water quality degrade substantially in the future, water purveyors will be required to implement water treatment activities to ensure that its water supply meets state public health standards. The need to implement such treatment activities are speculative at this time and beyond the scope of this PEIR.

SGPGS

Data provided in this PEIR indicates that implementation of the WMP will result in a less than significant cumulative impact on the quality of groundwater in the SGPGS.

4.3.6.3 Surface Water Quality

Implementation of the WMP has the potential to contribute to some degradation of surface water runoff both during the construction and operation phases. Implementation of the mitigation provided in this PEIR is considered adequate to reduce potential cumulative impacts to a less than significant level.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

4.3.7 Unavoidable Adverse Impacts

4.3.7.1 Groundwater Quantity

MCGS

Implementation of the WMP has the potential to result in the continued overdraft of the MCGS. The potential is unavoidable if the WMP is implemented as proposed. This unavoidable impact is considered to be both individually and cumulatively significant.

SGPGS

Implementation of the WMP has the potential to result in a reduction in the quantity of groundwater within this subbasin. However, this reduction is not considered substantial relative to the currently identifiable capacity of this subbasin. At this time, this reduction is considered unavoidable but both individually and cumulatively less than significant.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

4.3.7.2 Groundwater Quality

MCGS

Data provided in the PEIR indicates that implementation of the WMP has some potential to result in some degradation of water quality in the MCGS through its contribution to basin overdraft. However, to date, basin overdraft has not resulted in a detectable degradation of groundwater quality. While this contribution is unavoidable, it is not possible to determine the significance of the effect implementing the WMP will have on groundwater quality. Therefore this potential impact is considered unavoidable but individually and cumulatively less than significant.

SGPGS

The limited available data provided in the PEIR indicates that implementation of the WMP will contribute to a possible reduction in the volume of water in storage which could adversely affect the quality of groundwater. This potential reduction will be minimal based on the amount of water in storage in the SGPGS, but is considered unavoidable at this time. The potential effect on groundwater quality is unknown, but due to the minimal amount of water that could be extracted, the potential for impact is considered less than significant.

4.3.7.3 Surface Water Quality and Quantity

Implementation of the WMP has the potential to contribute to the degradation of surface water quality and increase runoff from the sites during both the construction and operation phases. While this potential for impact is unavoidable, it is considered to be both individually and cumulatively less than significant with implementation of the mitigation measures provided in this PEIR.

The WMP does not propose the extraction of water from or development of water facilities within any other subbasins.

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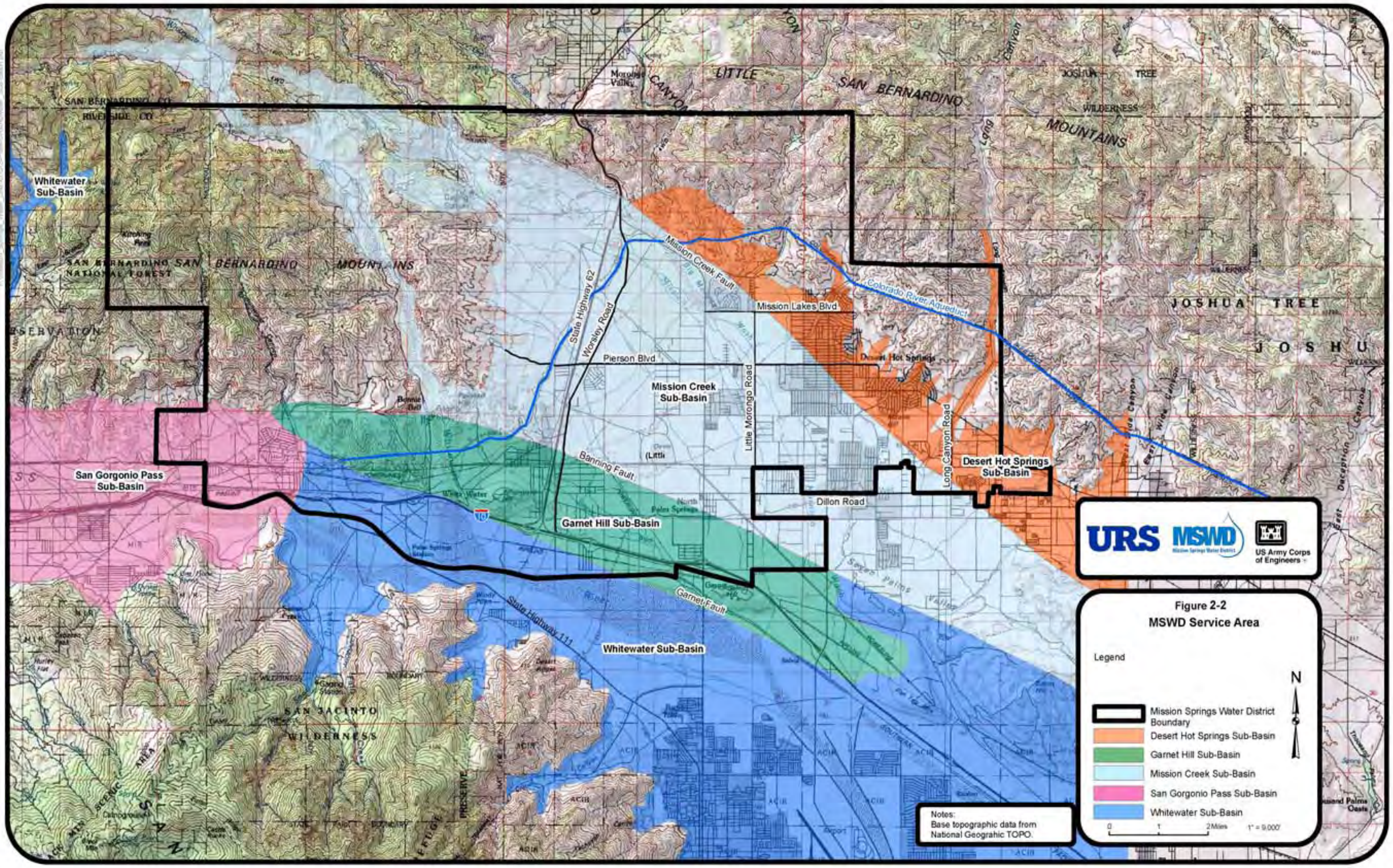
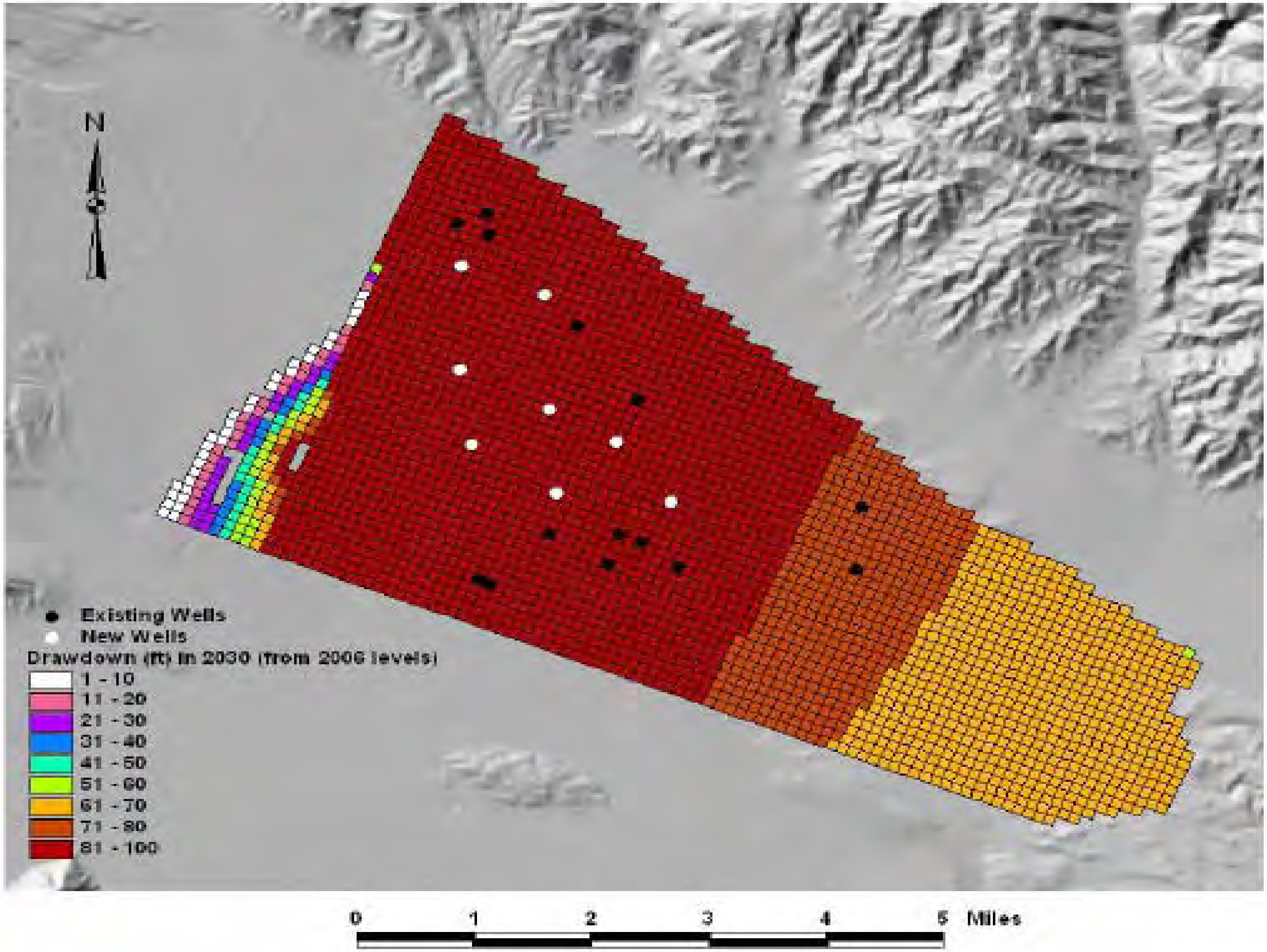
FIGURE 4.3-1
MSWD and MCGS Boundaries



Source: MSWD Final Water Master Plan 2007

Tom Dodson & Associates
Environmental Consultants

FIGURE 4.3-10
Model Estimated Drawdown



Source: Psomas

FIGURE 4.3-11
Modeled Groundwater Elevation - 2006

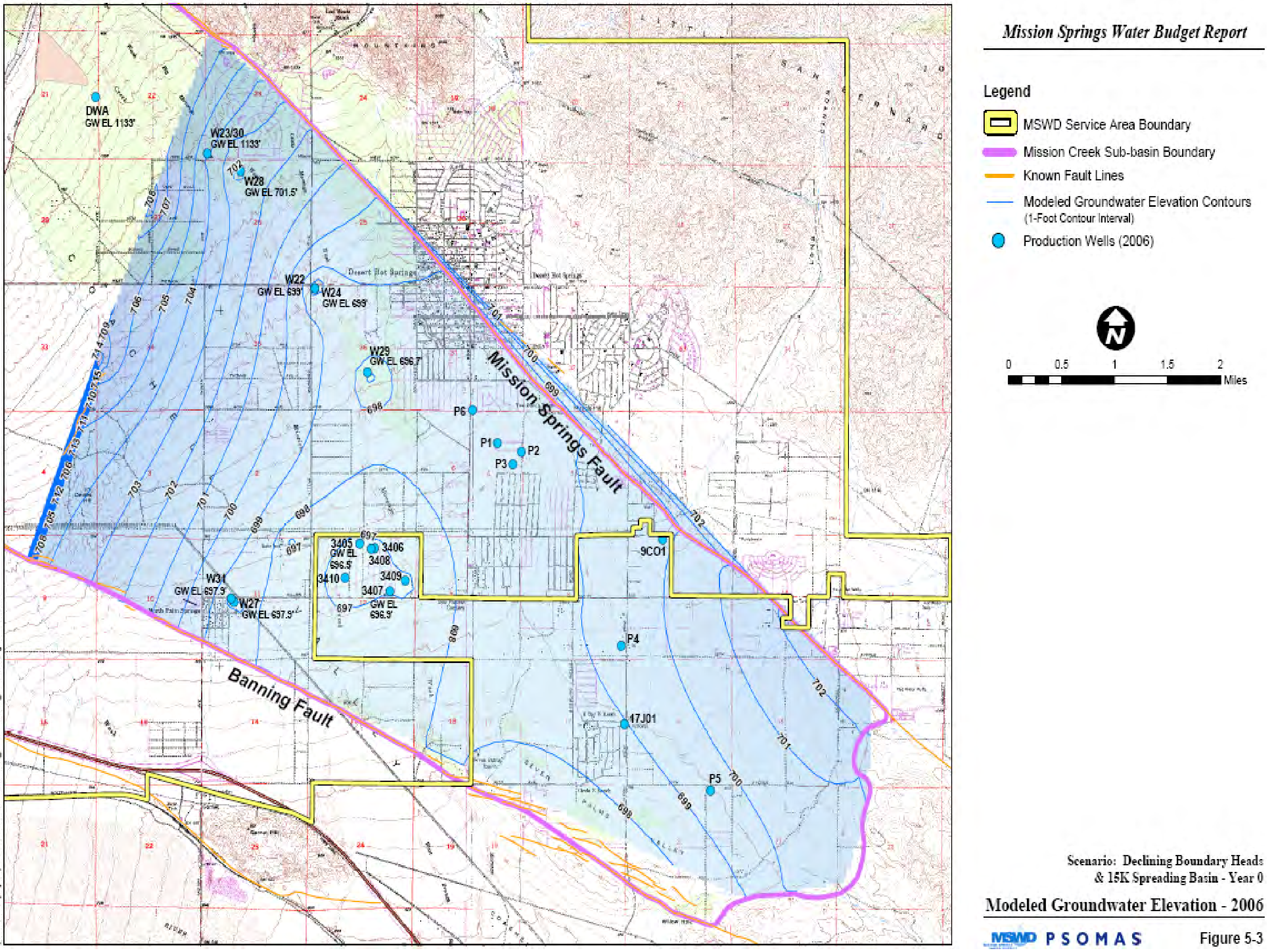


FIGURE 4.3-12
Modeled Groundwater Elevation - 2011

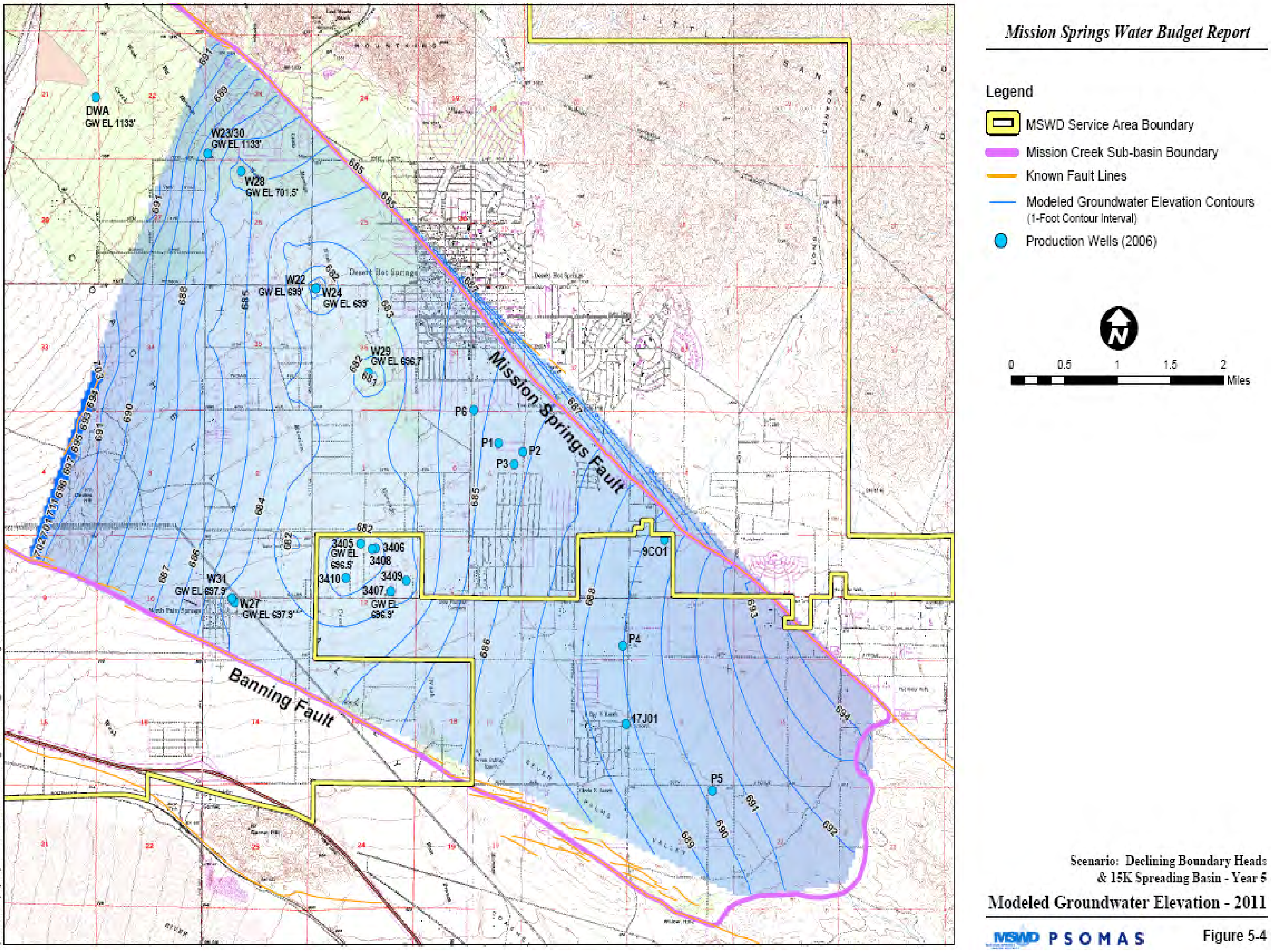


FIGURE 4.3-13
Modeled Groundwater Elevation - 2016

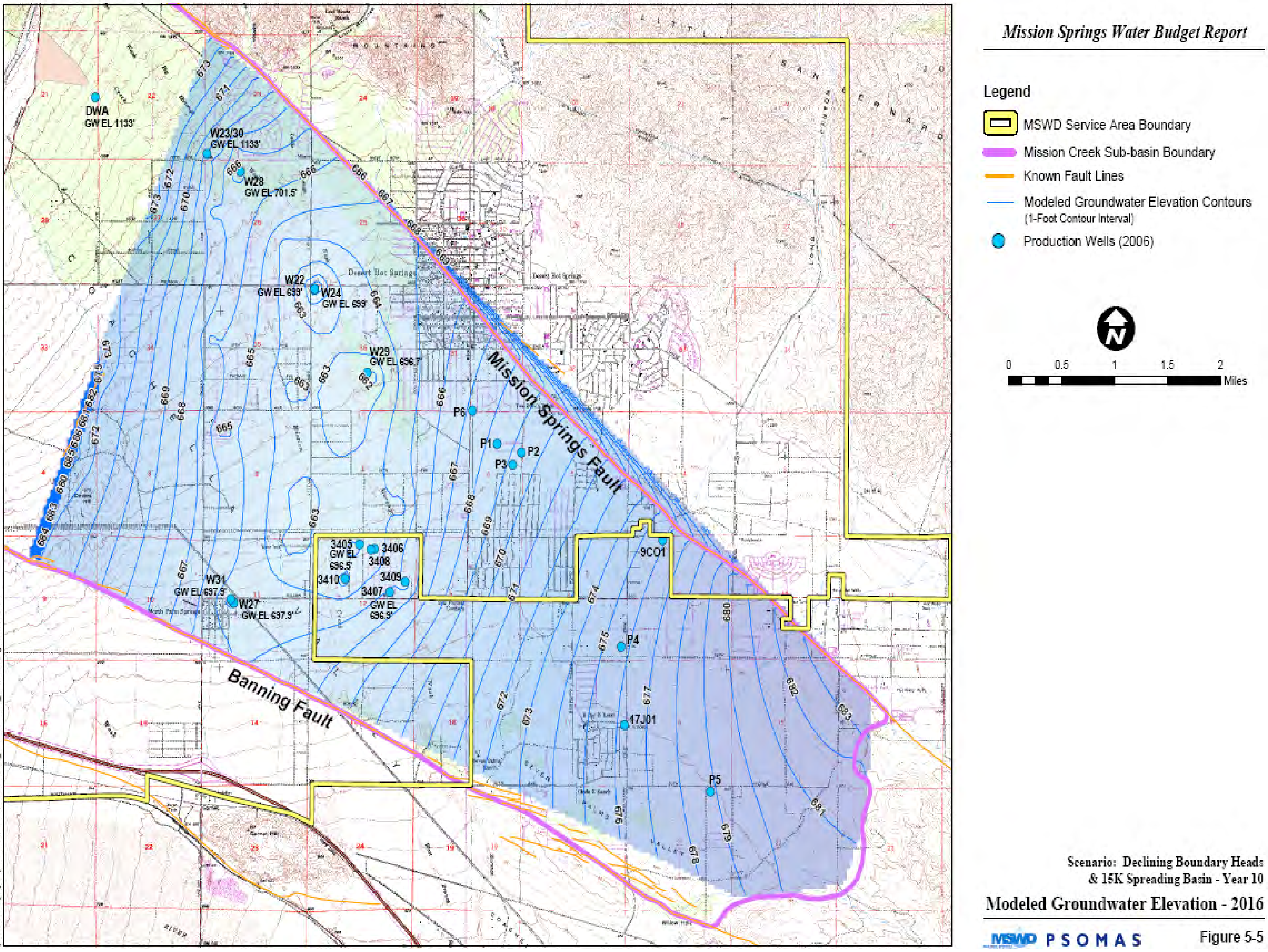


FIGURE 4.3-14
Modeled Groundwater Elevation - 2021

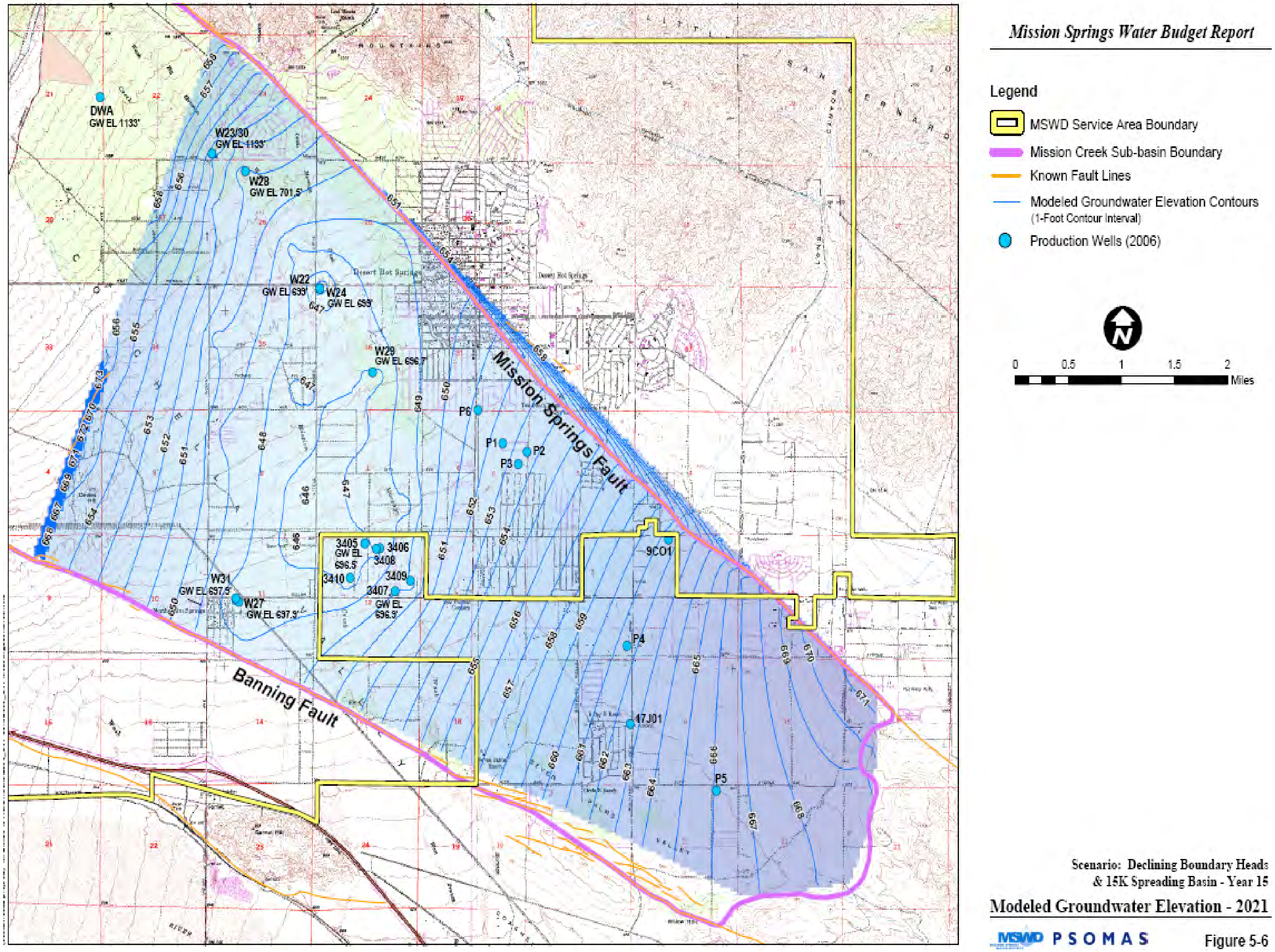


FIGURE 4.3-15
Modeled Groundwater Elevation - 2026

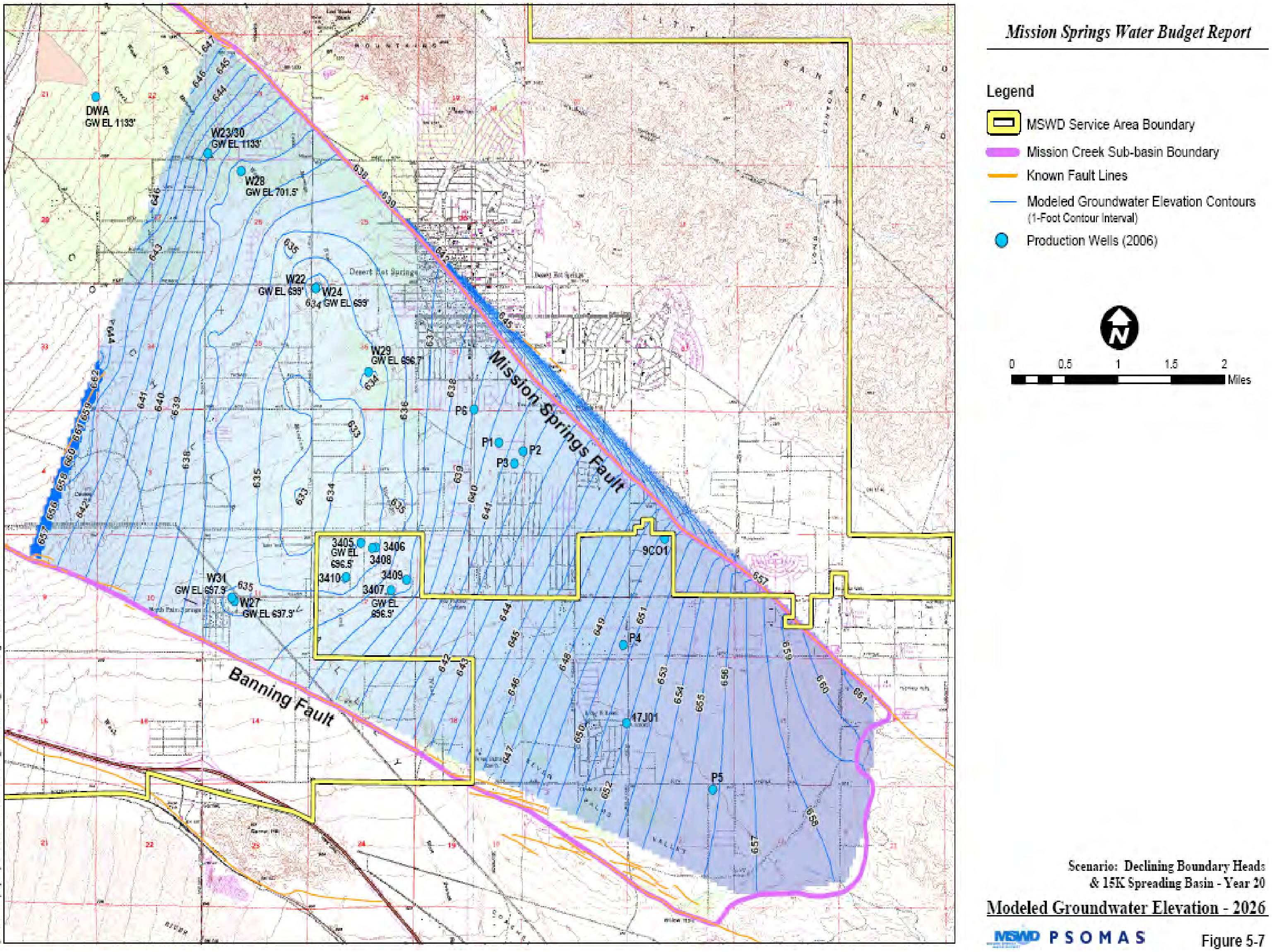


FIGURE 4.3-16
Modeled Groundwater Elevation - 2030

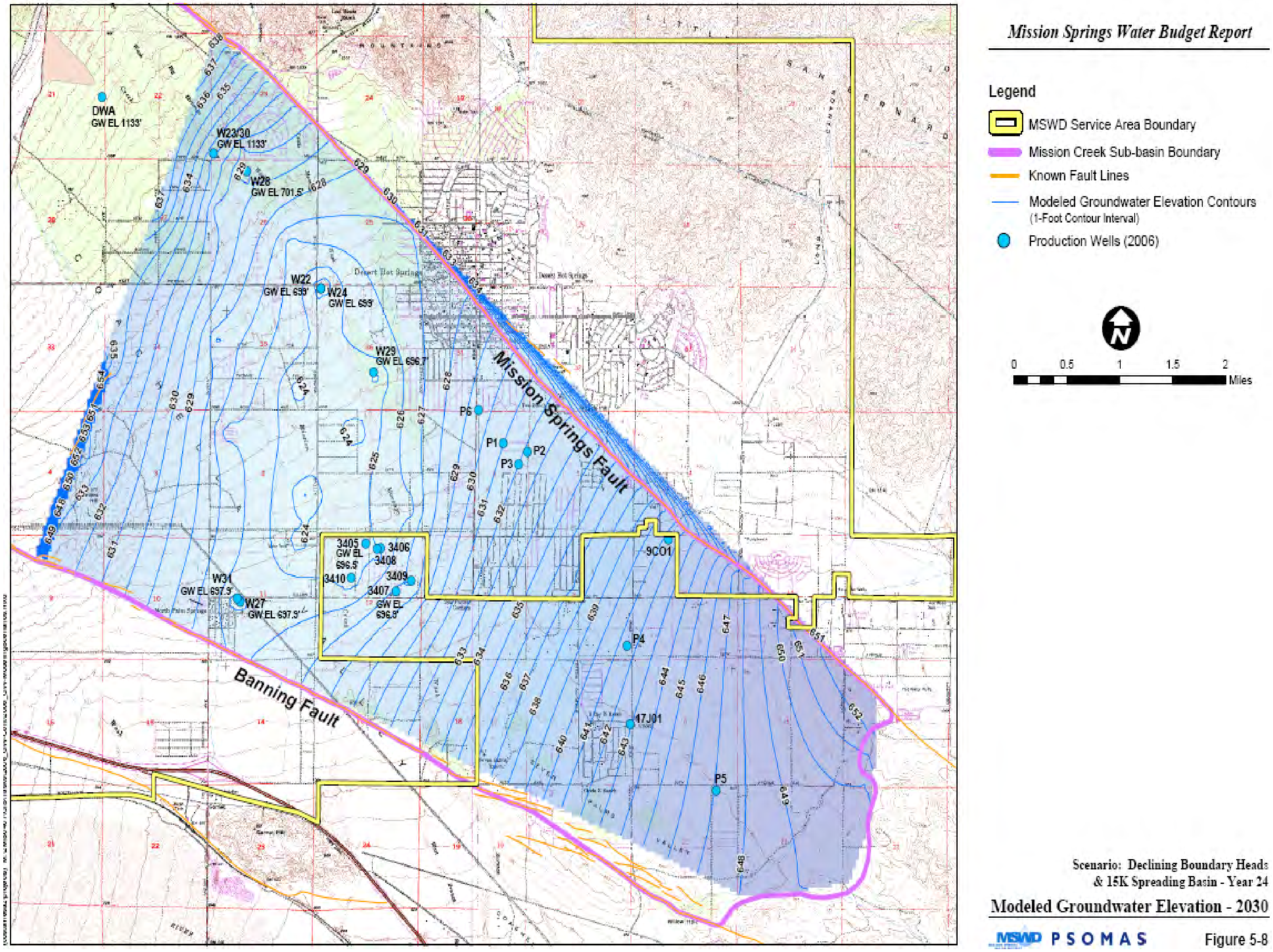
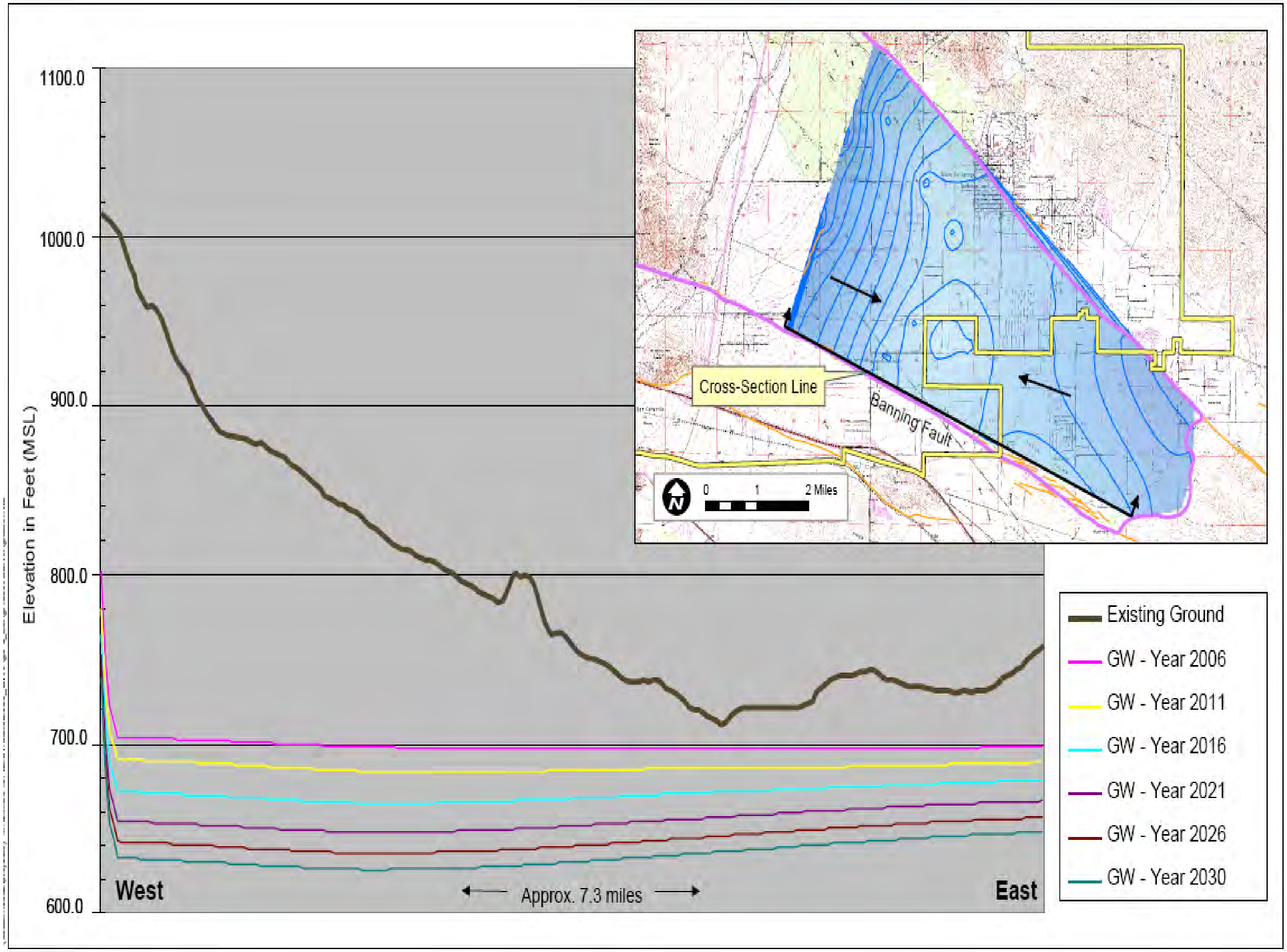
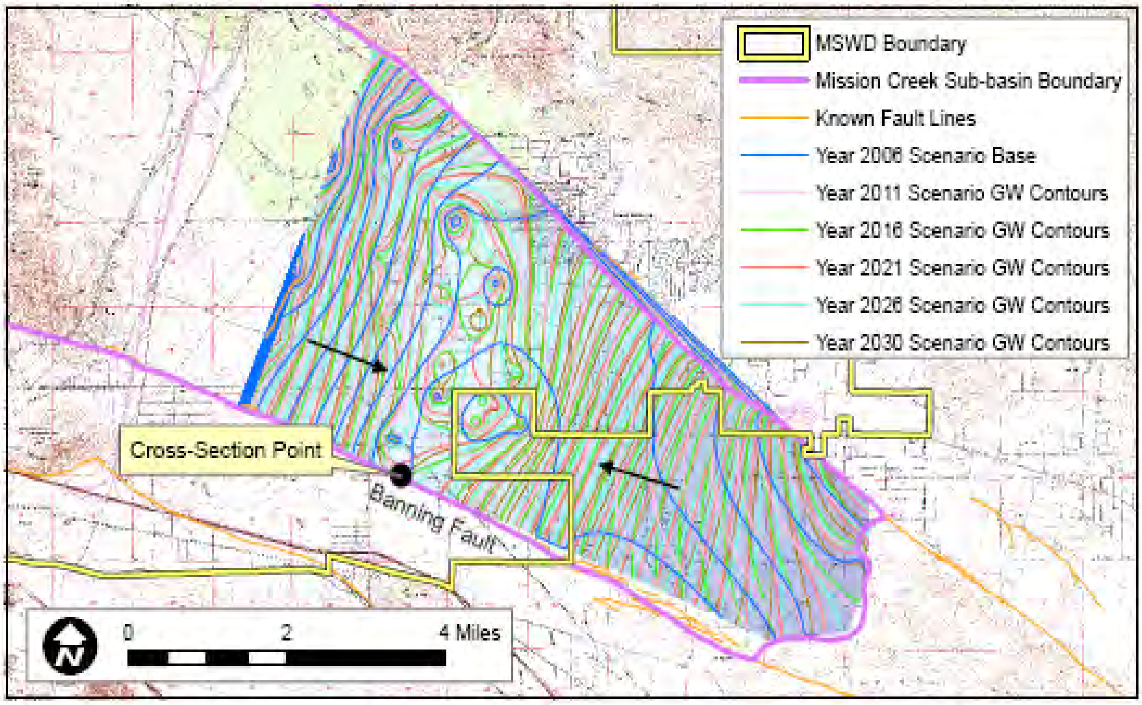


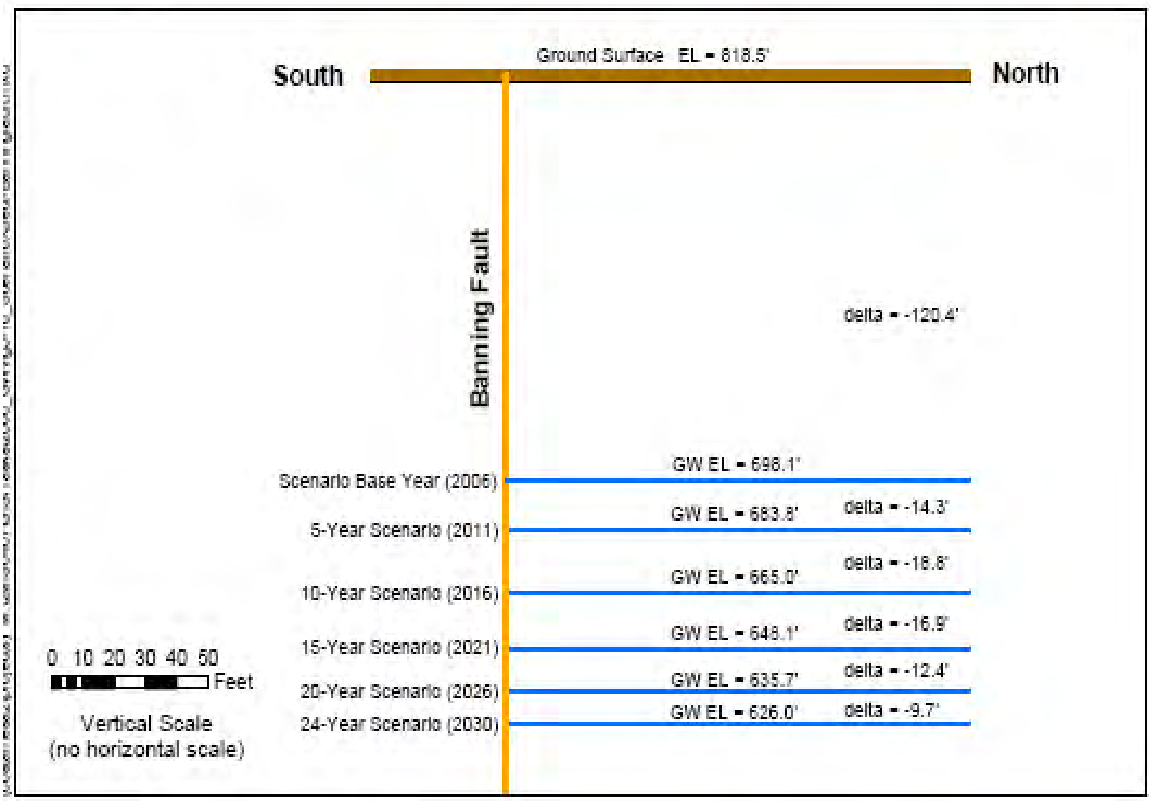
FIGURE 4.3-17
Groundwater Elevation Longitudinal Cross Section Along Banning Fault – All Scenarios



Source: Psomas

FIGURE 4.3-18
Groundwater Elevation Cross Section Point at Banning Fault – All Scenarios





Source: Psomas

4.4 BIOLOGICAL RESOURCES

4.4.1 Introduction

The Initial Study prepared for this project determined that implementation of the Water Master Plan (WMP) has the potential to adversely affect biological resources for all the issues evaluated. Potential impacts were determined to be potentially significant and are evaluated in this document. In response to the Notice of Preparation (NOP), two comment letters were received:

- The Center fo Biological Diversity identified the potential effects to biological resources from the continued extraction of groundwater. Of particular concern is that the EIR adequately identify and analyze direct, indirect and cumulative impacts to rare, sensitive, threatened and endangered species and unique plant communities and that alternatives to the proposed project that could avoid, mitigate and/or minimize the impacts be presented; and

- The California Department of Fish and Game (CDFG) stated that:

  » An assessment of the areas flora and fauna be identified with particular attention to endangered, threatened, locally unique and sensitive species and habitat;

  » An assessment of direct, indirect and cumulative impacts to biological resources with mitigation be provided;

  » A range of alternatives to the project be analyzed in an attempt to avoid or minimize potential impacts to biological resources;

  » A CESA Permit must be obtained if the project will result in “take” of plant or animal species listed under the CESA;

  » The CDFG opposes the elimination of watercourses, wetlands and riparian and aquatic habitat; and

  » CEQA is required for authorization of any activity covered under Fish and Game Code Section 1600 et seq.

The information in this section is derived from the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP), the County of Riverside General Plan, the California Natural Diversity Database (CNDDB), the CDFG California Wildlife, Conservation Challenges, and Federal Registry documents regarding species listing and critical habitat designations. Data contained in Section 4.3, Hydrology and Water Quality of this PEIR was also used to prepare the following evaluation. See sub-chapter 7.2 Bibliography for references.

4.4.2 Environmental Setting

The MSWD Service Area is primarily located within the Coachella Valley but also includes lower elevations of the Little San Bernardino Mountains on the north and the San Bernardino Mountains on the west. The Coachella Valley is a broad, low elevation, northwest-southeast trending valley comprising the westernmost limits of the Sonoran or Colorado Desert. Sonoran scrub habitat is the most widespread habitat community within the Service Area and often surrounds or occurs intermixed with other habitat communities. The scrub is dominated by creosote bush, burrobush, indigo bush, brittle brush, saltbush and California croton and is inhabited by many species including those that require large expanses of habitat such as the desert tortoise and Le Conte's thrasher. A small portion of the westerly extent of the MSWD Service Area is located within the San Gorgonio Pass.

The location of the MSWD Service Area is shown on Figure 2-2.

The range of elevation within the Service Area and accompanying differences in temperature and precipitation contribute to high biological diversity, with many biologically sensitive species adapted to survive in very specific and limited habitats. Higher elevations in the San Gorgonio Pass portion of the Service Area support chaparral communities dominated by chamise, scrub oak and ceanothus. Canyons in the mountainous areas support riparian habitat and streams that feed lower elevation desert dry wash, all of which are essential to migratory birds dependent upon riparian habitat. The alluvial fans associated with the canyon mouths and washes provide habitat for sensitive plants such as the triple ribbed milkvetch, Little San Bernardino Mountains Linanthus, and small mammals including the Palm Springs pocket mouse. Strong winds funnel through the San Gorgonio Pass from the west passing through areas where rivers have deposited sand and create an aeolian dune system that supports species such as the Coachella Valley fringe-toed lizard. Faulting associated with the San Andreas Fault creates groundwater damming that forces water towards the surface, where it supports desert fan palm oases or mesquite hummocks and species unique to these habitats.

4.4.2.1 Sensitive Species

This document evaluates the existing biological setting and the potential biological impacts that would result from implementation of the proposed project. Biological impacts may be considered significant under CEQA if sensitive species will be impacted, and adequate mitigation is not available to reduce impacts to a less than significant level. Sensitive species are native species that are afforded special legal status with management protection because of concern for their continued existence. Species may be protected by federal and/or state laws at varying levels depending on the available information regarding the magnitude of the threat to the species.

Both the California and Federal Endangered Species Acts provide legislation to protect the habitats of listed species as well as the species itself. If a state or federally listed threatened or endangered species were determined to be present within the area of impact, the proposed project may be constrained to avoid or minimize effects to the species. Species specific mitigation measures would need to be agreed upon and implemented to the satisfaction of agencies with jurisdictional over biological resources. These jurisdictional agencies may include some or all of the following: U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), the Regional Water Quality Control Board (RWQCB), and/or U.S. Army Corps of Engineers (COE).

The USFWS administers the federal Endangered Species Act (ESA) of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The meaning of "take" includes to harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct as well as to adversely modify habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act. The federal Migratory Bird Treaty Act protects all native migratory breeding birds, whether or not they are considered sensitive by resource agencies.

The CDFG administers the California Endangered Species Act (CESA). Both the state and federal laws consider a species endangered if prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A California State rare species is a native species that occurs in such small numbers throughout its range that it may become endangered if its present environment worsens. Further, all raptors and their nests are protected under Section 3503.5 of the California Fish and Game Code and all bird nests are protected under Section 3503 of the California Fish and Game Code. Species that are fully protected by the State of California include those protected by special legislation for various reasons, such as the California condor and big horned sheep. Species of Special Concern (SSC) is an informal designation used by CDFG for some declining wildlife species that are not proposed for listing as threatened or endangered, such as the burrowing owl. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFG.

The proposed project area is within the Coachella Valley MSHCP, which will be discussed in depth later in the chapter. In the event that the proposed project will impact a sensitive species, the MSWD may have the option to participate in the MSHCP. The MSWD would participate by mitigating impacts for proposed actions in accordance with the MSHCP in exchange for those impacts occurring under the MSHCP Take Permit.

If a project is not within the MSHCP area or if MSWD is not a participant in the Plan, MSWD would negotiate directly with the regulatory agencies in a manner similar to that which occurs without the MSHCP in place.

4.4.2.2 The California Natural Diversity Database Occurrence Overlay

The California Natural Diversity Database (CNDDB) was queried for a list of sensitive species that have been documented to occur within the USGS topographic quadrangles within which the Service Area is located. Some of the species identified may be historical records that represent past habitat conditions while others may occur in areas of the quadrangle that are outside of the Service Area boundaries. However, the full list of species and a brief habitat description is provided below because the precise location of many of the master planned facilities has not been selected.

Table 4.4-1
CNDDB OCCURRENCE OVERLAY FOR THE DESERT HOT SPRINGS, SEVEN PALMS VALLEY, MORONGO VALLEY AND WHITEWATER (USGS Quadrangles, 7.5 Minute Series)

Species	Status Federal / State / CNPS	Typical Habitat
Abronia Villosa var. *aurita* Chaparral sand-verbena	N / S2.1 / 1B.1	Grows in sandy, bare areas of chaparral and coastal sage scrub. Generally flowers from March through August.
Accipiter cooperii Cooper's Hawk	N / SC	Nests in live oaks woodlands and streamside groves of deciduous trees, especially in canyon bottoms on river floodplains.
Anniella pulchra pulchra silvery legless lizard	SC / SC	Found in sandy or loose loamy soils with a high moisture content under sparse vegetation.
Antrozous pallidus pallid bat	N / SC	Requires roosts that are protective from high temperatures. Most commonly found in open, dry habitats with rocky areas for roosting, but may occur in deserts, grasslands, shrublands, woodlands & forests. Very sensitive to disturbance of roosting sites.
Aquila chrysaetos golden eagle	N / SC DFG fully protected species	Nests in cliff-walled canyons or large trees and nests and winters in rolling foothills mountain areas, sage-juniper flats and desert.
Arabis pulchra var. munciensis Darwin rock cress	N / S1.3 / 2.3	Grows on limestone in chenopod scrub and Mojavean desert scrub between 1,100 and 2,075 meters.
Asio otus long-eared owl	N / SC	Nests in riparian bottomlands of tall willows and cottonwoods and in belts of live oak paralleling stream courses. Requires adjacent open lands for foraging and the presence of old nests of crows, hawks, or magpies for nests.
Aspidoscelis hyperythra orange-throated whiptail	N / SC	Inhabits washes and other sandy areas with patches of brush and rocks with sufficient perennial plants to sustain termite populations in low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats.
Astragalus lentiginosus var. *coachellae* Coachella Valley milkvetch	E / S2.1 / 1B.2	An erect winter annual, or short-lived perennial 8 to 12 in tall and covered with white-silky hairs. It blooms from February to May, producing pink to deep magenta-colored flowers. It is distinguished in part from other milkvetches by its strongly inflated, two-chambered, mottled pods. It grows on loose wind-blown and alluvial sands on dunes and flats in the Coachella Valley area of the Sonoran Desert near Palm Springs between 60-360m. Endemic to the Coachella Valley, Riverside County.

Species	Status Federal / State / CNPS	Typical Habitat
Astragalus tricarinatus triple-ribbed milk-vetch	E / S1.2 / 1B.2	A short-lived perennial, persisting for about 3 to 5 years about 12-20 inches tall. The lower stem is somewhat woody, with a tap root. The white to pale cream-colored flowers appear from February through April, with fruits appearing as early as March and present until at least May. The fruits are distinctive, narrow pods, 2 to 4 cm long and three-ribbed in cross section. Grows on hot, rocky slopes in canyons and along edge of boulder-strewn desert washes often with *Larrea* and *Encelia* in Joshua tree woodland and Sonoran desert scrub. Habitat preferences are poorly understood. It is known only from Riverside and San Bernardino Counties between 450-790m.
Athene cunicularia burrowing owl	SC / SC	This species is a subterranean nester, dependent upon burrowing animals such as ground squirrels and desert tortoise for burrow sites. Inhabits open, dry annual or perennial grasslands as well as deserts and scrublands characterized by low-growing vegetation.
Calochortus palmeri var. palmeri Palmer's mariposa lily	N / S2.1 / 1B.2	Grows in vernally moist places in yellow-pine forest, chaparral, meadows and seeps between 600 and 2,245m
Chaetodipus fallax fallax northwestern San Diego pocket mouse	N / SC	Inhabits sandy, herbaceous areas, usually in association with rocks or coarse gravel in coastal scrub, chaparral, grasslands and sagebrush habitats of western San Diego County.
Chaetodipus fallax pallidus pallid San Diego pocket mouse	N / SC	Inhabits sandy herbaceous areas, usually in association with rocks or coarse gravel in in desert wash, desert scrub, desert succulent scrub, pinyon-juniper and other desert border areas in eastern San Diego County.
Chamaesyce arizonica Arizona spurge	N / S1.3 / 2.3	Grows on sandy soils in Sonoran desert scrub between 50 and 300 meters.
Charina trivirgata rosy boa	SC / S3 S4	Inhabits habitats with a mix of brushy cover and rocky soil (desert and chaparral) from the coast to the Mojave and Colorado Deserts.
Chorizanthe parryi var. *parryi* Parry's spineflower	N / S2.1 / 3.2	Grows on dry, sandy slopes and flats of coastal scrub and chaparral sometimes at interface of 2 vegetation types such as chaparral and oak woodland. Occurs between 40-1705m.
Chorizanthe xanti var. *leucotheca* white-bracted spineflower	N / N / 1B.2	Grows in Mojave desert scrub and pinyon juniper woodland between 300-1200 meters.
Crotalus ruber ruber northern red-diamond rattlesnake	N / SC	Occurs in rocky areas with dense vegetation and rodent burrows, cracks in rocks or surface cover objects in chaparral, woodland, grassland and desert habitats from coastal San Diego County to the eastern slopes of the mountains.
Dendroica petechia brewsteri yellow warbler	N / SC	Most often nests in riparian areas with willows, cottonwoods, aspens, sycamores and alders but also in montane shrubbery in open conifer forests.

Species	Status Federal / State / CNPS	Typical Habitat
Dinacoma caseyi Casey's June Beetle	N / N	Occur on fine alluvial terraces and in dry washes, at the point in the slope of the terrain where the organic debris slowly filters out and is deposited as the surface flows abate along the southern edge of the Coachella Valley. Males fly at dusk on warm nights generally from late May through June in search of flightless females. Frank Hovore observed this species emerging from open sandy areas without any plants nearby, and from around the periphery of many different plants. Based upon these observations he concluded that if larvae eat roots, they are adventitious feeders on whatever is available, but they are likely to be detritivores.
Eremarionta morongoana Morongo (=Colorado) desertsnail	N / S1	Known only from under rocks in a gulch on the north side of Morongo Pass (type locality) in San Bernardino County near the Riverside County line.
Euphorbia misera cliff spurge	N / S3.2 / 2.2	Grows on rocky sites in coastal bluff scrub, coastal scrub between 10-500 meters in southern California, Baja and on Guadalupe Island.
Falco mexicanus prairie falcon	N / SC	Nests on cliffs in dry, open terrain. Forages far afield, even to marshlands and ocean shores.
Gopherus (*Xerobates*) *agassizii* Desert Tortoise	T / T	Most common in desert scrub, desert wash, and Joshua tree habitats, but occurs in almost every desert habitat. Requires friable soil for burrow and nest construction, and prefers Creosote bush habitat with large annual wildflower blooms.
Icteria virens Yellow-breasted chat	N / SC	A summer resident that nests in low, dense riparian growth consisting of willow, blackberry and wild grape. It forages and nests within 10 feet of the ground.
Linanthus maculatus Little San Bernardino Mountains linanthus	N / S1.2 / 1B.2	This minute plant requires soft-to-the-touch, open sandy flats with few or no competing species and no large shrubs or trees in the immediate area. Usually grows in light-colored quartz sand often in washes and bajadas between 195-2075 meters in desert dunes, Sonoran desert scrub, Mojave desert scrub, Joshua tree woodland. Only known from Riverside and San Bernardino Counties.
Macrobaenetes valgum Coachella giant sand treader cricket	SC / S1S2	Occurs exclusively in the active sand hummocks and dunes in the Coachella Valley. Abundance is generally associated with winter rains; however, populations are more predictable near springs. Their preferred habitat in windblown environments is dominated by perennial shrubs including creosote bush, burrobush, honey mesquite, Mormon tea, desert willow, and sandpaper bush. Stabilized sand areas appear to be avoided.
Mesquite Bosque	N / S2.1	This habitat occurs within the Service Area.
Mojave Riparian Forest	N / S1.1	This habitat occurs within the Service Area.
Myiarchus tyrannulus brown-crested flycatcher	N / SC	Requires riparian thickets, trees, snags, and shrubs for foraging perches, nesting cavities, and cover as found in desert riparian forest and desert oases.

Species	Status Federal / State / CNPS	Typical Habitat
Nemacaulis denudata var. *gracilis* slender woolly-heads	N /S2S3/ 2.2	Prefers well developed dunes usually in the desert but rarely along coastal beaches between 0-560 meters. In California it is known only from San Diego and Riverside Counties.
Neotoma lepida intermedia San Diego desert woodrat	N / SC	Abundant in rock outcrops and rocky cliffs and slopes with moderate to dense canopies preferred in coastal southern California from San Diego County to San Luis Obispo County
Ovis canadensis nelsoni Nelson's bighorn sheep	N / S3	This species is widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. It occurs in open, rocky, steep areas with available water and herbaceous forage.
Ovis canadensis nelsoni dps peninsular ranges bighorn sheep	E / T DFG fully protected species	The Peninsular bighorn sheep is restricted to the east facing, lower elevation slopes (below 1400 meters) of the Peninsular Ranges in the Sonoran desert life zone. Critical habitat and essential habitat identified in the MSHCP species map are located south of I-10 in the mountainous regions.
Parnopes borregoensis cuckoo wasp	N / S1?	DFG considers this species to be a state endemic special status species. It occurs in other habitats within the state in addition to the Colorado Desert. No specific habitat data was found for this species.
Perognathus longimembris bangsi *Palm Springs pocket mouse*	N / SC	Occurs on level to gently sloping topography with sparse to moderate vegetative cover and loosely packed or sandy soils. This subspecies occurs in the lower Sonoran life zone from the San Gorgonio Pass area east to the Little San Bernardino Mountains and south along the eastern edge of the Peninsular Range to Borrego Valley and the east side of San Felipe Narrows.
Phrynosoma coronatum (blainvillei population) San Diego horned lizard	N / SC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.
Phrynosoma mcallii flat-tailed horned lizard	PT / SC	Requires fine sand for burrowing into to avoid temperature extremes, vegetation cover and ants. Ants, especially harvester ants, comprise about 98% of their diet. Restricted to desert washes and desert flats in central Riverside, eastern San Diego and Imperial Counties.
Piranga rubra Summer Tanager	N / SC	Summer resident of cottonwood-willow riparian thickets where it nests and forages. Prefers older, dense stands along streams in California deserts.
Pyrocephalus rubinus vermillion flycatcher	N / SC	Nests in cottonwood, willow, mesquite, and other large desert riparian trees.
Rana muscosa mountain yellow-legged frog	E / SC	Adults are always encountered within a few feet of water. Tadpoles may require up to 2 yrs to complete their aquatic development.
Saltugilia latimeri Latimer's woodland-gilia	N / S2.2 / 1B.2	Grows on rocky or sandy substrate with chaparral or Mojavean desert scrub between 400 and 1900 meters.

Species	Status Federal / State / CNPS	Typical Habitat
Spermophilus tereticaudus chlorus Palm Springs round-tailed ground squirrel	C / SC	Prefers open, flat, grassy areas in fine-textured, sandy soil. Density is correlated with winter rainfall. Restricted desert succulent scrub, desert wash, desert scrub, alkali scrub and levees to the Coachella Valley.
Stenopelmatus cahuilaensis Coachella Valley jerusalem cricket	N / S1 S2	Inhabits the large, undulating dunes piled up at the north base of Mt San Jacinto in the vicinity of Palm Springs.
Taxidea taxus American badger	N / SC	Most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils. Requires sufficient food, friable soils and open, uncultivated ground that supports burrowing rodents.
Thamnophis hammondii two-striped garter snake	N / SC	Highly aquatic species found in or near permanent fresh water, often along streams with rocky beds and riparian growth. Occurs in coastal California from vicinity of Salinas to northwest Baja California from sea to about 7,000 ft elevation.
Toxostoma lecontei Le Conte's Thrasher	SC / SC	Primarily occurs in open desert washes, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat usually 2-8 feet above ground.
Uma inornata Coachella Valley fringe-toed lizard	T / E	Requires fine, loose, windblown sand (for burrowing), interspersed with hardpan and widely spaced desert shrubs. Limited to sand dunes in the Coachella Valley, Riverside County.
Vireo bellii pusillus least Bell's vireo	E / E	Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, mesquite. In low riparian, in vicinity of water or in dry river bottoms below 2000 ft.

Coding and Terms			
E = Endangered R = Rare	T = Threatened C = Candidate	SC = Species of Concern PT = Proposed Threatened	N = None PE = Proposed Endangered N / A = Not Applicable
Federal Species of Concern: "taxa for which the U.S. Fish and Wildlife Service has information that indicates proposing to list the taxa as endangered or threatened is possibly appropriate, but for which substantial data on the biological vulnerability and threats are not currently known or on file to support the immediate preparation of rules." (Arnold). All of these species have a limited range. In fact, some species are limited to the San Bernardino Mountains area, however, they are locally common.			
State Species of Special Concern: An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: "It is unlawful to take, posses or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird."			

Coding and Terms
State Plant Rankings: S1 - less than 6 element occurrences, or less than 1,000 individuals, or less than 2,000 acres S2 - 6 to 20 element occurrences, or between 1,000 and 3,000 individuals, or between 2,000 and 10,000 acres S3 - 21 to 100 element occurrences, or between 3,000 and 10,000 individuals, or between 10,000 and 50,000 acres S4 - No Threat Rank S5 - No Threat Rank .1 - very threatened SH - all sites in California are historical .2 - threatened .3 - no current threats known
CNPS Plant Rankings: 1A- presumed extinct in California 1B - Rare, Threatened or Endangered in California and elsewhere 2 - Rare, Threatened or Endangered in California but more common elsewhere 3 - Plants for which more information is needed 4 - Plants with a limited distribution CNPS Threat Code .1 - Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat) .2 – Fairly endangered in California (20-80% occurrences threatened) .3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

As stated previously, the species and habitat list provided above may include species or habitats that will not ultimately be impacted by implementation of the proposed WMP because the precise location of many of the master planned facilities has not been selected. Environmental impacts resulting from proposed project infrastructure necessary to implement later phases of the proposed project that are not evaluated herein will require a second-tier, project-specific evaluation under CEQA to allow a final determination of the significance of the impact. Such review is appropriate and consistent with utilization of a program environmental document in accordance with Sections 15162 and 15168 of the State CEQA Guidelines. Mitigation is provided in Section 4.4.5 for potential impacts that are identified by this level of evaluation.

4.4.3 <u>Regulatory Setting</u>

4.4.3.1 Coachella Valley MSHCP

The diverse habitats and many sensitive species that occur within the MSWD Service Area and the greater Coachella Valley watershed have led to the development of the Coachella Valley MSHCP/Natural Communities Conservation Plan (Plan or MSHCP) that includes portions of the MSWD Service Area. While the MSHCP has not been adopted, it is in its final review period and it is anticipated that the final Plan will not vary substantially from its final draft version. Data contained in the MSHCP provides the most extensive evaluation of biological resources in the MSWD Service Area and these data will be utilized in this PEIR to evaluate this projects potential impacts to biological resources. Much of the following information is excerpted directly from the recirculated MSHCP.

The MSHCP has been developed under the Federal and California Endangered Species Acts and the California Natural Community Conservation Planning Act (Fish and Game Code Section 2800 et seq.) with the goal of maintaining the ecological integrity of the Coachella Valley while streamlining the regulatory process with respect to potential effects on sensitive biological resources. Ultimately, the MSHCP intends to develop a reserve system of protected lands that provide sufficient habitat appropriately configured to maintain viable populations of the 27 species of plants and animals covered in the Plan. The 27 species covered by the MSHCP include species that are either (1) currently listed by USFWS or CDFG as rare, threatened, or endangered; or (2) could become listed in the foreseeable future. The Plan identifies and protects important ecological processes necessary to maintain included species and their habitats, such as sand source and transport for sand dunes and groundwater depth for oases and hummocks. The reserve system will be created by a network of existing public and private protected areas and new protected areas that are procured through Plan development and mitigation fees.

The Final MSHCP was published in February 2006. Fourteen permittees (cities and other entities; hereafter local permittees) approved the Plan. The City of Desert Hot Springs elected not to participate in the Plan. The Recirculated Draft Coachella Valley MSHCP released in March 2007 addressed public comments received on the 2006 Final MSHCP and removed the City of Desert Hot Spring as a permittee to the Plan. The public comment period on the Recirculated Draft closed on Wednesday, May 30, 2007. Implementation of the MSHCP will be overseen and administered by the Coachella Valley Conservation Commission (CVCC), a joint powers authority formed by the Local Permittees. Much of the MSWD Service Area within which the WMP proposes to develop water facilities is within the City of Desert Hot Springs which may not be included in the MSHCP. The remainder of the MSWD Service Area is within the Plan area and while the MSWD is not a signatory to the Plan, MSWD may elect to participate as a "Participating Special Entity" as defined in the Plan. Participating Special Entities (PSE) are any public service provider, such as a utility district, that operates facilities and/or owns land within the Plan Area. Take Authorization may be granted to a PSE for its activities that comply with all of the terms and requirements of the Permits and Implementing Agreement. The decision to participate in the MSHCP as a PSE and the formalization of this status is not expected to occur prior to the adoption of the MSHCP, which cannot occur until after the recirculated MSHCP comment period ends. If MSWD does not elect to participate in the Plan or if MSWD projects are located outside of the MSHCP area, then any project-related impacts to threatened or endangered species will require procural of required permits directly from the resource agencies in a manner similar to that which occurs without the MSHCP in place.

4.4.3.2 Surface Waters/Wetlands/Riparian Zones Regulatory Aspects

<u>California Department of Fish and Game Section 1603</u>

The California Department of Fish and Game takes jurisdiction over water flow areas, i.e. streams. These water flow areas are identified in the code as:

> "...natural flow or bed, channel or bank of any river stream of lake designated by the department in which there is at any time an existing fish aor wildlife resource or from which these resources derive benefit or will use material from the streambeds..."

Although river is never defined in the Fish and Game Code; a river is defined by Webster as: "A natural stream of water larger than a creek and emptying into an ocean, lake or another river". Further, Webster defines a stream as a small river.

In order to quantify the acreage of "Streambed," channels are usually walked and measurements of the discernable bed or banks are taken at approximately 100-foot intervals. The acreages are then calculated from these measurements.

U.S. Army Corps of Engineers "Waters of the United States", excluding wetlands

The limits of "waters of the United States", excluding wetland, are defined in 33 CFR 328.3(a) as those areas within the "ordinary high water mark" (OHWM). The OHWM is defined as:

> "...that line on the shore established by the fluctuations of the water and indicated by physical characteristics such as clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

In order to quantify the acreage of "Waters of the United States", channels are walked and measurements of the OHWM are taken at approximately 100-foot intervals. The acreages are then calculated from these measurements.

U.S. Army Corps of Engineers "Wetlands"

The conclusions in this determination and the subsequent delineation of the Jurisdictional Wetlands are based upon The U.S. Army Corps of Engineers' Wetland Delineation Manual, January 1987, Technical Report Y-87-1 (Manual). This Manual outlines a comprehensive approach based upon the presence of the following three parameters: wetland hydrology, hydrophytic vegetation, and hydric soils.

Wetland hydrology is present if the "sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation"(Manual). Hydrophytic vegetation is "the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Manual). A positive hydrophytic vegetation indicator is present if the prevalence, characterized by the dominant species of a plant community or communities, of the vegetation is classified as hydrophytic vegetation. Dominant plant species are those that contribute more to the character of a plant community than other species present, as estimated or measured in terms of some ecological parameter (i.e. %cover, %density, etc.). Hydric soil is a "soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation."

Using this Manual, a wetland determination is made when under "normal circumstances" an area has all three parameters present. An area is not functioning under normal circumstances if a positive indicator for one of the three parameters could not be found due to effects of recent human activities. If a particular site has been recently disturbed by natural or human activities, it may not meet the criteria of "normal circumstances". If this occurs it would be classified as an "Atypical Situation" meaning one or more parameters are not reliable indicators.

To complete a Jurisdictional Wetland Delineation, all three parameters are investigated: soils, hydrology and vegetation. The Manual describes inundation greater than one month to be a "very long duration", therefore areas that were ponded, or were saturated at the surface or within the root zone (usually 1-12 inches). The hydrophytic vegetation is characterized by plant species that have "demonstrated an ability to achieve maturity and reproduce in an environment where all or portions of the soil within the root zone become, periodically or continuously, saturated or inundated during the growing season." (Reed) The National List of Plant Species That Occur in Wetlands is used to determine the indicator status of the dominant species of a community. The wetland area is delineated by looking for vegetation boundaries in the field between communities dominated by Facultative Wetland Species - Obligate Wetland Species and those dominated by Facultative Upland - Upland species, and comparing the hydrological and soils data along the vegetation transition.

4.4.4 Project Impacts

Implementation of the WMP has the potential to impact biological resources both directly and indirectly. Direct impacts are associated with construction of the proposed facilities. The construction of the facilities identified in the WMP can result in the physical disturbance of both plant and animal species during site preparation. Operation of the facilities has the potential to affect biological resources through the generation of noise by equipment and human activities at facility sites such as repair, maintenance, monitoring, etc. of the equipment. Operation of the wells proposed by the WMP also has the potential to affect biological resources by contributing to the overdraft of the MCGS. The only other groundwater basin for which the WMP proposes to extract water is the SGPGS. The WMP proposes the development of one new well. Based on data provided in sub-chapter 4.3.2.1 of this PEIR, the potential for the WMP to have a significant adverse effect on the quantity of groundwater in the SGPGS and consequently, biological resources within the that subbasin is considered less than significant. An evaluation of the potential effects of implementing the WMP on water and water quality within the MSWD Service Area is provided in subchapter 4.3, Hydrology and Water Quality of this PEIR.

The WMP identifies a series of water system improvements that are forecast to be needed to meet existing and future water needs within the MSWD Service Area. However, the WMP does not identify specific locations for most of the proposed facilities. In the future, when specific sites are selected, second-tier site specific evaluations must be prepared to evaluate the projects potential impacts. Such review is appropriate and consistent with utilization of a program environmental document in accordance with Sections 15162 and 15168 of the State CEQA Guidelines. A suite of mitigation measures is provided to minimize or eliminate potential impacts to biological resources. Such review is appropriate and consistent with utilization of a program environmental document in accordance with Sections 15162 and 15168 of the State CEQA Guidelines.

At this time, MSWD has identified two sites that have been selected for development of water storage facilities. The Terrace and Vista reservoirs will be constructed on or adjacent to existing MSWD facilities. The MSWD has also selected a site for the 1400 Zone well and booster pump station and identified a pipe alignments associated with these facilities. Site-specific mitigation measures are provided for these projects.

4.4.4.1 Thresholds of Significance

The Initial Study Environmental Checklist Form (Appendix G of the State's CEQA Guidelines) provides recommendations for determining the significance of project-related impacts. The

Checklist Form (Issue #IV, Biological Resources) identifies the following criteria for determining whether a project may cause a significant adverse biological resource impact:

a. have a substantial adverse direct or indirect effect on any species identified as a candidate, sensitive, or special status species;

b. have a substantial adverse effect on riparian habitat or other sensitive natural community;

c. have a substantial adverse effect on federally protected wetlands;

d. substantially interfere with the movement of native fish or wildlife species, migratory wildlife corridors, or impede the use of native wildlife nursery sites;

e. conflict with local policies or ordinances protecting biological resources; or

f. conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved habitat conservation plan.

These thresholds of significance will be utilized in this PEIR to evaluate the potential impacts associated with implementation of this project.

4.4.4.2 Impact Analysis

a. Will the project have a substantial adverse direct or indirect effect on any species?

Data contained in the MSHCP provides the most detailed description of the biological resources that occur within the area covered by the WMP and, therefore, the best data to forecast potential impacts associated with implementation of the WMP. Therefore, this PEIR will rely heavily on data contained in the MSHCP regarding biological resources occurring in the project area. The MSHCP also identifies mitigation for potential impacts to biological resources that the regulatory agencies (USFWS, CDFG, RWQCB, COE) have determined to be adequate to reduce potential impacts to biological resources to a less than significant level. At this time, the MSHCP has not been adopted and MSWD has not determined if it will become a Participating Special Entity (PSE). Should the MSHCP not be adopted or should implementation of the WMP include projects located outside the Plan area or should MSWD not become a PSE, permits needed to implement the project must be obtained through application and negotiations with the appropriate regulatory agencies in a manner similar to that which currently exists.

The MSHCP will provide take authorization for Covered Activities within the Plan area outside of Conservation Areas as well as limited take authorization within the Conservation Areas. Covered Activities include development permitted or approved by Local Permittees, public facility operations and maintenance and safety activities by the Local Permittees for existing and future facilities and emergency response activities by Permittees required to protect the public health, safety, and welfare. Water development, production, storage, treatment, and transmission facilities and reclaimed water storage and transmission facilities are explicitly listed as Covered Activities outside of Conservation Areas in the MSHCP. Covered activities within Conservation Areas includes development permitted or approved by Local Permittees (in compliance with the Plan). The MSHCP does not provide Take Authorization for agricultural operations.

A PSE must submit a complete application for the proposed activity to the CVCC containing a detailed description of the proposed activity, a map indicating the location of the proposed activity and an analysis of its potential impacts to Covered Species and their Habitats and to the MSHCP Reserve System. If CVCC staff and the Wildlife Agencies concur that the proposed activity complies with all terms and requirements without compromising the MSHCP Permits and the MSHCP Reserve System, the project can be included as a Covered Activity after completion of required actions. Mitigation fees will be assessed for conversion of agricultural land to a non-agricultural use and for small vacant lots within urban areas that still contain natural open space, as well as for large vacant areas whether or not the species habitat distribution models and natural communities map prepared for the Plan show habitat or a natural community on the parcels. PSEs will be required to pay a fee or other appropriate measures as may be agreed to by the CVCC and the Wildlife Agencies for activities within the Plan Area in addition to an administration fee.

The MSHCP in the City of Desert Hot Springs

As a result of the decision by the City of Desert Hot Springs not to participate in the Plan, private lands within the city limits of Desert Hot Springs are not afforded Take Authorization by the Plan as depicted in Figure 4.4-1 of this PEIR (Figure 12A of the MSHCP). The Revised MSHCP reduces the Mission Creek/Big Morongo Canyon Conservation Area by only 400 acres because the bulk of the area removed from the Conservation Area is placed in the Morongo Wash Special Provisions Area. These publically and privately owned lands have been delineated to address a potential Morongo Wash flood control facility and an associated habitat conservation corridor. Some lands within the City that are owned by agencies such as Riverside County Flood Control (Mission Creek) or BLM are included within the Conservation Area. Other lands within the city limits of Desert Hot Springs that are not within the land use authority of any Permittee under the Plan are not included in the Upper Mission Creek/Big Morongo Canyon Conservation Area. Some acreage that had been within the northern extent of the Conservation Area along the Morongo Wash has been removed, but it had been a Special Provisions Area that would have been granted Take Authorization once other portions of the Conservation Area had been protected. The only other substantial change to the revised Upper Mission Creek/Big Morongo Canyon Conservation Area is the exclusion from the Conservation Area of some privately owned parcels west of 62 that are surrounded or nearly surrounded by existing public conservation lands. The MSHCP states that portions of the lands within the City limits west of Highway 62 have important biological value as Core Habitat for desert tortoise and as Other Conserved Habitat for Le Conte's thrasher and Palm Springs pocket mouse.

It is not clear if PSE status within the MSHCP will be an option for MSWD for projects within the City of Desert Hot Springs that are not located within the Morongo Wash Special Provisions Area or within the jurisdiction of CVAG, County Flood Control or other permittee. If not, the MSWD must pursue take permits and regulatory concurrence for any impacts to threatened and endangered species directly with the regulatory agencies, as described previously. The proposed Terrace Reservoir is located within the City of Desert Hot Springs.

The Morongo Wash Special Provisions Area establishes minimum dimensions and conservation acreage to maintain a biological corridor for the Palm Springs pocket mouse. Loss of functional connectivity for Palm Springs pocket mouse between Core Habitat in the Upper Mission Creek/Big

Morongo Canyon and the Willow Hole Conservation Area is defined by a cumulative narrowing of Palm Springs pocket mouse habitat to less than 600 feet wide for a length along Big Morongo Wash/Morongo Wash (Indian Avenue to Varner Avenue) of more than 2,000 feet, or any single narrowing or constriction of Palm Springs pocket mouse habitat to less than 300 feet wide for a length along Morongo Wash of more than 200 feet. The loss of this connectivity function must be offset through acquisition of an additional 1,400 acres of high function habitat for Palm Springs pocket mouse, beyond that required elsewhere in the Plan, within or adjacent to the Willow Hole, Upper Mission Creek/Big Morongo Canyon, Long Canyon, and/or Snow Creek/Windy Point Conservation Areas. If acreage within the Morongo Wash Special Provisions Area is not protected in sufficient quantity and is not offset with sufficient acreage in other occupied habitats as described in the Plan, coverage for Palm Springs pocket mouse and/or Little San Bernardino Mountains linanthus by the MSHCP will be automatically terminated.

Requirements within the MSHCP

Public Utility actions inside the Conservation Areas are required to be designed and implemented pursuant to the requirements of Section 4.0 of the MSHCP and all other requirements of the MSHCP, including payment of Local Development Mitigation Fees as adopted for commercial and industrial Development. For such activities outside of the Conservation Areas, contributions will consist of payment of Local Development Mitigation Fees as adopted for commercial and industrial Development and any other applicable requirements. All fees will be collected the CVCC, and all obligations satisfied prior to impacts to Covered Species and their Habitats.

Within the Plan area, mitigation is required to minimize impacts to covered species within designated Conservation Areas and to maintain ecological processes where indicated. Conservation Objectives that detail required acreages for conserving core habitat for covered species, protecting essential ecological processes necessary to maintain habitat viability and maintaining biological corridors and linkages as well as mitigation specific to each Conservation Area is provided in the discussion of each Area in Chapter 4 of the Plan. Species specific mitigation that applies to many conservation areas is detailed in Section 4.4 Required Avoidance, Minimization, and Mitigation Measures of the MSHCP. Where Core Habitat has been delineated, Conservation Objectives are stated for either acres of habitat or known occurrences that must be protected within the Conservation Area for the species. Specific Conservation Objectives for other conserved habitat are generally not delineated because it was determined that the habitat will be conserved in conjunction with attaining the conservation objectives that are detailed. For projects within each of the Conservation Areas, the MSWD will be required to show that implementing the project will not result in conflict with the MSHCP goals and objectives.

The MSWD Service Area includes the following MSHCP Conservation Areas within its boundaries: Stubbe and Cottonwood Canyon, Whitewater Canyon, Upper Mission Creek/Big Morongo Canyon, Highway 111, Whitewater Floodplain, Long Canyon and Willow Hole. The Core Habitat, Other Conserved Habitat and mapped Ecological Processes for all Conservation Areas within the MSWD Service Area are summarized in Table 4.4-2.

The specific locations of many of the master planned facilities are not known at this time, and no specific measures to comply with the MSHCP, if implemented, can be identified. As specific projects are proposed a determination of the projects relationship to the Plan will be made and compliance with the requirements of the Plan implemented. If a specific project will not be implemented under the MSHCP, any impacts must be determined, evaluated and mitigated to the extent feasible in a Second Tier CEQA Document. Any required take permits would be procured directly from the regulatory agency(ies).

None of the MSWD Master Planned projects as presently identified appear to be located within the Stubbe and Cottonwood Canyons, Whitewater Canyon, Highway 111, Whitewater Floodplain, Long Canyon or Willow Hole Conservation Areas. In the event that future improvements are located within one of these Conservation Areas, potential impacts should be evaluated within the context of the MSHCP and permits for proposed activities procured either through the MSHCP or directly from the regulatory agencies.

Master Planned Facilities have been proposed for generalized areas rather than for specific locations. For this reason, it is not possible to definitively state most potential impacts, but it is possible to discuss impacts that could occur in the general area. In summary, the majority of the currently proposed Master Planned projects are not located within a Conservation Area, but those that are, appear to be located within the Upper Mission Creek/Big Morongo Canyon Conservation Area or the Morongo Wash Special Provisions Area if located outside the corporate boundaries of the City of Desert Hot Springs. Specifically, the 1400 Zone well and pump station and the Terrace and Vista reservoirs are within the City of Desert Hot Springs and, at this time are not within the proposed MSHCP boundaries. The Redbud Reservoir, the Highland Reservoir, the 2800' Well Tie and the 1530 Zone Loop for Zone 1400 all appear to be within or immediately adjacent to the Upper Mission Creek/Big Morongo Canyon Conservation Area or the Morongo Wash Special Provisions Area. The Redbud Tank and the Highland Tank appear to be within or adjacent to Core Habitat for the Desert Tortoise. The 1400 Zone Wells, the 2800' Well Tie and the 1530 Zone Loop for Zone 1400 are located within or adjacent to habitat for Le Conte’s Thrasher and Coachella Valley Milkvetch and are within or adjacent to areas designated for sand transport and as a biological corridor for Desert Tortoise and Palm Springs Pocket Mouse. As stated previously, it is not clear if PSE status within the MSHCP will be an option for MSWD for projects within the City of Desert Hot Springs that are not located within the Morongo Wash Special Provisions Area or that MSWD will elect to participate as a PSE if the option is available. If MSWD is not a PSE, the MSWD must pursue take permits and regulatory concurrence for any impacts to threatened and endangered species as described previously in the Sensitive Species section.

A Conservation to Development ratio is used in specific areas where the Plan determined that even limited Development could impede attainment of a Conservation Objective. The ratio ensures that the Conservation Objective will be attained by requiring that for every acre of Development allowed in the specified area, a predetermined number of acres will be conserved. If it appears that the ratio may not be met, the appropriate Local Permittees will meet with the Wildlife Agencies and identify additional means that will be implemented to maintain the functionality of the Biological Corridor, including an accelerated acquisition program and/or Development standards to restrict fencing that would impede wildlife movement. None of the Master Planned projects as presently identified appear to be within the Conservation to Development ratio areas; however, in the event that future improvements are proposed in those areas, conformance would be required in order to participate in the MSHCP.

Table 4.4-2
MSHCP CONSERVATION AREAS

Conservation Areas Within the MSWD Service Area	C.V. [#] Milkvetch	Little San Bernardino Mountains Linanthus	Triple-ribbed Milkvetch	Coachella Valley Jerusalem Cricket	C.V. Giant Sand-Treader Cricket	Arroyo Toad	Desert Tortoise	Coachella Valley Fringe-Toed Lizard	Flat-tailed Horned Lizard	Gray Vireo	Le Conte's Thrasher	Crissal Thrasher	Breeding/Migratory Riparian Birds	Burrowing Owl	C.V. Round-tailed Groundsquirrel	Palm Springs Pocket Mouse	Southern Yellow Bat	Sand Source	Sand Transport	Biological Corridor/Linkage
Stubbe & Cottonwood Canyons (Section 4.3.2)	✓			✓			✓*			✓	✓		✓	✓	✓	✓		✓	✓	✓
Whitewater Canyon (Section 4.3.4)	✓	✓	✓*	✓		✓*	✓*			✓	✓		✓		✓	✓	✓	✓		✓
Highway 111 (Section 4.3.5)	✓		✓	✓							✓				✓	✓				
Whitewater Floodplain (Section 4.3.6)	✓*		✓		✓*		✓	✓*	✓		✓			✓	✓*	✓*			✓	✓
Upper Mission Creek/ Big Morongo Canyon (Section 4.3.7)	✓	✓*	✓*	✓			✓*		✓	✓	✓		✓	✓		✓*		✓	✓	✓
Willow Hole (Section 4.3.8)	✓*	✓		✓	✓		✓	✓*	✓		✓	✓	✓	✓	✓*	✓*	✓		✓	✓
Long Canyon (Section 4.3.9)	✓			✓			✓		✓		✓			✓	✓	✓			✓	

Notes: * Core Habitat
C.V. = Coachella Valley

The following Conservation to Development ratio areas are within conservation areas, portions of which occur within the MSWD Service Area. Within Stubbe and Cottonwood Canyons Conservation Area a Conservation to Development ratio of 9:1 shall be maintained within the east half of Section 6, T3S R3E to maintain the functionality of the Biological Corridor. Within Willow Hole Conservation Area a Conservation to Development ratio of 9:1 shall be maintained within the portion of the north half of Section 24, T3S R4E that is in the Conservation Area, within the north half of Section 19, T3S R5E; within the portion of the south half of the northwest quarter of Section 20, T3S R5E that is in the Conservation Area; within a portion of the northwest quarter of Section 29, T3S R5E; and within the south half of the south half of Section 28, T3S R5E to maintain the functionality of the fluvial and aeolian sand transport systems. If it appears that the ratio may not be maintained, the appropriate Local Permittee(s) will meet with the Wildlife Agencies and identify additional means that will be implemented to achieve these goals and objectives, including an accelerated acquisition program and/or Development standards to maintain fluvial and aeolian sand transport. The requirements for Development in floodplains also help ensure that sand transport capacity is maintained.

Willow Hole includes one Special Provisions area located in the portion of Section 3, T4S R5E, in the Conservation Area. None of the master planned projects currently proposed are located within Special Provisions Areas.

The MSHCP calls for expansion of the Whitewater Canyon, Whitewater River, Mission Creek and Willow Wash Conservation Area Biological Corridors to one mile wide in order to minimize edge effects with the exception of the freeway and highway bridges and any Existing Use areas. Along the Morongo Wash in the Upper Mission Creek/Big Morongo Canyon and Willow Hole Conservation Areas, contiguous habitat must be maintained to provide a Biological Corridor for the Palm Springs pocket mouse. Any project-related activities along the Cabazon, Stubbe and Cottonwood Canyons, Whitewater Canyon, Whitewater Floodplain, Upper Mission Creek/Big Morongo Canyon, Mission Creek/Morongo Wash, Willow Hole and Long Canyon must maintain the current capacity of fluvial sand transport. The 1400 Zone Wells and the 2800' Well Tie appear to be within or adjacent to the Morongo Wash Special Provisions Area.

While the proposed MSWD Master Planned Facilities have been evaluated in the context of the MSHCP, the MSHCP is not legally binding and does not confer take authorization on MSWD actions within the plan area until the Plan is adopted and MSWD has established PSE status, if available. In the event that unforseen circumstances prevent implementation of the MSHCP, that PSE status would not be available within the City of Desert Hot Springs, that MSWD would elect not to be a PSE or that a MSWD project would be determined to be in conflict with the MSHCP Permits and/or the MSHCP Reserve System, the MSWD would be required to secure any necessary permits from the responsible wildlife agencies directly.

Within the context of the MSHCP, the following summarizes the requirements for meeting the permit conditions regarding each type of resource. CVCC will be responsible for overseeing the following mitigation to insure compliance with the MSHCP permits. Table 4.4-2 identifies the species of concern and ecological processes within each Conservation Area that must be evaluated when projects are proposed. Habitat and issues are not uniform within each Conservation Area, and analysis may find that biological resources listed within a Conservation Area are not impacted at a particular location. Mitigation measures applicable to proposed projects located within the MSHCP are provided in subsection 4.4.5.

It should be noted that while the following is provided in the context of the MSHCP, the procedures identified are essentially the same as those required when permitting is required for projects not covered by HCPs and permits are secured directly from the regulatory agencies.

Desert Tortoise - The Redbud Tank and the Highland Tank, if outside the City of Desert Hot Springs, appear to be within or adjacent to Core Habitat for Desert Tortoise. The MSHCP includes a protocol for utility development designed to avoid or minimize potential adverse impacts to the desert tortoise in the Conservation Areas from utility and road right-of-way projects, such as would result from implementing the Master Plan. Utility development protocols are established for the desert tortoise inactive and active season that provide specific direction on site preparation and construction phases of utility projects within the Conservation Areas. The inactive season protocol must be used for utility maintenance or development between November 1 and February 14 time frame while the active season protocol must be used between the February 15 and October 31. Deviations from these time frames must be presented to the Reserve Management Oversight Committee (RMOC).

Burrowing Owl - None of the master planned projects, as presently identified, appear to be near a known burrowing owl burrow location. This includes the Terrace and Vista reservoirs and the 1400 Zone well and pump station site. Mitigation is provided in Section 4.4.5 of this PEIR which requires burrowing owl surveys of project sites prior to land disturbance activities.

Le Conte's Thrasher - The 1400 Zone Wells, the 2800 Well Tie and the 1530 Zone Loop for Zone 1400 all appear to be within or adjacent to habitat for Le Conte's Thrasher. Mitigation is provided in Section 4.4.5 of this PEIR which requires Le Conte's thrasher surveys of project sites prior to land disturbance activities.

Arroyo Toad - None of the projects identified in the WMP appear to be within Arroyo Toad breeding habitat. Mitigation is provided in Section 4.4.5 of this PEIR which requires arroyo toad surveys of project sites prior to land disturbance activities.

Covered Riparian Bird Species - None of the master planned projects as presently identified appear to be within Riparian Habitat, which refers to the following natural communities: southern arroyo willow riparian forest, Sonoran cottonwood-willow riparian forest, desert fan palm oasis woodland, and southern sycamore-alder riparian woodland in the Cabazon, Stubbe and Cottonwood Canyons, Whitewater Canyon and Upper Mission Creek/Big Morongo Canyon Conservation Areas. Groundwater extraction proposed as part of the Master Plan Facilities could impact the habitat that these species require. Please refer to the discussion of hydrology later in this section and mitigation provided in Section 4.4.5 of this PEIR.

Crissal Thrasher - None of the master planned projects as presently identified appear to be within crissal thrasher habitat. Groundwater extraction proposed as part of the Master Plan Facilities could impact the habitat that this species requires. Please refer to the discussion of hydrology later in this section and mitigation provided in Section 4.4.5 of this PEIR.

The **southern yellow bat** (*Lasiurus ega*) is a state species of special concern that inhabits desert fan palm oasis woodlands. This habitat requires hydrological groundwater regimes that support palm oasis. The Plan calls for evaluation of groundwater management on southern yellow bat habitat. Groundwater extraction proposed as part of the Master Plan Facilities could impact the habitat that this species requires. Please refer to the discussion of hydrology later in this section.

The Federal Candidate and State Species of Concern **Coachella Valley round-tailed ground squirrel** (*Spermophilus tereticaudus chlorus*) occur at higher densities in mesquite hummocks (Ball et al. *in Press*.) Substantial stands of mesquite hummocks and dunes are conserved within the Willow Hole and Thousand Palms Conservation Areas. Groundwater extraction proposed in the WMP could impact the habitat of this species. Please refer to the discussion of hydrology later in this section.

The state and federal listed as endangered **desert pupfish** (*Cyprinodon macularius macularius*) may be threatened by surface or groundwater depletion in the Coachella Canal, the upper Salt Creek Canyon and other canyons in the Orocopia and Chocolate Mountains that contribute to the groundwater in the Salt Creek drainage system. According to the Plan, desert pupfish are found in the Dos Palmas, Thousand Palms and Coachella Valley Stormwater Channel and Delta Conservation Areas. The Plan links Coachella Valley Water District pumping to the species habitat. No MSWD pumping occurs in the watersheds that impact groundwater or seepage in the pupfish habitat.

Triple-ribbed milkvetch - None of the master planned projects as presently identified appear to be within triple-ribbed milkvetch habitat. Mitigation is provided in Section 4.4.5 of this PEIR which requires triple-ribbed milkvetch surveys of project sites prior to land disturbance activities.

Little San Bernardino Mountains Linanthus - None of the master planned projects as presently identified appear to be within Little San Bernardino Mountains Linanthus.

Palm Springs pocket mouse and its habitat occur in the Upper Mission Creek/Big Morongo Canyon and Willow Hole Conservation Areas. Mitigation is provided in Section 4.4.5 of this PEIR which requires Palm Springs pocket mouse surveys of project sites prior to land disturbance activities.

Sand Transport - Certain future WMP projects may occur within sand transport areas. Mitigation Measures 4.4-8 and 4.4-10 is provided to reduce potential impacts to a less than significant level.

Biological Corridors - Certain facilities proposed by the WMP may affect Biological Corridors. Mitigation Measure 4.4-11 is designed to reduce potential impacts to Biological Corridors to a less than significant level.

Mesquite Hummocks and Mesquite Bosque Natural Communities - Construction activities in the Cabazon and Willow Hole Conservation Areas will avoid mesquite hummocks and mesquite bosque to the maximum extent Feasible. Mesquite are dependent upon groundwater and substantial lowering of the groundwater table could have a significant adverse impact on mesquite hummocks and associated Covered Species. **Honey mesquite** individuals have been documented to have roots of up to 160 feet (Phillips 1963, Phillips and Comus 1999). However, relatively moderate groundwater decreases have been found to substantially stress or kill adult mesquite individuals (Stromberg et al. 1992). Stromberg et al. (1993) indicated that when the water table occurred below 20 feet, continual and quantifiable reduction in mesquite stature resulted. The theoretical adaptability of existing adult mesquite plants to lower groundwater based on extended deep roots, is not supported by empirical data. In fact, extensive areas of mesquite communities throughout the southwestern U.S. have been eliminated by lowering the water tables (Phillips and Comus 1999). Most large floodplain mesquites die if the water table drops below 43 feet of the ground surface (Phillips and Comus 1999). No evidence could be found indicating an effective ability of mesquite individuals to adapt to groundwater artificially lowered to more than 49 feet of the ground surface (Stromberg et al. 1992, Phillips and Comus 1999, Nabhan and Holdsworth 1998, Judd et al. 1971, Stromberg 1993, Laity 2003, Sharifi et al. 1982, Bainbridge and Virginia 2002, Sosebee and Wan 1989).

The Plan defines lowering of the water table as an increase in the depth to groundwater that significantly affects water availability to mesquite plants located in the Willow Hole, East Indio Hills, or Thousand Palms Conservation Areas, although impacts that could result in substantial lowering of the groundwater table in these areas may occur outside of those Conservation Areas, for example from groundwater withdrawals. A more detailed evaluation of potential project-related impacts to riparian habitat in issue “b” below.

Land Use Adjacency Guidelines will require projects to avoid or minimize indirect, or edge, effects from Development adjacent to or within the Conservation Areas. The MSHCP defines adjacent as sharing a common boundary with any parcel in a Conservation Area. Indirect effects may include noise, lighting, drainage, and the introduction of non-native plants. These are potential indirect effects of implementing the WMP.

Specifically, certain WMP projects such as the Redbud and Highland reservoirs, the 2800' Well Tie and the 1530 Zone Loop for Zone 1400 have the potential to be within or adjacent to the Upper Mission Creek/Big Morongo Canyon Conservation Area. Depending upon the final boundaries of the MSHCP, if adopted, these facilities may be required to comply with the policies of Chapter 4.5 Land Use Adjacency Guidelines if MSWD is a participant in the Plan. These policies address stormwater quantity and quality, toxics, artificial light, noise levels above 75 dBA, invasive non-native plants, domestic animals, trespass and manufactured slopes adjacent to Conservation Areas.

Implementation of the WMP has the potential to result in adverse impacts to biological species. Should the MSHCP be adopted and MSWD is a PSE, potential impacts to these species will be mitigated through participation and compliance with the MSHCP on a project specific basis. For projects that are not within the Plan area or if MSWD is not a PSE, then potential impacts to biological resources from implementing individual projects must be determined on a project specific basis and adequate mitigation provided. This includes negotiating mitigation with the responsible regulatory agencies when required. The mitigation provided in this PEIR is considered adequate to reduce the potential for significant impact to biological species to a less than significant level for all issues except the potential for lowering groundwater levels in the MCGS. If the MSHCP is adopted and MSWD participates, compliance with the requirements of the Plan would be considered adequate mitigation. However, should the Plan not be adopted or MSWD not participate, then potential impacts to biological species from the lowering of groundwater would not be considered totally mitigable and indirect impacts would be considered significant.

This issue is evaluated further in issues “b” and “c” below.

Construction Impacts

The Terrace Reservoir is located within an urbanized portion of the City of Desert Hot Springs. The Vista Reservoir is located in the northerly portion of the City adjacent to Core Habitat for Desert Tortoise as currently identified in the MSHCP.

Terrace Reservoir Site – The Terrace Reservoir Site is characterized by lightly to moderately disturbed Sonoran creosote bush scrub habitat surrounded by residential development and existing MSWD reservoir facilities. Several small, contiguous properties are also vacant, but the site is isolated from other habitat areas by urban development. Salt cedar/tamarisk trees are planted along some of the property edges and light dumping of household materials is evident on the property edges.

A reconnaissance level survey of the site did not detect any sign of desert tortoise, burrowing owl or other sensitive biological species.

Vista Reservoir Site – The Vista Reservoir Site is characterized by moderately to heavily disturbed Sonoran creosote bush scrub habitat adjacent to an existing MSWD reservoir with residential development to the south and large undeveloped areas to the north and west. Joshua Tree National Park is located approximately one mile northwest of the site. The site is situated against a hill sloping steeply up to the north and east with rock outcroppings. The site appears to have been heavily disturbed by vehicular traffic in the past, perhaps in association with the adjacent reservoir.

A reconnaissance level survey of the site did not detect any sign of desert tortoise, burrowing owl or other sensitive biological species.

The Terrace and Vista Reservoir sites are shown on Figure 3-7 of the PEIR.

1400 Zone Well, Booster Pump and Pipeline – Protocol surveys for desert tortoise and burrowing owl were conducted on December 2 and 3, 2007. The purpose of the survey was to determine biological resources present within and adjacent to the project area, and to assess potential project related impacts to those resources. Pedestrian surveys covered the entire pipeline alignment, well site, and zone of influence. The existing site conditions range from heavily disturbed to pristine habitat. Most of the adjacent habitat consists of disturbed creosote bush scrub habitat, in which principal disturbances are roads, off road vehicles, dumping, litter, and shooting. In heavily disturbed areas, principal disturbances are off road vehicles and dumping. The only natural drainage within the project area is Big Morongo Creek, which contains a variety of native annual and perennial plants associated with Sonoran creosote scrub habitat.

The pipeline alignment follows existing paved and dirt roads. The habitat directly adjacent to the road ways suffers an edge effect and as such is highly disturbed containing mostly non native perennial and annual vegetation. Outside of the road “edge effect”, the habitat consist of Sonoran creosote bush scrub as described in the Coachella Valley Multi Species Habitat Conservation Plan (CVMSHCP). This community is termed Creosote bush-white bursage series in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995). There are over 400,000 acres of Sonoran creosote bush scrub in the Coachella Valley. Sonoran creosote bush scrub is the most widespread vegetation type in the Colorado Desert and is found on the vast intermountain bajadas on coarse, well-drained soil with a total salinity of less than 0.02%. This vegetation community is characterized by low species diversity and broadly spaced shrubs with bare ground between. Many species of ephemeral herbs may flower in late winter/early spring if winter rains are sufficient. The Coachella Valley MSHCP habitat description identifies the following species as associated with portions of this community: Peninsular bighorn sheep, Palm Springs ground squirrel, Palm Springs pocket mouse, desert tortoise, burrowing owl, Coachella giant sand treader cricket, Coachella Valley grasshopper, Casey's June beetle, Coachella Valley milkvetch, triple ribbed milkvetch, Mecca aster, and Orocopia sage.

No desert tortoise or burrowing owl individuals or recent sign indicative of these burrowing species was found on or adjacent to the project sites. As presently located, the proposed well, pump station, and pipelines are located within the City of Desert Hot Springs and the project sites are not within the boundaries of the most recent final draft of the MSHCP.

The 1400 Zone Well, Pump Station Site and Pipe alignment are shown on Figure 3-10 of the PEIR.

Mitigation is provided in this PEIR to reduce potential impacts to Desert Tortoise and/or other species to a less than significant level either through participation in the MSHCP, compliance with the mitigation measures provided herein or through separate permitting with the appropriate regulatory agencies, if required.

Operations Impacts

Potential impacts associated with the operations phase will be similar to those identified for construction. The mitigation provided in this PEIR is considered adequate to reduce potential impacts to a less than significant level except for potential long-term noise effects to the level of groundwater. The potential for long-term noise impacts to biological resources will be evaluated on a project-specific basis as required in sub-chapter 4.11 of this PEIR. Adequate mitigation is provided in sub-chapter 4.11 to reduce potential noise impacts to biological resources to a less than significant level. This includes the potential noise impacts associated with operation of the Terrace and Vista reservoirs and the 1400 Zone well and booster pump station.

b. Have a substantial adverse effect on riparian habitat or sensitive natural community.

The annual rate of natural recharge in the MCGS is estimated by the USGS to be about 5,000 AF. Subsurface flows are generally to the southeast, with groundwater at or near the surface at some points along the Banning Fault and at Willow Hole. Between 2,000 and 5,360 AF per year of groundwater is estimated to flow across the Banning Fault and into the adjoining GHGS. The MSHCP assumes that natural recharge roughly equals natural subbasin outflows. The mesquite hummocks associated with the Banning Fault are senescent and degraded along its western extent (between Mission Creek and Morongo Wash), likely due to artificially lowered groundwater levels in the subbasin. The mesquite hummocks farther to the east, (near Palm Drive) are currently less degraded and show substantially greater density of leafed out mesquite plants; these hummocks were historically and are currently closer to groundwater. Further reductions in groundwater in the subbasin would likely increase the extent of degradation that has already occurred in Willow Hole Conservation Area.

Because the subbasin has been in overdraft, the Mission Creek recharge ponds were constructed in the northwest portion of the subbasin to increase groundwater recharge using Colorado River water delivered via a turnout on the Metropolitan Water District Colorado River Aqueduct. The MSHCP identifies that in 2002, 4,733 AF of Colorado River water were delivered and recharged into the aquifer reducing the net overdraft for that year to about 4,346 AF. The Mission Creek recharge facility is designed to recharge up to 25,000 AF of Colorado River water in any one year. The MSHCP anticipates that between 5,000 and 10,000 AF per year could be delivered to the spreading facility in non-drought years, and up to 15,000 AF in wet years.

The MSHCP also identifies that current pumpage from the MCGS is approximately 14,700 AF per year (MSWD 2004). The MSWD, which extracts approximately 58% of the water pumped from the subbasin, has accelerated its pumping by approximately 7% per year between 1998 and 2005, and forecasts a 2% per year between 2005 and 2010 (MSWD 2000). Similar increases in pumping are likely from CVWD, which currently extracts 31% of the water from the subbasin. If natural recharge to the subbasin is estimated to be 5000 AF per year, more than 9000 AF of water would need to be imported and recharged per year to offset current pumping to retain status quo groundwater levels, and these imports would need to increase by 2.7 percent per year to keep track with the accelerating pumping in the subbasin. As of 2002, the estimated gross overdraft in the subbasin has been 127,000 AF since 1978 (CVWD 2003 in the MSHCP).

The MSHCP calls for evaluating the potential for mesquite hummock restoration and enhancement through monitoring and Adaptive Management. This evaluation will consider results from other areas where mesquite restoration has been attempted in terms of the potential for success. Water requirements, the source of water to support mesquite restoration or enhancement, and the relationship with groundwater levels will be addressed in this evaluation. Adding supplemental water at the surface would create the potential for invasive weeds and non-native ants that are threats to the aeolian sand communities to become established. Subsurface supplemental water will be evaluated through MSHCP adaptive management.

Many of the sensitive species and habitat covered within the MSHCP are dependent upon active and intact hydrological regimes to retain sand transport systems and habitat features, although the impacts may be indirect. For example, one of the primary threats to the aeolian community is considered the loss of mesquite to anchor dunes which would contribute to the loss or stabilization of active aeolian sands. The honey mesquite that form mesquite hummocks grow in hydrologic environments where the water table is near the surface. Because this impact is dependent upon groundwater levels rather than on final location of facilities, the impact of the WMP facilities can be discussed more concretely. The generalized location of wells and recharge activities are generally specific enough because they are located within the MCGS.

Subchapter 4.3 of this PEIR provides a detailed analysis of the MCGS. The analysis utilized more recent data including the recharge of 5,564 AF of imported water in 2005 and 18,778 AF in 2006 (see Table 4.3-2 of this PEIR). The Psomas 2007 Report forecasts that an average of 15,000 AFY of imported water will be recharged into the MCGS.

Figure 4.3-17 of this PEIR, Groundwater Flow Model of the MCGS (Figure 5-9 of the 2007 Psomas Report) shows the Groundwater Elevation Longitudinal Cross Section along the Banning Fault, indicating that the groundwater level in the hummock area is expected to decrease substantially over the years. The model includes expected natural inflow and recharge as well as artificial recharge at the existing Mission Springs basins. The model and Figure 4.3-17 shows that groundwater levels would drop below depths (about 40 to 50 feet below ground surface) expected to severely stress or kill mesquite in all areas of the hummocks by 2016 as a result of projected groundwater pumping in the basin. See page 4-93 of this PEIR. The model and Figure 4.3-17 shows that at many locations along the fault, the groundwater levels are already low enough to stress or kill mesquite. As such, if the groundwater model is accurate and based upon the scientific understanding of honey mesquite habitat requirements as published in peer reviewed journals (and summarized previously in the Mesquite section of this PEIR (page 4-93), implementing the WMP is forecast to result in severe stress and mortality of the hummock community by 2016 without adequate mitigation.

Mesquite in and of themselves are not listed by state or federal law as a threatened or endangered species. At a minimum, the mesquite directly provide habitat for migratory birds (protected by the federal Migratory Bird Treaty Act) including listed birds such as the southwestern willow flycatcher and least Bell's vireo, as well as for the Coachella Valley round-tailed groundsquirrel (federal Candidate species and state species of concern), Coachella giant sand treader cricket (federal species of concern), some habitat for the fringe toed lizard (federal threatened and state endangered) and expected habitat of the crissal thrasher (state species of concern). Indirectly the mesquite anchor dunes which would contribute to the loss or stabilization of active aeolian sands. Active aeolian sands are habitat for a number of listed species including Coachella giant sand treader cricket (federal species of concern) and the fringe toed lizard (federal threatened and state endangered). Implementing the WMP as proposed is expected to result in significant impacts to these habitats and species.

The only other groundwater basin from which water is planned to be extracted is the San Gorgonio Pass Groundwater Subbasin (SGPGS) of the Cabazon Groundwater Basin. As detailed in the Hydrology Section of this PEIR, the SGPGS is under study by the USGS but data has not been made available for review. The District proposes to install one well in the vicinity of the existing wells 25A and 26A near the southeasterly extent of the subbasin. The exact location would have to be evaluated when selected to determine if it would fall within the Conservation Area and to evaluate the direct impacts of the proposed well. Well 26A is not located within the Stubbe and Cottonwood Canyons Conservation Area according to the CVMSHCP, but Well 25A appears to be within the Conservation Area. The groundwater is not known to pool close to the surface prior to flowing from the SGPGS to the Coachella Valley Groundwater Basin. As long as the proposed well is not located in a sand transport area as designated just east of the Well 26A area, it would not impact sand source or sand transport from the Stubbe and Cottonwood Canyons Conservation Area to downstream/wind areas nor would it interfere with a biological corridor. There are no known habitats dependent upon high groundwater levels that would be impacted by the proposed well. Stubbe and Cottonwood Canyons Conservation Area supports Sonoran cottonwood-willow riparian forest and desert dry wash woodland, which contain suitable migration and breeding habitat for least Bell's vireo, southwestern willow flycatcher, summer tanager, yellow-breasted chat, and yellow warbler. The riparian habitat is upstream of the generalized area where the well is expected to be located and is not expected to be impacted by an additional well.

The MSHCP calls for quantifying the relationship between hydrologic conditions and the health and reproduction of the native mesquite hummocks in order to mitigate natural and human-induced impacts on this resource. Monitoring will involve evaluating the health of the mesquite in the Willow Hole, Thousand Palms, East Indio Hills, and Dos Palmas Conservation Areas, and its relationship to hydrologic/groundwater conditions in the Coachella Valley. The objectives of this research will include, (1) to monitor the plant characteristics and hydrologic conditions of mesquite hummocks in the Coachella Valley; (2) to determine the source(s) of water utilized by the mesquite; and (3) to relate vegetation health and reproduction to varying hydrologic conditions in the Coachella Valley. The water-level trends from monitored sites will be compared to precipitation and pumping trends to help determine the natural and/or human-induced impacts on the groundwater system. These data will be used in conjunction with the hydrologic data to determine if there is a correlation between the health of the mesquite and the hydrologic properties at the site (depth to water and soil moisture). Persistence of the mesquite trees will be monitored to determine if there is a relationship between water-table depth, soil moisture, and reproduction.

Hydrological regimes are an important component of the maintenance of desert fan palm oases, wetlands, marshes, riparian and desert dry wash woodland communities. These regimes have increasingly altered seasonality, flow frequency, volume, and purity of water. The MSHCP adaptive management will determine appropriate measures which may include water conservation, restrictions on additional water use, or surface flow alterations above the water dependent habitats that could remediate the water supply to baseline levels. The Plan calls for monitoring of groundwater depth and groundwater quality as part of ongoing management.

However, the MSHCP has not been adopted and none of the programs identified in the MSHCP have the ability to ensure that the groundwater table will not continue to decline over the life of the WMP. The evaluation provided Section 4.3 Hydrology and Water Quality of this PEIR determined that even with implementation of the available mitigation measures provided in the PEIR, implementation of the WMP will result in both individually and cumulatively significant impacts to the quantity of water stored in the MCGS. This reduction in the depth to groundwater has the potential to adversely affect wetlands, riparian habitat, the mesquite hummocks and the species they support.

Construction Impacts

Neither the Terrace or Vista reservoirs or the 1400 Zone Well, booster pump and pipeline are located within riparian or other sensitive habitat. Construction of these reservoirs, well, pump station and pipeline has no potential to adversely effect wetlands or riparian habitat resources. Some potential may exist for riparian habitat to be affected by constructing other WMP facilities. However, without specific locations of facilities identified, it is not possible to determine if such resources will be affected.

As sites are selected in the future, they will be evaluated to determine if the site contains protected wetlands or riparian habitat. As discussed in Section 4.4.3.2 of this PEIR, surface water, wetlands and riparian habitat are under the jurisdiction of state and/orfederal regulatory agencies. Before such habitat or resources can be disturbed, that activity must be permitted by the appropriate agencies. Mitigation Measures are provided in this PEIR to reduce potential impacts to a less than significant level. Permitting by these agencies can be accomplished either through participation in the MSHCP or direct negotiations with the regulatory agencies.

Operations Phase

Generally, operation of the facilities proposed by the WMP will not result in any impacts that exceed those identified for the construction phase. However, the proposed wells will contribute to ongoing overdraft of the MCGS which has the potential to adversely affect riparian habitat. Should a WMP well project be covered by the MSHCP, then compliance with the terms and conditions of the Plan is considered adequate mitigation for potential impacts to riparian habitat. For those well projects that are not covered by the MSHCP, adequate mitigation may not be available to reduce the potential long-term operations impacts to riparian habitat associated with lowering the groundwater table in the MCGS to a less than significant level.

At this time, the MSHCP has not been adopted and the 1400 Zone well is not within the proposed boundaries of the MSHCP, if it were adopted. Therefore, operation of the 1400 Zone well proposed at this time will contribute to the ongoing overdraft of the MCGS. Therefore, the potential impacts associated with operation of this well are considered cumulatively significant.

c. Have a substantial adverse effect on federally protected wetlands.

Construction Phase

Neither the Terrace of Vista reservoirs nor the 1400 Zone well, booster pump station and pipeline are located within federally protected wetlands. Construction of these reservoirs, well, booster pump and pipeline have no potential to adversely effect such resources. Some potential may exist for wetlands to be affected by constructing other WMP facilities. However, without specific locations of facilities identified, it is not possible to determine if such resources will be affected.

As sites are selected in the future, they will be evaluated to determine if the site contains protected wetlands or riparian habitat. As discussed in Section 4.4.3.2 of this PEIR, surface water, wetlands and riparian habitat are under the jurisdiction of state and/orfederal regulatory agencies. Before such habitat or resources can be disturbed, that activity must be permitted by the appropriate agencies. Mitigation Measures are provided in this PEIR to reduce potential impacts to a less than significant level. Permitting by these agencies can be accomplished either through participation in the MSHCP or direct negotiations with the regulatory agencies.

Operation Phase

Generally, operation of the facilities proposed by the WMP will not result in any impacts that exceed those identified for the construction phase. However, the proposed wells, including the 1400 Zone well, will contribute to ongoing overdraft of the MCGS which has the potential to adversely affect wetlands. Should a WMP well project be covered by the MSHCP, if adopted, then compliance with the terms and conditions of the Plan is considered adequate mitigation for potential impacts to riparian habitat. For those well projects that are not covered by the MSHCP, adequate mitigation may not available to reduce the potential long-term operations impacts to wetlands from lowering the depth to groundwater in the MCGS to a less than significant level. At this time, the proposed 1400 Zone well is not within the proposed boundaries of the latest MSHCP and the potential impacts to federally protected wetlands is considered to be cumulatively significant.

d. Substantially interfere with the movement of native fish or wildlife species, migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Construction Phase

The Terrace Reservoir is located within an urbanized area within the City of Desert Hot Springs. The site is vacant and contains disturbed native habitat. No streams or other water courses exist on the site. The site is surrounded by existing urban development. Due to the sites limited size (about 2 acres) and its location surrounded by residential development and other water storage facilities, no potential to substantially interfere with the movement of native fish or wildlife species, migratory wildlife corridors or impede the use of native wildlife nursery sites will result.

The Vista Reservoir site is located on a partially disturbed site located in the foothills of the Little San Bernardino Mountains. The project site is within the corporate limits of the City of Desert Hot Springs and is immediately adjacent to, but not within, Core Habitat of the Desert Tortoise as identified in the MSHCP.

Development has occurred southerly and westerly of the site but the adjacent hillsides are moderately disturbed native habitat. The site is located along the access road to an existing MSWD reservoir that is located immediately adjacent to the proposed reservoir site. Due to the relatively small size of the site (about 1 acre) and its location adjacent to existing development, the potential for this project to impede the movement of wildlife or affect a wildlife nursery is considered less than significant.

The Vista Reservoir project has the some minimal potential to affect desert tortoise or its habitat. However, implementation of Mitigation Measure 4.4-1 is considered adequate to reduce this potential to a less than significant level.

The 1400 Zone well, booster pump and pipeline will be constructed on District owned property located on the northerly side of Two Bunch Palms Trail between Atlantic Avenue and Little Morongo Road. The site is within the City of Desert Hot Springs and the Big Morongo Wash channel is located easterly of the well and booster pump site. The well, booster pump station and pipeline are located within the City of Desert Hot Springs and at this time, are not within the proposed MSHCP.

All other potential projects identified in the WMP will be evaluated on a project specific basis to determine the type of biological resources that could be affected and the mitigation that is required in a second tier environmental evaluation. The mitigation measures provided in this PEIR are considered adequate to reduce potential impacts associated with implementation of the WMP at this level of evaluation

Operations Phase

Potential impacts associated with operation of the facilities identified in the WMP are not forecast to exceed those identified for the Construction Phase, except possibly long term noise impacts. Mitigation provided Sections 4.4.5 and 4.7.4, Noise of this PEIR are considered adequate to reduce potential operations impacts to a less than significant level at this level of evaluation.

e. Conflict with local policies or ordinances protecting biological resources.

Construction Phase

Neither the Vista or Terrace reservoirs or the 1400 Zone well, booster pump station and pipeline are located within an area covered by any local plans or ordinances protecting biological resources.

The location of the other facilities proposed by the WMP have not been identified in sufficient detail to determine if they will result in any conflicts with such local policies or ordinances. However, the type of facilities proposed by the WMP are not of the size or type that generally conflict with biological resources. Future specific projects will undergo second-tier environmental review to determine if they will result in any conflicts with such policies or ordinances when they are proposed for development.

Operations Phase

Potential impacts associated with operation of the facilities identified in the WMP will be similar to those identified for the Construction Phase. No impacts that exceed those identified for construction are forecast to result. Mitigation provided below is considered adequate to reduce potential impacts to a less than significant level at this level of evaluation.

f. Conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved habitat conservation plan.

Construction Phase

At this time, there are no known habitat or natural community conservation plans that have been adopted or approved within the area that would be affected by the WMP. This includes the Vista and Terrace reservoir sites and the 1400 Zone well and pipeline sites. The Coachella Valley Multi-Species Habitat Conservation Plan is in its final draft and is expected to be adopted in the near future. The facilities proposed for development in the WMP, except for facilities within the City of Desert Hot Springs, are within the Plan area as currently proposed. The MSHCP was developed to allow participants a method of obtaining regulatory permits for impacts to biological resources without going through the usual permitting process with regulatory agencies. The Plan utilizes many of the regulatory requirements to determine a projects potential for impact to biological resources (method and timing of surveys). The goal of the Plan is to master plan and streamline the regulatory process for projects within the Plan area.

Should the MSHCP be adopted and MSWD is a participating entity, then projects covered by the Plan which are developed in a manner consistent with the Plan and permits issued will not be in conflict with the Plan. Should the Plan be adopted and MSWD does not participate, it will be required to secure the necessary permits from the regulatory agencies through separate negotiations with the agencies. Compliance with the conditions of any permits secured through separate negotiations will be considered compatible with the MSHCP.

No conflict with any adopted habitat or natural community conservation plan is forecast to occur as a result of implementing the WMP.

Operations Phase

Operations impacts will be similar to those identified for the construction phase of development. The only potential for conflict will be associated with overdraft of the MCGS. The substantial lowering of groundwater within the MCGS would conflict with the goals of the MSHCP if it results in impacts to wetlands, riparian and other water dependent habitats. The WMP and the MSHCP identify mitigation that can reduce the effects of basin overdraft. However, over the long term, this PEIR has determined that the implementable measures provided in the MSHCP and in this document are not adequate to reduce the potential long term impacts to water dependent habitats to a less than significant level.

4.4.5 Mitigation Measures

The following mitigation measures are specific to the MSHCP, however, they are also the mitigation measures which should be implemented if the MSWD does not become a PSE, the Plan is not adopted or the project is not located within the Plan. These measures are written in a manner that is applicable to activities covered by the Plan or those for which individual permits must be obtained from the regulatory agencies.

4.4-1 Breeding Habitat in the Whitewater Canyon Conservation Area
Activities will be conducted outside of the March 1 - June 30 reproductive season unless otherwise authorized through a Minor Amendment to the Plan or through authorization by the permitting agency. Activities and projects involving water diversions in arroyo toad habitat are not Covered Activities. Take Authorization for Listed Species requires a Minor Amendment with Wildlife Agency concurrence or permitting agency concurrence if not covered by the Plan. Under the Plan, Wildlife Agencies nonconcurrence with Minor Amendments must occur within 60 days of receipt of a written proposed amendment. If the Wildlife Agencies concur, or if they fail to respond within the 60-day period, the Minor Amendment may be approved.

4.4-2 Riparian Habitat
Covered Activities, including operation and maintenance (O&M) of facilities and construction of permitted new projects, in riparian Habitat will be conducted to the maximum extent feasible outside of the March 15 - September 15 nesting season for least Bell's vireo, and the May 1 – September 15 nesting season for southwestern willow flycatcher, summer tanager, yellow warbler, and yellow-breasted chat. If Covered Activities must occur during the nesting season, surveys shall be conducted to determine if any active nests are present. If active nests are identified, the Covered Activity shall not be conducted within 200 feet of an active nest. If surveys conducted during the nesting season document that Covered nesting riparian bird Species are not present, the Covered Activity may proceed.

4.4-3 Desert Tortoise
Inactive Season Protocol. This protocol is applicable to pre-construction and construction phases of utility Covered Activity projects occurring between November 1 and February 14. These protocols apply only to the site preparation and construction phases of projects. The project proponent must follow the eight pre-construction protocol requirements listed below. These protocol are adequate for projects not covered by the MSHCP which have been determined to have a potential to impact desert tortoise

1. A person from the entity contracting the construction shall act as the contact person with the representative of the appropriate Reserve Management Unit Committee (RMUC.) or the permitting agency. He/she will be responsible for overseeing compliance with the protective stipulations as stated in this protocol.

2. *Prior to any construction activity within the Conservation Areas, the contact person will meet with the representative of the appropriate RMUC or the permitting agency to review the plans for the project. The representative of the appropriate RMUC or the permitting agency shall review the plans and recommend plan modifications to the contact person to further avoid or minimize potential impacts to desert tortoise.*

3. *The construction area shall be clearly fenced, marked, or flagged at the outer boundaries to define the limits of construction activities. The construction right-of-way shall normally not exceed 50 feet in width for standard pipeline corridors, access roads and transmission corridors, and should be minimized to the maximum extent feasible. Existing access roads should be used to the maximum extent feasible, and rights-of-way for new and existing access roads should normally not exceed 20 feet in width. Other construction areas including well sites, storage tank sites and laydown/staging sites which require larger areas will be determined in the pre-construction phase. All construction workers shall be instructed that their activities shall be confined to locations within the fenced, flagged, or marked areas.*

4. *An Acceptable Biologist shall conduct pre-construction clearance surveys of all areas potentially disturbed by the proposed project. Any winter burrows discovered in the Conservation Areas or on the project site during the pre-construction survey shall be avoided or mitigated. The survey shall be submitted to the representative of the appropriate RMUC or the permitting agency as part of plan review.*

5. *All site mitigation criteria shall be determined in the pre-construction phase, including but not limited to seeding, barrier fences, leveling, and laydown/staging areas, and will be reviewed by the representative of the appropriate RMUC or permitting agency prior to the start of construction.*

6. *A worker education program shall be implemented prior to the onset of each construction project. All construction employees shall be required to read an educational brochure prepared or approved by the representative of the appropriate RMUC and/or the RMOC or the permitting agency and attend a tortoise education class prior to the onset of construction or site entry. The class will describe the sensitive species which maybe found in the area, the purpose of the MSHCP Reserve System, if applicable, and the appropriate measures to take upon discovery of a sensitive species. It will also cover construction techniques to minimize potential adverse impacts.*

7. *All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the supervision of an Acceptable Biologist.*

8. *If there are unresolvable conflicts between the representative of the appropriate RMUC and the contact person, then the matter will be arbitrated by the RMOC and, if necessary, by CVCC or the permitting agency if the project is not covered by the MSHCP*

The following terms are established in the MSHCP to protect the desert tortoise during utility-related construction activities in the Conservation Areas and are to be conducted by an Acceptable Biologist. These measures are also applicable to projects not covered by the Plan.

9. *An Acceptable Biologist shall oversee construction activities to ensure compliance with the protective stipulations for the desert tortoise.*

10. *Desert tortoises found above ground inside the project area during construction shall be moved by an Acceptable Biologist out of harm's way and placed in a winter den (at a distance no greater than 250 feet). If a winter den cannot be located, the USFWS or CDFG shall determine appropriate action with respect to the tortoise. Tortoises found above ground shall be turned over to the Acceptable Biologist.*

11. No handling of tortoises will occur when the air temperature at 15 centimeters above ground exceeds 90 degrees Fahrenheit.

12. Desert tortoise burrows shall be avoided to the maximum extent feasible. An Acceptable Biologist shall excavate any burrows which cannot be avoided and will be disturbed by construction. Burrow excavation shall be conducted with the use of hand tools only, unless the Acceptable Biologist determines that the burrow is not occupied.

Active Season Protocol. This protocol is applicable to pre-construction and construction phases of utility development projects occurring between February 15 and November 1. It is identical to the Inactive Season Protocol with the following additions:

13. Work areas shall be inspected for desert tortoises within 24 hours of the onset of construction. To facilitate implementation of this condition, burrow inspection and excavation may begin no more than seven (7) days in advance of construction activities, as long as a final check for desert tortoises is conducted at the time of construction.

14. All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the overall supervision of an Acceptable Biologist. Any hazards to tortoises created by this activity, such as drill holes, open trenches, pits, other excavations, or any steep-sided depressions, shall be checked three times a day for desert tortoises. These hazards shall be eliminated each day prior to the work crew leaving the site, which may include installing a barrier that will preclude entry by tortoises. Open trenches, pits or other excavations will be backfilled within 72 hours, whenever possible. A 3:1 slope shall be left at the end of every open trench to allow trapped desert tortoises to escape. Trenches not backfilled within 72 hours shall have a barrier installed around them to preclude entry by desert tortoises. All trenches, pits, or other excavations shall be inspected for tortoises by a biological monitor trained and approved by the Acceptable Biologist prior to filling.

15. If a desert tortoise is found, the biological monitor shall notify the Acceptable Biologist who will remove the animal as soon as possible.

16. Only burrows within the limits of clearing and surface disturbance shall be excavated. Burrows outside these limits, but at risk from accidental crushing, shall be protected by the placement of deterrent barrier fencing between the burrow and the construction area. The barrier fence shall be at least 20 feet long and shall be installed to direct the tortoise leaving the burrow away from the construction area. Installation and removal of such barrier fencing shall be under the direction and supervision of the biological monitor.

17. If blasting is necessary for construction, all tortoises shall be removed from burrows within 100 feet of the blast area.

Disposition of Sick, Injured, or Dead Specimens. Upon locating dead, injured, or sick desert tortoises under any utility or road project, initial notification by the contact representative or Acceptable Biologist must be made to the USFWS or CDFG within three (3) working days of its finding. Written notification must be made within five (5) calendar days with the following information: date; time; location of the carcass; photograph of the carcass; and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care. Injured animals shall be taken care of by the Acceptable Biologist or an appropriately trained veterinarian. Should any treated tortoises survive, USFWS or CDFG should be contacted regarding the final disposition of the animals.

4.4-4 ***Burrowing Owl***

Prior to construction, the project area and adjacent areas within 500 feet of the site, or to the edge of the property if less than 500 feet, will be surveyed by an Acceptable Biologist for burrows that could be used by burrowing owl. If a burrow is located, the biologist will determine if it is occupied and if so a 160 foot buffer during the non-breeding season, 250 feet during the breeding season, or a buffer to the edge of the property boundary if less than 500 feet will be established around the burrow. The buffer will be staked and flagged. No construction or O&M activities will be permitted within the buffer until the young are no longer dependent on the burrow.

If the burrow is unoccupied, it will be made inaccessible to owls, and the project may proceed. If the biologist determines that a burrowing owl is in the burrow, but the burrow is not an active nest site, owls shall be relocated pursuant to accepted Wildlife Agency protocols. A burrow is assumed occupied if records indicate that, based on protocol surveys, at least one burrowing owl has been observed occupying a burrow on site during the past three years. If there are no records for the site, surveys must be conducted to determine, prior to construction, if burrowing owls are present.

4.4-5 ***Le Conte's Thrasher***

In modeled Le Conte's thrasher Habitat in all the Conservation Areas, during the nesting season, January 15 - June 15, prior to the start of construction activities, surveys will be conducted by an Acceptable Biologist on the construction site and within 500 feet of the construction site, or to the property boundary if less than 500 feet. If nesting Le Conte's thrashers are found, a 500 foot buffer, or to the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged.

4.4-6 ***Crissal Thrasher***

In modeled Crissal Thrasher Habitat in the Willow Hole Conservation Area, surveys will be conducted by an Acceptable Biologist prior to the start of construction activities during the nesting season, January 15 - June 15, to determine if active nest sites for this species occur on the construction site and/or within 500 feet of the construction site, or to the edge of the property boundary if less than 500 feet. If nesting Crissal Thrashers are found, a 500-foot buffer, or a buffer to the edge of the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction activities will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged. The MSHCP also calls for evaluating the impacts of groundwater management on mesquite areas, which are important habitat for crissal thrasher, to determine if the water sources for this habitat are adequately protected or if additional water sources may be needed.

4.4-7 ***Triple-ribbed milkvetch***

For Covered Activities within modeled triple-ribbed milkvetch habitat in the Whitewater Canyon, Whitewater Floodplain and Upper Mission Creek/Big Morongo Canyon Conservation Areas, surveys by an Acceptable Biologist will be required for activities during the growing and flowering period from February 1 - May 15. Any occurrences of the species will be flagged and public infrastructure projects shall avoid impacts to the plants to the maximum extent feasible. In particular, known occurrences shown on a map maintained by CVCC shall not be disturbed.

4.4-8 ***Essential Ecological Process Fluvial Sand Transport Areas***

Development in Essential Ecological Process fluvial sand transport areas shall not obstruct natural watercourses, and the rate of flow and sediment transport shall not be impeded. Salvage of top soil and/or seeds conducted by or in cooperation with the CVCC should occur prior to ground disturbance. To ensure maintenance of the habitat for the Little San Bernardino Mountains linanthus, the potential for periodic and unpredictable flooding to rework stream channels and channel sediments, and create shallow terraces along the wash bottom must be maintained.

4.4-9 ***<u>Palm Springs pocket mouse</u>***
Clearing: For construction that would involve disturbance to Palm Springs pocket mouse habitat, activity should be phased to the extent feasible and practicable so that suitable habitat islands are no farther than 300 feet apart at any given time to allow pocket mice to disperse between habitat patches across nonsuitable habitat (i.e., unvegetated and/or compacted soils). Prior to project construction, a biological monitor familiar with this species should assist construction crews in planning access routes to avoid impacts to occupied habitat as much as feasible (i.e., placement of preferred routes on project plans and incorporation of methods to avoid as much suitable habitat/soil disturbance as possible). Furthermore, during construction activities, the biological monitor will ensure that connected, naturally vegetated areas with sandy soils and typical native vegetation remain intact to the extent feasible and practicable. Finally, construction that involves clearing of habitat should be avoided during the peak breeding season (approximately March to May), and activity should be limited as much as possible during the rest of the breeding season (January to February and June to August).

Revegetation: Clearing of vegetation (e.g., creosote, rabbitbrush, burrobush, cheesebush) should include revegetation resulting in habitat types of equal or superior biological value for Palm Springs pocket mouse.

Trapping/Holding: All trapping activity should be conducted in accordance with accepted protocols and by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California.

Translocation: Should translocation between distinct population groups be necessary, as determined through the Adaptive Management and Monitoring Program, activity should be conducted by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California. Trapping and subsequent translocation activity should be conducted in accordance with accepted protocols. Translocation programs should be coordinated by or conducted by the CVCC and/or RMOC to determine the appropriate trapping, holding, marking, and handling methods and potential translocation sites.

4.4-10 ***<u>Sand Transport</u>***
Activities within designated sand transport areas will be conducted in a manner to maintain the sand transport capacity of the system. The permit requires that natural flows onto parcels in the fluvial sand transport areas shall be conveyed offsite in the natural predisturbance direction of flow and floodwaters shall not be artificially retained onsite. Concentration of flows and increase in flow velocity offsite shall be minimized to avoid downstream erosion and scour. Alternatively, a flood control structure for the area that is designed to ensure no net reduction of sediment transport from the sand source area to the sand deposition area where aeolian sand transport processes are active may be used to achieve the Conservation Objective of fluvial sand transport.

4.4-11 ***The CVCC will require monitoring programs to detect and address substantial lowering of the water table. Should monitoring detect a substantial lowering or a decline in mesquite health, the following actions are required by the Plan Implementing Agreement.***

- ***Evaluate the results of the monitoring.***
- ***Prepare a damage assessment report.***
- ***Develop Feasible measures to ameliorate the effects of substantial lowering of the water table on mesquite hummocks and associated Covered Species.***
- ***Implement measures through Adaptive Management.***

This measure is specific to the MSHCP and the participants in the Plan. However, this measure is intended to provided mitigation, to the greatest extent achievable , for potential impacts associated with the lowering of groundwater. Therefore, this measure should be considered and implemented to the greatest extent feasible by projects not included in the MSHCP.

4.4-12 ***State Fish and Game Code Section 3503 prohibits the take, possession or destruction of any bird nests. All construction activities should be limited to the non-nesting seasons or the site surveyed for the presence of nests prior to the start of activities that would disturb the nests. If nests are encountered during the survey, appropriate measures shall be identified and implemented to prevent the disturbance of any nests or the occupants during construction activities.***

4.4-13 ***When necessary, the MSWD shall negotiate and secure Streambed Alteration Agreements and/or a Section 2081 Take permits from the California Department of Fish and Game (CDFG) for activities associate with the WMP that are under the jurisdiction of the CDFG and not covered by the proposed MSHCP, if adopted.***

The MSWD shall provide replacement habitat for disturbances to native habitat and species under the jurisdiction of the CDFG at a 3:1 ratio. This is deemed adequate mitigation for potential impacts to riparian habitat and potential impacts to listed species. If negotiations with the CDFG results in greater compensatory mitigation, MSWD shall accept the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as with the U.S. Army Corps of Engineers.

4.4-14 ***When necessary, the MSWD shall negotiate and secure a Section 404 permit from the U.S. Army Corps of Engineers (COE) for potential impacts to "waters of the United States". If federally listed species are involved, the COE must consult with the U.S. Fish and Wildlife Service (USFWS) and obtain an incidental take permit from USFWS. This measure is applicable to projects not covered by the proposed MSHCP if adopted.***

The MSWD shall provide replacement habitat at a ratio of 3:1 . This is deemed adequate mitigation for potential impacts to "waters of the United States" and potential impacts to listed species. If the negotiations with COE results in greater compensatory mitigation, MSWD shall accept the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as those with the CDFG.

4.4.6 Level of Significance After Mitigation is Applied

4.4.6.1 Construction Phase

Data provided in this PEIR indicates that implementation of this project as identified in the WMP could result in significant adverse impacts to biological resources without mitigation applied. These impacts would result from the disturbance of sensitive habitat and the take of threatened or endangered species. However adequate mitigation is provided through either participation in the MSHCP if adopted or through negotiations and permitting by the appropriate regulatory agencies to reduce potential impacts associated with the construction phase to a less than significant level.

4.4.6.2 Operations Phase

Data provided in this PEIR indicates that potential direct impacts to biological resources from operating the WMP facilities will not be greater than those identified for the Construction Phase. Generally, potential impacts to biological resources occur during construction activities. The mitigation provided in this PEIR for direct impacts to biological resources is considered adequate to reduce the potential direct operations impacts to a less than significant level. The exception is the possibility that operation of the facilities could result in the generation of long term noise. However, adequate mitigation is provided in this document to reduce potential long term noise impacts to a less than significant level.

Operation of the wells proposed by the WMP, including the 1400 Zone well, has the potential to substantially lower the depth to groundwater in the MCGS. Based on data provided in this PEIR, this overdraft condition is forecast to adversely affect riparian and wetlands habitat and the mesquite hummocks that rely on the higher groundwater elevations to survive and reproduce. These habitats provide habitat for listed species and control the dispersion of sand within the Coachella Valley. This sand transport also affects the habitat of other listed species. For projects covered by the MSHCP, if adopted, compliance with the terms and conditions of the MSHCP and receipt of authorization as a Covered Activity would be considered adequate to reduce the potential effects of basin overdraft to a less than significant level. For projects not covered by the MSHCP, the available mitigation for overdraft of the MCGS is adequate to reduce or delay the adverse effects of lowering the depth to groundwater on groundwater sensitive habitats. However, the available mitigation is not adequate to eliminate these indirect long term impacts which are forecast to be <u>significant adverse impacts within the MCGS</u>. For biological resources within all other subbasins within the MSWD Service Area, potential impacts are considered <u>less than significant</u>.

4.4.7 <u>Cumulative Impacts</u>

4.4.7.1 Construction Phase

Data provided in the PEIR indicates that construction of the WMP facilities will result in <u>less than significant</u> cumulative construction phase impacts to biological resources with implementation of the mitigation provided herein.

4.4.7.2 Operations Phase

Data provided in the PEIR indicates that operation of WMP wells, including the 1400 Zone well, not covered by the MSHCP, if adopted, will result in <u>cumulatively considerable significant adverse impacts</u> to biological resources through their contribution to overdraft of the MCGS. While mitigation has been provided that will reduce or delay the potential impacts, these measures are not considered adequate to eliminate basin overdraft and maintain water dependent habitat and the species that rely on that habitat within the MCGS.

Potential impacts for resources within other WMP subbasins are considered <u>cumulatively less than significant</u>.

4.4.8 <u>Unavoidable Adverse Impacts</u>

4.4.8.1 Construction Phase

Data provided in this PEIR indicates that implementation of the WMP has the potential to result in significant adverse impacts to biological resources. However, adequate mitigation has been provided to reduce potential unavoidable short- term construction impacts to a <u>less than significant level</u>.

4.4.8.2 Operations Phase

Data provided in this PEIR indicates that implementation of the WMP has the potential to result in unavoidable adverse impacts to biological resources for projects within the MCGS not covered by the MSHCP, if adopted. Mitigation is provided in this document that reduce the potential for impact to a less than significant level except for the potential effects to water dependant habitats and the species that rely on such habitat. This impact will result from the potential lowering of groundwater in the MCGS to levels that adversely affect the survivability of such habitat. While mitigation is provided, it is judged to not be adequate to reduce the potential for impact to a less than significant level. This indirect impact is considered to be unavoidable and adverse within the MCGS.

For WMP projects within other groundwater subbasins, potential impacts are unavoidable but considered less than significant.

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FIGURE 4.4-1
MSHCP Plan Area

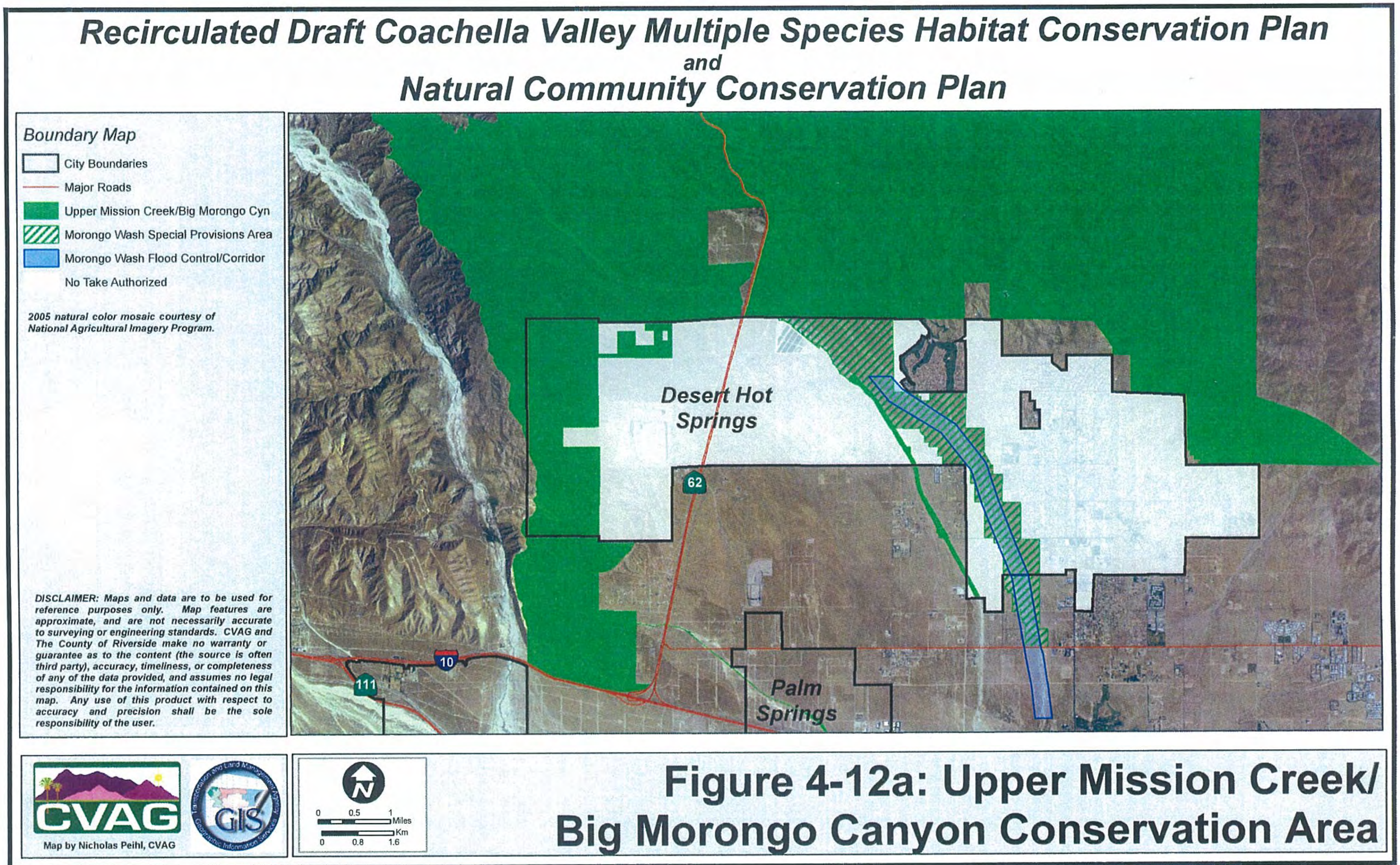

Figure 4-12a

4.5 CULTURAL RESOURCES

4.5.1 Introduction

The project's potential to affect cultural resources was included in the PEIR due to the known occurrence of such resources in the MSWD Service Area and the number and varied locations of facilities proposed by the Water Master Plan. Implementation of the proposed Water Master Plan could result in the disturbance of cultural resources during the construction of facilities proposed in the Water Master Plan. In this sub-chapter, the term cultural resources refers to both archaeological resources (man-made) and paleontological resources (fossil remains). The evaluation of this sub-chapter relies extensively on data developed through records searches at the Eastern Information Center (EIC) at the University of California, Riverside for archaeological resources. The EIC is the State of California's official cultural resource records repository for the County of Riverside. The research was performed by the cultural resources consulting firm of CRM TECH. CRM TECH also consulted with the State's Native American Heritage Commission and nine Native American (NAHC) representatives in the region recommended by the NAHC. The results of the CRM TECH investigation are contained in their report entitled *"Records Search and Native American Consultation"* dated February 22, 2007 which is provided as Appendix D, Volume 2 of this PEIR. This report is referred to as the Historic Resources Report in this PEIR. Figure 4.5-1 of this PEIR shows the district boundaries of the MSWD and the area evaluated by CRM TECH.

To evaluate the potential for paleontological resources to be affected by implementation of the Water Master Plan, CRM TECH initiated records searches at the Natural History Museum of Los Angeles County and the San Bernardino County Museum. Pertinent geological/paleontological literature and maps are also reviewed. The results of CRM TECH's investigation/evaluation is provided "Paleontologic Records Search and Literature Review Mission Springs Water District" April 9, 2007. This report is referred to as the Paleontologic Resources Report in this PEIR. This report is also provided as Appendix D, Volume 2 of this PEIR. Figure 4.5-1 shows the district boundaries of the MSWD and the area evaluated by CRM TECH.

"Cultural Resources" is a term meant to encompass paleontologic, archaeological, historic, and prehistoric resources in this PEIR. Different type of cultural resources may occur together on the same site. Although most cultural resources are in fact man-made, they occur on the landscape as a result of previous human activities, and thus must be addressed in the CEQA process in a manner similar to natural resources.

Archaeological resources are the physical remains of past human activities, and can be either prehistoric or historic in origin. Such resources include artifacts, refuse, and features in both surface and subsurface contexts, are greater than 50 years in age and/or meet other established criteria to qualify as historic in nature.

- Prehistoric archaeological resources may include the remains of villages and campsites, food processing locations, lithic (stone) resource procurement and tool-making location, and burial and cremation areas. They may also consist of trails, rock are and geoglyphs (ground figures) and isolated artifacts. Prehistoric archaeological resources are the result of cultural activities of the ancestors and predecessors of contemporary Native Americans, and in many cases, retain special traditional and sacred significance for those people.

- Historic archaeological resources include refuse deposits such as can and bottle dumps, filled-in privy pits and cisterns, melted adobe walls and foundations, collapsed structures and associated features, and roads and trails. They may relate to mission activities, travel an exploration, early settlement, homestead activities, cattle and sheep herding, lumbering, and mining, among other themes. In the MSWD service area, historical archeological resources date from the earliest Spanish Mission activities (ca. 1770) to the turn of the century.

Historic resources are intact structures of any type that are 50 years or more of age. These resources are sometimes called the “built environment” and include houses or other structures, irrigation works, and engineering features, among other items.

In the history of the Americas, the term "prehistoric period" refers to the time prior to the arrival of non-Indians, when native lifeways and traditions remained intact and viable. In the present-day San Gorgonio Pass-Coachella Valley region, foreign influences began to bring about profound changes to native lifeways around the late 1700s, which ushered in the “historic period.”

The prehistoric period in the San Gorgonio Pass-Coachella Valley region is generally divided into the Late Prehistoric and the Archaic Periods. The transition between these two periods is generally considered to be around AD 1000, marked by the introduction of pottery into the region from the Colorado River cultures. For this reason, the Archaic Period is sometimes also referred to as the “pre-ceramic” period. Other important cultural changes in prehistoric times include the introduction of the bow and arrow, probably around AD 500, and the change from burial practices to cremations, perhaps around 500 BC. Students of historical linguistics propose a migration of Takic speakers sometime between 1000 BC and AD 500 from the Great Basin region of Nevada, Utah, and eastern California into southern California.

The introduction of pottery is most frequently used as the watershed separating the Archaic Period from Late Prehistoric, although it would also be acceptable to use the other significant events in prehistory. As further archaeological work progresses, in part under the mandate of federal, state, and local historic preservation regulations, the important nodes marking cultural change over past centuries and millennia will become more clearly defined.

Known cultural resources are those which have been identified through formal recognition on one or more of the following inventories: National Register of Historic Places, California Archaeological Inventory, California Historic Resources Inventory, California Historical Landmarks, and Points of Historic Interest.

Paleontological Resources are the fossil remains or traces of past life forms from previous geologic periods, including both vertebrate and invertebrate species, as well as plants. These resources are found in geologic strata conducive to their preservation, typically sedimentary formations.

All vertebrate fossils are considered to be significant; other kinds of paleontologic resources must be evaluated individually for significance depending on their potential scientific value.

Both archaeological and paleontological resources can be exposed during ground disturbance activities and are therefore considered together in this subsection of the PEIR.

The purpose of this PEIR is to provide the MSWD and other interested parties with the necessary information and analysis to determine whether the proposed undertaking would have any adverse effects on cultural resources, as defined by the National Historic Preservation Act (NHPA) Section 106 and CEQA, that may exist within the area of potential effect (APE).

4.5.2 Existing Environmental Setting

The proposed project involves the possible construction and/or modification of both new and/or existing facilities; with activities including pipeline installation, earthmoving operations, and other ground-disturbance activities. The potential locations of many facilities identified in the Water Master Plan are relatively uncertain at this time. However many of the projects will be installed in areas that have already been previously disturbed and excavated. In most cases, pipelines will be installed along existing roadways and easements where development has already occurred, thus the chances of uncovering previously unidentified cultural resources are diminished. During construction of other facilities (such as wells, reservoirs, etc.), the chances of encountering cultural resources are greater than along existing roadways, however the actual potential of discovery at each location is substantially different in nature, and is highly site/project specific. The locations within the project area boundaries with known sensitivity for cultural resources have been identified as a result of the records searches and literature reviews discussed below.

4.5.2.1 Archaeological History

Ethnohistoric Context

The Mission Springs Water District (MSWD) lies on the border between the traditional territories of two Native American groups: the Pass Cahuilla of the San Gorgonio Pass and the northwestern Coachella Valley, one of the three subgroups—as defined by modern anthropologists—of the Cahuilla people, and the Serrano of the San Bernardino Mountains. Anthropological literature suggests that the Cahuilla and Serrano societies were similar in many respects. Both groups were primarily hunters and gatherers, and occasional fishers. Both were organized by lineages and clans that were affiliated with one of two exogamous moieties. These different lineages, clans, and moieties interacted with the others through trade, ceremonies, and intermarriage.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Cahuilla and Serrano lifeways was negligible until the 1800s. Beginning in the early 19th century, the increased Spanish—and later American—presence and involvement in the area severely altered their lifeways. In particular, the native population was decimated during the 19th century as a result of the exposure to European diseases, most notably smallpox, for which the Native peoples had no immunity. Today, the nearest Native American group to the study area is the Morongo Band of Mission Indians, which includes members of both Cahuilla and Serrano descent. Portions of the Morongo Band's reservation are located adjacent to the western boundary of the MSWD.

Historic Context

Dating back to ancient times, the San Gorgonio Pass has always been known as a nexus for cross-desert travels. In 1823-1825, José Romero, José Maria Estudillo, and Romualdo Pacheco, leading a series of expeditions in search of a route to Yuma, became the first noted European explorers to travel through the mountain pass and into the Coachella Valley. However, due to its harsh environment, few non-Indians set foot in this arid desert region during the Mexican and early American periods, except those who traveled across it along the established trails.

The most important among these trails was the Cocomaricopa Trail, an ancient Native American trading route connecting the coastal region of California to areas along the Colorado River. In 1862, the Cocomaricopa Trail was “discovered” by William David Bradshaw, and became known as the Bradshaw Trail. For the next 15 years, it served as the main thoroughfare between the Los Angeles area and gold mines near present-day Ehrenberg, Arizona, until the completion of the Southern Pacific Railway in 1876-1877 brought an end to its heyday.

Around 1824, the present-day Banning-Beaumont area, on the west side of the San Gorgonio Pass, became the site of the earliest non-Native settlement in the region when friars from Mission San Gabriel established a mission outpost named in honor of St. Gorgonious. During the mission period, that area was generally known as Rancho San Gorgonio, the most remote of the 24 principal cattle ranches under the control of Mission San Gabriel. In the ensuing decades, a few other early settlers ventured into that area, including Powell “Paulino” Weaver, a colorful native of Tennessee who settled near present-day Banning in the mid-1840s.

Farther to the east, non-Native settlement began in the eastern San Gorgonio Pass and the northwestern Coachella Valley in the 1870s, with the establishment of railroad stations along the Southern Pacific Railway. It spread further during the 1880s, after public land was opened for claims under the Homestead Act, the Desert Land Act, and other federal land laws. Farming became the dominant economic activity in the region, thanks to the development of underground water sources, often in the form of artesian wells. But it was not until the completion of the Coachella Canal in 1948-1949 that farmers in the arid desert valley obtained an adequate and reliable water supply.

The main agricultural staple in the Coachella Valley, the date palm, was first introduced around the turn of the century. By the late 1910s, the date palm industry had firmly established itself, giving the region its celebrated image of “the Arabia of America.” In the 1920s, the sleepy town of Palm Springs was “discovered” by the rich and famous of Hollywood, and quickly rose into stardom as a glamorous desert spa. As a result, a new industry, featuring equestrian camps, resort hotels, and eventually country clubs, gradually spread throughout the Coachella Valley, and since then transformed it into southern California's leading winter retreat.

The principal community in the MSWD, Desert Hot Springs, is among the towns that were largely created by the Coachella Valley's resort industry. Although sporadic settlement took place in the vicinity as early as 1908, the community owes much of its early growth to the abundance of hot mineral water along the San Andreas fault line. L.W. Coffey, who subdivided the Desert Hot Springs townsite in 1933, is also credited with the first successful development of the hot springs for commercial use. Advertised in the early and mid-20th century primarily for its potential for health spas and convalescent homes, Desert Hot Springs saw sufficient growth by 1944 to warrant the establishment of a post office. After a further growth spurt during the post-WWII boom, Desert Hot Springs incorporated as a city in 1963.

4.5.2.2 Archaeological Records Search Results

According to EIC records, nearly 170 previous cultural resource studies have been completed within the scope of the records search, including some 150 within the MSWD boundaries (Figure 4.5-1). As a result of these and other similar studies in the vicinity, a total of 135 historic-period buildings, archaeological sites, or isolates—i.e., sites with fewer than three artifacts—were previously recorded within the scope of the records search. Table 4.5-1 lists the recorded sites.

Table 4.5-1
PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN THE SCOPE OF THE RECORDS SEARCH

Site No.	Recorded by/Date	Description
33-5575	Pritchard-Parker 1994	Isolate: 1 Tizon Brownware sherd
33-5576	Pritchard-Parker 1994	Isolate: 2 Tizon Brownware sherds
33-5722	Warner 1983	Warner Homestead, rectangular residence with 2 geodesicdome additions, ca. 1954
33-6838	Adams 1983	Vernacular and Mediterranean/Spanish-style buildings associated with the B-Bar-H Ranch, ca. 1920
33-6839	Warner 1983	Mediterranean/Spanish-style buildings associated with the B-Bar-H Ranch, ca. 1920
33-6840	Warner 1983	Mediterranean/Spanish-style bungalow, ca. 1936
33-6841	Warner 1983	Vernacular wood-frame house, ca. 1952
33-6842	Adams 1983	"Cabot's Indian Pueblo," Desert Hot Springs pioneer settler Cabot Yerxa's Hopi-style residence, built in 1941-1965
33-6843	Warner 1983	Vernacular wood-frame buildings associated with the LostHeads Ranch, ca. 1950
33-6844	Adams 1983	Vernacular wood-frame buildings associated with Coffee's Spa and Hotel, ca. 1948
33-6845	Adams 1983	Desert Hot Springs Library and Museum
33-6846	Warner 1983	4 wood and 2 brick structures, part of Norm's Motel/DesertTrails Guest Ranch, ca. 1950
33-6847	Warner 1983	Mediterranean/Spanish-style residence, ca. 1932
33-6848	Warner 1983	Vernacular stone residence, pre-1946
33-6849	Warner 1983	Cliff's automotive repair shop, a vernacular wood-frame garage, ca. 1951
33-6850	Adams 1983	Desert Hot Springs schoolhouse, a vernacular wood-frame structure, ca. 1935
33-6886	Warner 1983	Vernacular wood-frame residence, ca. 1952
33-6887	Warner 1983	Vernacular adobe residence with Pueblo Revival elements, ca. 1946
33-6888	Warner 1983	Vernacular wood-frame farmhouse, ca. 1935
33-6889	Warner 1983	Vernacular stone and adobe residence, ca. 1951
33-6890	Warner 1983	Vernacular stone and adobe residence, ca. 1935

Site No.	Recorded by/Date	Description
33-6891	Adams 1983	Vernacular wood-frame residence, ca. 1946
33-6892	Warner 1983	Mediterranean/Spanish Revival-style residence, ca. 1946
33-6893	Warner 1983	Vernacular wood-frame residence, ca. 1941
33-6894	Warner 1983	Vernacular wood-frame residence, ca. 1940
33-6895	Warner 1983	Vernacular wood-frame and stone residence, ca. 1946
33-6896	Warner 1983	Vernacular wood-frame residence, ca. 1946
33-6897	Warner 1983	Vernacular wood-frame residence, ca. 1945
33-6898	Warner 1983	"Los Chimeneas," a vernacular brick residence, ca. 1949
33-6899	Warner 1983	Mediterranean/Spanish Revival-style adobe residence, ca. 1946
33-6900	Warner 1983	Vernacular wood-frame residence with a Moorish-style dome, ca. 1950
33-6901	Warner 1983	Vernacular wood-frame residence, ca. 1946
33-6902	Warner 1983	Mediterranean/Spanish-style residence, ca. 1945
33-6903	Warner 1983	Mediterranean/Spanish-style residence, ca. 1949
33-6904	Warner 1983	Vernacular wood-frame residence, ca. 1950
33-6905	Warner 1983	Pueblo Revival-style brick residence, ca. 1943
33-6906	Warner 1983	Mediterranean/Spanish Revival-style adobe residence, ca. 1946
33-6907	Warner 1983	"Stone Crest," a vernacular stone residence, ca. 1949
33-6908	Warner 1983	Vernacular wood-frame duplex, ca. 1942
33-6910	Adams 1983	Vernacular wood-frame pool house at B-Bar-H Ranch, ca. 1936
33-7582	Terell 1983	Cylindrical water tower associated with the Palm SpringsRailroad Depot, late 1920s
33-7787	Warner 1983	The Whitewater Ranch/Whitewater Adobe site, 1860s-1870s; formerly the Cahuilla village of *Wanapiapa*
33-8403	Brock 1998	20th Avenue, a two-lane asphalt road, ca. 1940
33-8409	Brock 1998	Palm Drive, a two-to four-lane asphalt road, ca. 1930s
33-8410	Brock 1998	Dillon Road, a two-lane asphalt road, ca. 1930s
33-8411	Brock 1998	Devers-Hinds 220-kv power transmission lines, ca. 1950
33-8412	di Iorio 1998	Mediterranean/Spanish-style commercial building, ca. 1948
33-8413	di Iorio 1998	Mediterranean/Spanish-style commercial building, ca. 1948
33-8414	Brock 1998	18th Avenue, a two-lane dirt road, ca. 1940
33-11010	Adams 1983	San Andreas Fault
33-12696	Taskiran and Broomhall 1992	Isolate: 1 prehistoric ceramic sherd
33-12878	Harris 2003	Wooden-box culvert below Long Canyon Road, ca. 1930s

Site No.	Recorded by/Date	Description
33-12922	Carrico 1979	Isolate: 1 square nail embedded in concrete, ca. 1900-1910
33-13433	Way and Eckhardt 2003	Isolate: 1 obsidian secondary flake
33-13562	Way and Eckhardt 2003	Isolate: 1 quartzite secondary flake
33-13678	Breece 1980	Isolate: 1 Tizon brownware rim sherd
33-13738	Rector 1980	Isolate: 2 black ceramic sherds with mica temper
33-14810	Taniguchi 2004	Modern-style wood-frame residence, ca. 1948
33-14863	Carrico 1979	Isolate: 2 pieces of sun-colored amethyst glass
33-15297	Pollock, Knypstra, andJones 2005	Isolate: Fragment of sun-altered amethyst glass, pre-1920s
33-15298	Pollock et al. 2005	Isolate: Fragment of sun-altered amethyst glass, pre-1920s
CA-RIV-53	Eckhardt and Way 2004	A segment of the Cocomaricopa Trail with an associated lithic scatter
CA-RIV-73	Johnston 1955	2 bedrock mortars, 7 cupules, scatter of Tizon brownwaresherds, and 2 redware sherds
CA-RIV-74	Johnston 1956	3 bedrock mortars, 1 broken metate, scatter of redware sherds, exposed midden soil
CA-RIV-75	Johnston 1956	Light ceramic sherd scatter
CA-RIV-154	Eberhart 1952	Burial
CA-RIV-178	Johnston 1960	Site of Palm Springs railway station, with scattered debris,water tank, and several concrete foundations, ca. 1890s
CA-RIV-269	Johnston and Johnston 1964	3 bedrock mortars, 1 possible hearth, adobe wall remnants, 2historic-period graves, 2 metates, 2 Cottonwood triangular projectile points, and a lithic flake scatter
CA-RIV-360	Johnston 1964	Mortar with pestle, 1 metate, 3 cupules, 5 mortars, 1 millingslick, and 1 sherd
CA-RIV-890	?	Unidentified trail
CA-RIV-1068H	Christenson and Cooper1991	Bonnie Bell, a1930s community of 18 houses with associatedbuildings, structural remains, and other features, somepossibly dating to the 1850s
CA-RIV-1118	Cowan 1976	Colorado buffware sherd scatter
CA-RIV-1119	Wilke 1972	Lithic scatter, Tizon brownware and Colorado buffware sherd scatter, 1 possible quartz core
CA-RIV-1246	Smith 1977	Scatters of ceramic sherds, groundstone fragments, lithicflakes, burned bone, and 1 projectile point
CA-RIV-1380	Morin et al. 1976	1 small cairn on top of a ridge
CA-RIV-1387H	Morin et al. 1976	Historic-period refuse, including 2 hole-in-top cans
CA-RIV-1388	Morin et al. 1976	4 flaked cobble fragments, 2 flakes, and fire-affected rock
CA-RIV-1389	Morin and Toren 1976	1 quartz flake with semi-circle of stones
CA-RIV-1390	Morin 1976	Small cairn and trails, possible mining claim
CA-RIV-1391	Morin and Toren 1976	1 flake, 1 biface scrapper

Site No.	Recorded by/Date	Description
CA-RIV-1392	Schummer 1976	1 cairn, fragments of wooden grape stakes
CA-RIV-1393	Schummer 1976	1 cairn, animal trials, 2 tin cans
CA-RIV-1394	Schummer 1976	1 Andesite scrapper, 1 cairn
CA-RIV-1808	Carrico et al. 1979	Salton buffware sherd scatter
CA-RIV-1825	Breece 1980	5 Tizon brownware sherds, several projectile points, lithicdebitage
CA-RIV-1827	Breece 1980	1 Tizon brownware sherd, 1 piece of white chert debitage
CA-RIV-2166	Ritter 1981	1 16-gauge penny wire nail, aqua-glass insulator, wood beam, ca. 1920s-1930s
CA-RIV-2167	Swenson 1982	Small rock ring, 1 metate, 1 possible mano
CA-RIV-2168H	Ritter 1981	3 cairns, 1 broken brown whiskey bottle
CA-RIV-2169H	Ritter 1981	1 cairn and 1 aquamarine jar, ca. 1900
CA-RIV-2170	Ritter 1981	2 rock-ring features, 1 quartzite chopper, possible cairn
CA-RIV-2241	Ritter 1981	3 sherds and 4 jasper-chert flakes
CA-RIV-2642	Drover 1982	Possible village site with Lower Colorado buffware sherds, burned bone, debitage, and burned adobe fragments
CA-RIV-2643	Drover 19892	Small Lower Colorado buffware scatter and fire-affected rock
CA-RIV-2644	Drover 1982	Small Lower Colorado buffware scatter, fire-affected rock, debitage
CA-RIV-2645	Drover 1982	Lower Colorado buffware scatter, hammerstone, fire-affected rock, groundstone
CA-RIV-2646	Drover 1982	Sparse scatter of lithic debitage and fire-altered rock
CA-RIV-2647	Drover 1982	Burned bone, lithic debitage, Lower Colorado buffware scatter
CA-RIV-2668	McCarthy 1983	1 bedrock milling slick
CA-RIV-2774	Swenson 1984	1 granite mortar
CA-RIV-3395	Mitchell and Noordman 1988	2 ollas, 1 rim fragment with red-brown paint on a white slip, small scatters of sherds
CA-RIV-3423	Altschul 1986	A small rock wall structure within an artificial depression
CA-RIV-3441H	Apple et al. 1988	Scatter of debris, footings for a water tank, early 1900s
CA-RIV-3656H	Goodman and Arkush 1989	Remains of a large water tank and a dense refuse deposit, ca. 1920-1930s
CA-RIV-3657H	Goodman 1989	Mine or well shaft with a dense scatter of historic-era refuse
CA-RIV-3658	Goodman 1989	1 bedrock milling slick
CA-RIV-4040	Swope and Diehl 1990	Refuse scatter from a homestead, early 1900s
CA-RIV-4041	Swope and Hallaran 1990	Refuse scatter, rock alignment, earthen depression from ahomestead, early 1900s
CA-RIV-4109H	Everson 1990	Concrete foundation, ceramic standing pipe, well casing,demolished wooden structure, refuse and debris
CA-RIV-4873H	Taskiran 1992	Refuse scatter with 1 cone-top beer can, ca. 1930s

Site No.	Recorded by/Date	Description
CA-RIV-5503	Pritchard-Parker 1994	1 bedrock milling slick
CA-RIV-5504	Pritchard-Parker 1994	Mining claim including cairn and wooden post, 1 cigar can
CA-RIV-5507H	Pritchard-Parker and Conkling 1994	Refuse scatter with cans, ceramics, and glass
CA-RIV-6128	Sawyer and Smith 1998	Refuse concentration, ca. 1940s
CA-RIV-6129	Sawyer and Smith 1998	2 Refuse concentrations, ca. 1940s
CA-RIV-6379H	Love and Tang 2000	Water-conveyance system and associated features, ca. 1920s
CA-RIV-6380H	Love and Tang 2000	Water-conveyance system and associated features, ca. 1920s
CA-RIV-6381H	Taniguchi 2005	Segment of the Southern Pacific (now Union Pacific) Railway, ca. 1876
CA-RIV-6492H	Conkling 1994	Homestead with rock alignments, concrete pads, and several refuse concentrations, ca. 1920s-1940s
CA-RIV-6726H	Dice 2001	Segment of the Colorado River Aqueduct, built in the 1930s
CA-RIV-6945H	Cotterman 2002	Can scatter, ca. 1915-1945
CA-RIV-7161H	Harris 2003	Tailing piles and concrete structural remains associated with the construction of the Colorado River Aqueduct, ca. 1930s
CA-RIV-7162H	Harris and Bircheff 2003	Water level gauge station on a terrace on Long Canyon Road, ca. 1914-1945
CA-RIV-7478	Raschkow 2002	Concentration of brownware sherds, burned bone, and fire-affected rock
CA-RIV-7487	Alexandrowicz and Krautkaner 2004	Early 20th century habitation site with rock alignments andrefuse deposits
CA-RIV-7491H	Brock and Eason 2004	Scott Farris Date Farm with concrete foundation, 1 well, and a refuse scatter, ca. 1947
CA-RIV-7590	Smallwood 2004	1 bedrock milling slick
CA-RIV-7591	Smallwood 2004	1 bedrock milling slick
CA-RIV-7606H	Eddy 2004	1 concrete building foundation, 4 refuse concentrations, ca.1920s
CA-RIV-7832	Dice 2005	2 bedrock milling slicks
CA-RIV-7957	Kind 2006	Triangular concrete foundation, possible water collection tank and trench
CA-RIV-7958	Kind 2006	Rectangular concrete foundation, rock-ringed fire pit
CA-RIV-8054	de Barros 2006	Stone circle
CA-RIV-8080	Pollock et al. 2005	Refuse scatter with tin cans and glass fragments, ca. 1914-1945

As Table 4.5-1 shows that more than two-thirds of these recorded cultural resources were from the historic period, including some 40 buildings or groups of buildings. These buildings predominantly dated to the 1930s-1950s, and most of them were concentrated in the downtown area of the City of Desert Hot Springs. The archaeological sites from the historic period consisted mostly of debris or structural remains that reflected early settlement activities, while segments of irrigation lines and early transportation routes were also recorded. The prehistoric—i.e., Native American—sites were typically described as scatters of ceramic, lithic, groundstone, or other artifacts, along with several ancient trails, bedrock milling features, and at least one human burial.

Among these recorded sites, 33-6842, a Hopi Pueblo-style residence built near downtown Desert Hot Springs by local pioneer Cabot Yerxa between 1941 and 1965, has been designated a California Point of Historical Interest and a Riverside County Landmark. Also designated as such was Site 33-7787, which represented both the site of a known Cahuilla village and that of an early Anglo-American settlement and a stage stop on the Cocomaricopa-Bradshaw Trail (Site CA-RIV-53), an ancient Native American trading route that became an important wagon road across the Colorado Desert during the mid-19th century.

Among the prehistoric sites recorded within the scope of the records search, the most notable were CA-RIV-1246 in the Two Bunch Palms area and CA-RIV-2642 in the Seven Palms area. Recent archaeological excavations at both of these sites have revealed rich, multi-layered cultural deposits with a large number and variety of artifacts and features, some of which evidently reflect habitation and other activities in the site areas during the Archaic Period (pre-1000 A.D.).

4.5.2.3 Native American Input

In response to CRM TECH's inquiry, the Native American Heritage Commission reports that the Sacred Land File (SLF) indicate an unspecified number of Native American cultural resources within the study area, located on the USGS Cabazon, Desert Hot Springs, and Whitewater, Calif.,1:24,000 quadrangles. In addition, the commission states that although no sites are identified on the other quadrangles, the SLF inventory is by no means exhaustive. Therefore, the commission recommends that local Native American representatives be consulted for additional information, and provided a list of potential contacts.

Upon receiving the Native American Heritage Commission's reply, CRM TECH contacted all nine individuals on the referral list and the organizations they represent, as stated above. As of this time, three of these local Native American representatives have responded on behalf of the Morongo Band of Mission Indians, the Agua Caliente Band of Cahuilla Indians, and the Cabazon Band of Mission Indians.

Judy Stapp, Director of Cultural Affairs for the Cabazon Band, responded to CRM TECH's inquiries by telephone on January 5, 2007. During the telephone conversation, she stated that the Cabazon Band did not have any concerns over the study area unless cultural remains were uncovered that would require further consultation with the tribe.

Britt Wilson, Cultural Resources Coordinator for the Morongo Band, also responded by telephone on January 5, 2007. Based on extensive research he had conducted on the Village of *Wanapiapa*, Mr. Wilson stated that there might have been several different locations for the village, all of which lie within the boundaries of the study area. According to Mr. Wilson, the Whitewater River would flood periodically and wash out the entire village site, which would force the occupants of the village to relocate. On January 23, Mr. Wilson offered additional comments by e-mail, in which he identifies much of the study area as part of the Morongo Band's culturally affiliated lands. Mr. Wilson further notes in the e-mail:

> *As a general statement, rock art sites and village sites are considered sacred to the Tribe and we oppose any destruction of those sites. If development will be placed near those sites, we ask for a buffer zone of at least 75 yards.*

In a letter dated January 16, 2007, Richard Begay, Director of the Agua Caliente Tribal Historic Preservation Office, states that the Agua Caliente Cultural Register also shows the presence of Native American cultural resources within the study area, but that he was unable to reveal further information on these sites. Since the study area is considered a part of the Agua Caliente Band's traditional use area, Mr. Begay requests copies of cultural resource documentation generated through this study and that Approved Cultural Resource Monitor(s) be present during any ground-disturbing activities in the area.

To date, none of the other local Native American representatives contacted by CRM TECH has responded directly. However, Katherine Siva Saubel, Spokesperson for the Los Coyotes Band of Mission Indians and a well-known authority on Cahuilla culture and history, indicated to Britt Wilson that she was aware of a plant collecting area on the Desert Hot Springs quadrangle that was used by Native people. Based on information relayed toCRM TECH by Mr. Wilson, this is likely one of the Native American cultural resources identified in the Native American Heritage Commission's SLF.

Although at this time neither the commission nor the local Native American representatives would reveal the exact nature or location of the sites identified in the SLF due to confidentiality concerns, it is clear that a number of sites of Native American traditional cultural value are known to be located within the Cabazon, Desert Hot Springs, and Whitewater quadrangles. Among them are a sacred plant collecting area, at least one hill associated with spiritual powers, several burial sites, and at least two important village sites, which also include burials and other locations of spiritual significance.

4.5.2.4 Archaeological Sensitivity Assessment

A comprehensive assessment of the study area for cultural resources sensitivity is subject to the limitation of existing data. As Figure 4.5-1 shows, more than half of the study area has not been surveyed systematically for cultural resources, especially in the San Bernardino and Little San Bernardino Mountains in the northwestern and northeastern portions of the MSWD. Approximately 35% of land within the MSWD has been surveyed previously, but some of the areas were surveyed more than 10 years ago and typically will need to be resurveyed. The patchwork of past survey work reflects contemporary land use and development patterns, and any determination of cultural resources sensitivity of unsurveyed areas on the basis of available data should only be considered preliminary, pending the completion of systematic and area-specific studies.

In spite of this limitation, the results of past studies in the vicinity, along with findings from similar studies elsewhere in the Coachella Valley, suggest that areas along streambeds, most notably the Whitewater River but also including the various seasonal washes, and along the foothills of the San Bernardino and Little San Bernardino Mountains are of relatively high sensitivity for both prehistoric and historic-period archaeological resources. In addition, in light of recent archaeological discoveries of great scientific significance, the Two Bunch Palms-Seven Palms area in the southwestern portion of the MSWD and other locations along the fault lines, where the presence of natural springs often brought about desert oases, should also be considered highly sensitive for prehistoric archaeological remains.

For historic-period archaeological resources, essentially all areas on the level valley floor are of at least moderate sensitivity, while sites associated with specific resource procurement activities, such as logging, mining, and development of irrigation systems, may occur sporadically in the rugged mountain terrain. As for historic-period buildings and other built environment features, clearly the largest concentration is located in the downtown area of the City of Desert Hot Springs, as revealed by both the distribution of recorded examples and historic maps from the 1940s-1950s. However, isolated or locally clustered historic-period buildings may be encountered almost anywhere on the valley floor.

According to the historic maps, by the mid-20th century several smaller centers of settlement and land development activities had formed around the mouth of the Whitewater canyon, at the community of North Palm Springs, in the Seven Palms Valley, and in the Miracle Hill-Two Bunch Palms area. Although relatively few historic-period buildings were previously identified at these locations, many of the buildings dating to the mid-20th century, if still present, have by now reached the 45-year age threshold to be recorded and evaluated as potential historical resources.

Finally, because of the presence of an unspecified number of Native American sacred sites or other sites of traditional cultural value within the Cabazon, Desert Hot Springs, and Whitewater quadrangles, all portions of the study area within these quadrangles (Figure 4.5-1) should be considered sensitive for Native American cultural concerns.

4.5.2.5 Paleontological History

The study area includes portions of three of California's geomorphic provinces (Jenkins 1980:40-41; Harden 2004:63-64; Harms 1996:iii). The San Bernardino Mountains to the north of the Banning Branch of the San Andreas Fault System and the Little San Bernardino Mountains lie within the Transverse Range Province. The San Gorgonio (Banning) Pass area, in the Banning Fault Zone, is located in the northern part of the Peninsular Range Province. The Painted Hills and Coachella Valley portion of the study area to the southeast is part of the Colorado Desert Province.

Colorado Desert Province

The Colorado Desert Province is bounded on the southwest by the Peninsular Range Province, on the north by the eastern Transverse Ranges Province, and on the northeast by the southern portion of the Mojave Desert Province. It widens to the southeast through the Imperial Valley and on into Mexico where it becomes part of the Gulf of California.

A major feature in the northwestern portion of the Coachella Valley is that of the San Andreas Fault System. The fault system has brought to the surface rocks that date to the lower Pliocene and probably as old as the late Miocene (Dibblee 1954:Plate 2; Proctor 1968:Plate 1). This portion of the study area contains the tectonically uplifted features of Painted Hill and Garnet Hill. It is here that some of these older sedimentary rocks are exposed at the surface.

Peninsular Range Province

The Peninsular Range Province is bound on the north by the Transverse Range Province, on the northeast by the Colorado Desert Province, and on the west by the Pacific Ocean(Jenkins 1980:40-41; Harmes 1996:131). It extends southward to the southern tip of Baja California (Jahns 1954; Harden 2004:465).

The Peninsular Range Province consists of a series of roughly northwest-southeast trending structural blocks of uplifted mountains separated by valley basins along the intervening fault zones. The mountains are primarily igneous intrusive rocks, metasedimentary rocks, and some meta-volcanic rocks (Norris and Webb 1976:169-173; Harden 2004:466-468). The non-crystalline rocks in the western portion consist of both metavolcanic and metasedimentary rocks primarily of Mesozoic age, while the eastern portion contains metasedimentary rocks dating to the Paleozoic age or older (Norris and Webb 1976:169173; Harden 2004:471-472). The crystalline basement rocks are present in both the western and eastern portions, consisting largely of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (Harden 2004:466-468).

The intervening valley basins are filled mainly with Pliocene to Recent non-marine sedimentary rocks (Woodford et al. 1971:3421), with the exception of the San Bernardino Valley, which contains Miocene through Recent non-marine sedimentary rocks (Clarke 1978-1979:15). Reynolds and Reeder (1986:52) state:

> Dibblee (1981) suggest that the San Timoteo formation was probably deposited in a northwest-southeast trending depositional basin which extended from the San Bernardino plain into the San Jacinto Valley, and eastward through the SanGorgonio Pass and into the Salton Trough. The upper Pliocene basin in which the San Timoteo formation was deposited was probably partially coincident with the former Mio-Pliocene marine embayment responsible for the deposition of the Imperial formation.

Such an idea is supported by a wildcat well that was drilled in 1926 for oil and gas on the Shutt Ranch in Section 16, T2S, R2W, SBBM, to a depth of 5,358 feet without encountering crystalline basement rocks (Oakeshott et al. 1950:32). Reynolds and Reeder (1986:51) state that “records on file with the California Division of Oil and Gas indicate the well encountered some oil-bearing sands at a depth of 5,187 feet. The well log also indicated that 28 feet of 'marine sands' were encountered at a depth of 4,872 feet.”

Transverse Range Province

The Transverse Range Province is a very complicated and diverse structural feature made up of a group of discrete mountains and basins structurally oriented in a nearly east-west direction (Harms 1996:158; Norris and Webb 1976:190). Rocks within this province range in age from Precambrian to Recent (Harms 1996:158). The San Bernardino Mountains are the largest and tallest mountain range within the Transverse Range Province and consist of igneous and metamorphic rock of Mesozoic and pre-Mesozoic age along with a few Cenozoic-age volcanic and sedimentary rocks (ibid.:169-170; Norris and Webb 1976:220221). Some Cenozoic-age sedimentary and volcanic rocks can be found along the southern flanks and filling some of the interior basins of this mountain range (Vaughn 1922:Map;Dibblee 2004:DF-119, -120, and -121).

The Little San Bernardino Mountains are separated from the San Bernardino Mountains by the Morongo Fault (Harmes 1996:173) or the Pinto Mountain Fault (Bortugno and Spittler1986). These mountains are much lower in elevation and are considered to be the eastern terminus of the Transverse Range Province (ibid.; Norris and Webb 1976:221-222). The geology of these mountains is very similar to that of the San Bernardino Mountains (ibid.). Some Cenozoic-age sedimentary and volcanic rocks can be found along the southern flank sand filling some of the interior basins of this mountain range (Proctor 1968:Plate 1; Trentand Hazlett 2002:Geologic Map).

4.5.2.6 Records Searches

The records search service was provided by the Regional Paleontologic Locality Inventory at the San Bernardino County Museum and the Vertebrate Paleontology section of the Natural History Museum of Los Angeles County. These institutions maintain files of regional paleontological localities as well as supporting maps and documents. The records search results are used to identify previously discovered paleontological localities in and near the study area.

The results of the records searches conducted by both museums indicate that no paleontological localities have been discovered within or in close proximity to the boundaries of the study area. The records searches results further indicate that the igneous and metamorphic rocks and the Holocene-age surface alluvium present within the study area have a low potential for containing significant nonrenewable paleontologic resources (McLeod 2007; Scott 2077; see App. 1).

The Los Angeles County Museum considers all of the sedimentary rocks of Miocene through Pleistocene age to have a high potential for paleontological resources (McLeod2007). With the exception of the Ocotillo Conglomerate, the San Bernardino County Museum concurs to this conclusion (Scott 2007). Both museums indicate the need for monitoring of these Miocene-through Pleistocene-age sedimentary rocks and consider the sediments of the Imperial Formation to have a high sensitivity for important nonrenewable vertebrate fossil remains (McLeod 2007; Scott 2007).

The results of the records searches are as follows:

<u>Colorado Desert Province</u>

Most of the Coachella Valley proper within the study area is covered by Qal, or alluvium of Recent (Holocene) origin, and this material is generally considered low in sensitivity for paleontological resources. However, it rests directly on top of older sediments that are likely to contain vertebrate fossils, and its thickness is unknown and variable. Based on the sediments outcropping in the Painted Hills and Garnet Hill areas, some important, potentially older fossiliferous sediments are likely be present in the subsurface of the northwestern portion of the Coachella Valley proper. Because of this stratigraphic configuration, it will be necessary to start periodic monitoring in this area when excavations exceed 5 feet in depth, and continuous monitoring will be required if any of the older potentially fossiliferous sediments are encountered below the Qal or if excavations exceed ten feet in depth.

In the few areas where Pleistocene-age Cabezon Fanglomerate or Ocotillo Conglomerate are in outcrop, periodic monitoring will be necessary from the start of ground disturbances and continuous monitoring will be required should any potentially fossiliferous sediments be encountered. The San Bernardino Museum does not consider the Cabezon Fanglomerate/Ocotillo Conglomerate to be highly fossiliferous (Scott 2007), but the Los Angeles County Museum does (McLeod 2007). While the Los Angeles County Museum reports a fossil locality from the Ocotillo Conglomerate at Flat Top Mountain, northwest of Edom Hill (McLeod 2007), the rest of the paleontological literature suggests that if this fossil did come from the Ocotillo conglomerate it is the only vertebrate fossil reported to have been found in this formation in the Coachella Valley.

The older sedimentary rocks present in and near the Painted Hills area, such as the Coachella Fanglomerate, Imperial Formation, and Palm Springs Formation, will need continuous monitoring from the start of any excavations.

Peninsular Range Province

Most of the study area lying within the San Gorgonio Pass proper is also covered by Qal, alluvium of Recent (Holocene) origin. As in the adjacent area within the Colorado Desert Province, periodic monitoring is recommended when excavations exceed five feet in depth, and continuous monitoring is recommended if any of the older, potentially fossiliferous sediments are encountered below the Qal. Similarly, in the few areas with Pleistocene-age Cabezon Fanglomerate or Ocotillo Conglomerate in outcrop, periodic monitoring will berequired from the start of ground disturbances and continuous monitoring will be necessary should any potentially fossiliferous sediments be encountered.

Most of the area within the Banning Fault Zone will need continuous monitoring from the beginning of ground disturbances. This is especially true for the Coachella Fanglomerate, Imperial Formation, and Palm Springs Formations. The areas with Qal or Cabezon Fanglomerate outcropping at the surface will need periodic monitoring during excavations that reach deeper than five feet, or continuous monitoring if older sediments are encountered.

Transverse Range Province

The sedimentary rocks present along the south flank of the Little San Bernardino Mountains are described as coarse grained and probably do not make a good environment for preserving vertebrate fossils. These sediments will require periodic monitoring during all earth-moving operations, and continuous monitoring if any potentially fossiliferous sediments are encountered. The area in the San Bernardino Mountains is primarily igneous and metamorphic rocks and these will not require paleontological monitoring. Some Cabezon Fanglomerate mapped along the west side of the Whitewater River will need periodic monitoring should they be impacted. Again, full-time monitoring will become necessary if potential fossiliferous sediments are encountered.

The Qal mapped within the Burro Flats area will need periodic monitoring for any cuts deeper than five feet, with continuous monitoring to be implemented when older sediments are encountered. If the Cabazon Fanglomerate and older sedimentary rocks are in outcrop, then periodic monitoring will be needed from the start of ground disturbances.

Summary

Generally speaking, the areas of igneous and metamorphic rocks and those with Recent(Holocene) alluvium will not require any monitoring, although some of the Recent alluvium will need periodic monitoring for any cuts deeper than five feet, in case older sediments buried underneath are encountered. The areas with outcroping Ocotillo and/or Cabazon Fanglomerate will need to be periodically monitored from the start of ground disturbances in order to determine if any fossil-bearing soils are present and to see what might be exposed below them. Outcrops of any of the Tertiary-age sedimentary rocks (Tcs, Tcf, Ti, Tpf, and Tps) will require monitoring on a continuous basis from the start of any ground disturbances.

4.5.3 Thresholds of Significance

The purpose of this study is to identify any cultural resources within or adjacent to the project area and to assist the MSWD in determining whether such resources meet the official definitions of "historic resources," as provided in the California Public Resources Code, in particular CEQA.

According to PRC §5020.1(j), "historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." Specifically, CEQA guidelines states that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing the California Register of Historical Resources, included in the local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a) (1)-3)).

Regarding the proper criteria for the evaluation of historical significance, CEQA guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

A significant cultural resource impact would be any one impact that resulted in the damage, disturbance or destruction of an archeological, paleontological, or other historic/cultural resource.

a. Will the project disturb, damage, or destroy cultural resources?

The proposed project is designed to enhance and maintain water supplies and water quality within the MSWD, and to create the necessary infrastructure and supporting facilities to achieve these goals within the project area. Implementation of project-related facilities could encounter, destroy, or permanently alter the paleontologic sites and resources that exist within the project area. The loss or significant damage to resources or their information value would be a significant impact of the proposed project. Mitigation measures have been identified below that will minimize paleon-tologic site damage and disturbance. Implementation of these measures can ensure that paleontological resources are managed in a manner that does not cause significant adverse impacts.

The cultural resource analysis completed for the project area indicates that there is a high probability for encountering prehistoric archaeological resources, historic archaeological resources and historic resources in certain localities within the project area boundaries. The potential for encountering such resources is unknown at this time, as the exact locations for all the facilities have yet to be defined. Thus, potential impacts to cultural resources must be considered significant under CEQA until further evaluated and/or declared not significant by a qualified professional.

Mitigation measures have been identified below that will ensure archaeological and historical sites and resources will not be damaged or disturbed without preserving the resources and their information value. Implementation of these measures can ensure that archaeological and historical resources are managed in a manner that reduces impacts to a less than significant level by working through the established process defined below, by avoiding the site, or if impacts could still remain significant, then further site specific environmental documentation will be prepared by a qualified professional.

4.5.4 Project Impacts

Activities requiring the excavation or movement of soil material at any location within the project area have the potential to adversely effect cultural resources. The impact evaluation presented below focuses on the proposed physical changes to sites and any potential adverse impacts these changes may have on the cultural resources that may exist on the site. For purposes of the following analysis of cultural resource impacts, it is assumed that the project will be approved and implemented as proposed and described in the Project Description, Chapter 3 of this document.

The development of land within the project area would include installing new infrastructure systems. These water supply facilities are consistent with any land use designation, and thus could conceivably be located anywhere within the project area. The cultural resource issues of focus in this evaluation are related to the types of possible alterations in the existing ground surface and substrate from construction of Water Master Plan facilities, and the potential damage or loss of historical structures that exist within the project area that may be impacted from implementing this project. The project proposes construction of new facilities within the project area, the exact locations of most has not yet been defined. Thus a general evaluation of cultural resources has been conducted to provide guidance for the siting of future project facilities while site-specific evaluations will be provided for the known sites.

For those facilities for which sites have been selected, the following evaluation is provided:

Vista Reservoir

The Vista Reservoir will be located on and adjacent to an existing MSWD water storage facility. This site is located in the foothills of the Little San Bernardino Mountains. The existing reservoir site has been graded and an access road constructed. The proposed site is located along the access road on land that has been partially excavated by development of the access road and reservoir site. The remainder of the proposed site is comprised of moderately disturbed hillside. No structures or other signs of human occupation of the site was observed. Data provided in the Historic

Resources Report and Figure 4.5-1 of this PEIR indicates this site has not been previously surveyed for historic resources but is located near areas that have been previously surveyed. While it is unlikely that historic resources occur on the site, it is located within the Desert Hot Springs quadrangle and a site specific cultural resources investigation should be performed prior to the start of land disturbance activities.

As stated, the Vista Reservoir site is situated within the foothills of the Little San Bernardino Mountains. These mountains are comprised of igneous and metamorphic rock. The potential for paleontologic resources to occur is considered very low. Unless younger alluvium is encountered during construction activities, no further investigation or monitoring of construction at this site is recommended.

Terrace Reservoir

The proposed Terrace Reservoir site is situated within an urbanized portion of the District. The proposed site is a vacant parcel that is surrounded by development. An existing MSWD water storage facility is located southwesterly of the site and residential development occurs on the other sides. While vacant, the site is subject to human usage on a regular basis. Vehicle and pedestrian tracks are evident as is some unauthorized dumping. No structures are evident on the site.

Due to the disturbed nature of the site, it is highly unlikely that any historic resources are present. However, the site is located within the Desert Hot Springs quadrangle and some potential does exist for sub-surface resources to occur. The site has not been previously surveyed and a site specific cultural resources investigation should be performed prior to the start of land disturbance activities.

The site is situated atop younger alluvium. However, the depth to older alluvium at the site is not known. Therefore, a site specific evaluation for paleontologic resources should be performed prior to the start of land disturbance activities.

1400 Zone Well, Booster Pump Station and Pipeline

The proposed 1400 Zone well and booster pump station is located on a vacant parcel of land on the north side of Two Bunch Palms Trail within in a lightly urbanized area of the City of Desert Hot Springs. Commercial development occurs on the south side of Two Bunch Palms Trail across from the site. The site is located easterly of Little Morongo Road near Big Morongo Wash. While the site is vacant, it is subject to human usage. According to data provided on Figure 4.5-1 of this PEIR, the site has not been previously surveyed for cultural resources. No structures or other manmade features are evident on the site.

It is possible that surface or subsurface resources exist on the proposed well and pump station site. Therefore, a site specific cultural resources investigation should be performed prior to the start of any land disturbance activities.

The proposed pipeline is located within developed roadways and no potential for surface or near surface cultural resources to occur exists. It is possible that unknown buried resources may exist along the pipe alignment. Mitigation is provided in this PEIR to reduce the potential for impact to buried resources, if encountered, to a less than significant level.

Due to the location disturbed nature of the site, it is highly unlikely that any historic resources are present. However, the site is located within the Desert Hot Springs quadrangle and some potential does exist for subsurface resources to occur. The site has not been previously surveyed, however, adjacent parcels have been surveyed with negative findings for cultural resources. A site-specific cultural resources investigation should be performed prior to the start of land disturbance activities

The site is situated atop younger alluvium. However, the depth to older alluvium at the site is not known. Therefore, a site specific evaluation for paleontologic resources should be performed prior to the start of land disturbance activities.

4.5.5 Mitigation Measures

Mitigation measures are required to reduce potential archaeological, paleontological and historical resource impacts to a non-significant level. The following mitigation measures are recommended as conditions of project approval for projects being developed in areas that have not been previously evaluated for cultural resources.

4.5.5.1 Archaeology

4.5-1 Inventory: A required basic archaeological inventory should encompass the following guidelines:

a. Literature and Records Search - Existing maps, site reports, site records, and previous EIRs in the region of the subject area should be researched to identify known archaeological sites and works completed in the region. All maps, EIRs, historical maps and documents, and site records should be cited in text and references. Local historical societies and Native American tribes should also be contacted and referenced. State Information Centers will provide the bulk of this information. The Eastern Information Center at UC Riverside should be contacted.

b. Field Reconnaissance - Conduct a surface survey to obtain comprehensive examination of current status of the area and gather general understanding of the kinds of cultural and related phenomena present. At a minimum, all ground surfaces chosen for survey should be walked over in such a way that every foot of ground can be visually scanned. All previously recorded cultural resources should be revisited to determine their current status, and all newly discovered sites should be recorded on either State Form 422 or 523 and supplements, as appropriate. Trinomial designations will be obtained from the Eastern Information Center. For the inventory process, a compilation of all historical resources, including archaeological and historic resources older than 50 years, using appropriate State record forms, following guidelines in the California Office of Historic Preservation's handbook should be completed for all new discoveries. Two copies of the report shall be submitted to the Eastern Information Center for the assignment of trinomials.

c. Report - A technical report should be prepared which fully describes both the methods and results of all efforts. Research sources should be listed, and the information summarized. The field work should be presented in detail, with all appropriate maps and graphics. Any areas not inspected with full intensity should be specified, preferably using clear, easily understood maps, and the reasons for the deficiency presented. Site records should be prepared for all new discoveries, and amendments prepared to update old records where necessary; since locational data are shielded from public access, the actual forms should be provided in the separable appendix, but the sites should be described in the main text. Each resource description should include a professional opinion of significance, with reference to the qualities or research potential which make it worthy of further consideration. Archaeological sites

which need test excavation to confirm significance, integrity, and boundaries should be identified, and a sampling program recommended.

For each potentially significant cultural resource, possible impacts should be listed and mitigating measures developed. All standards for compliance with the CEQA requirements and those of the lead agencies should be addressed.

4.5-2 Assessment: Properties shall be evaluated using a well-understood cultural context that describes the cultural development of an area and identifies the significant patterns that properties represent. This same historic context is used to organize all identification, registration, and preservation decisions within the planning framework. To be useful in subsequent stages of the planning process, evaluation decisions must make clear the significance of the property with the historic context. Potential preservation treatments should not influence the evaluation of significance (National Park Service n.d.:35).

The nature and type of assessment will depend on the particular resource(s) and level of information for a particular region. Consequently, it is not possible to prescribe specific methods to be utilized. However, there are certain basic elements that should be included and are as follows:

a. Preparation of a Research Design - Archaeological documentation can be carried out only after defining explicit goals and a methodology for reaching them. The goals of the documentation effort directly reflect the goals of the preservation plan and the specific needs identified for the relevant historic contexts.

b. Field Studies - The implementation of the research design in the field must be flexible enough to accommodate the discovery of new or unexpected data classes or properties, or changing field conditions. An important consideration in choosing methods to be used in the field studies should be assuring full, clear, and accurate description of all field operations and observations, including excavation and recording techniques and stratigraphic or inter-site relationships.

c. Report - The assessment report should evaluate the significance and integrity of all historical resources within the project area, using criteria established in Appendix K of the CEQA Guidelines for important archaeological resources and/or CFR 60.4 for eligibility for listing on the National Register of Historic Places. The report should contain the following information and should be submitted to the San Bernardino county Archaeological Information Center or to the Eastern Information Center at UC Riverside for permanent archiving:

(1) Description of the study area;
(2) Relevant historical documentation/background research;
(3) The research design;
(4) The field studies as actually implemented, including any deviation from the research design and the reason for the changes;
(5) All field observations;
(6) Analysis and results, illustrated as appropriate with tables, maps, and graphs;
(7) Evaluation of the study in terms of the goals and objectives of the investigation, including discussion of how well the needs dictated by the planning process were served;
(8) Information on where recovered materials are curated and the satisfactory condition of those facilities to protect and to preserve the artifacts and supporting data. The Eastern Information Center requests that historical resource data and artifacts collected within this project area be permanently curated at an appropriate repository.

d. In the event that a prehistoric or historic artifact over 50 years in age is encountered within the project area, especially during construction activities, all land modification activities in the immediate area of the finds should be halted and an onsite inspection

should be performed immediately by a qualified archaeologist. This professional will be able to assess the find, determine its significance, and make recommendations for appropriate mitigation measures. Further, if human remains of any kind are encountered on the property, the Riverside County Sheriff's and Coroner's Office must be contacted within 24 hours of the find, and all work should be halted until a clearance is given by that office and any other involved agencies.

4.5-3 Monitoring: In situations where resources are potentially subject to direct or indirect impact and testing or data recovery is not proposed, an archaeological monitor and Native American observer/consultant should be present during subsurface work. One circumstance under which this might occur would be if a known resource was close to a area of impact and the site boundaries were ambiguous. Monitors help insure that exposed data or materials are collected and that if potentially significant cultural materials or features are encountered, they will be preserved either by realignment of the proposed facilities or by prompt evaluation and recommendations for any necessary mitigative measures.

4.5-4 Data Recovery: If an archaeological resource is found to be significant and no other preservation option is possible, mitigation of adverse effects by scientific data recovery, including analysis and reporting is the method of last resort. Such a mitigation program is usually only developed after an assessment test has been completed to identify physical parameters and cultural complexity, and formulate a research design. Each specific program would have to be developed in response to the site and potential impact, with the concurrence of the appropriate agencies and in consultation with Native American representatives.

4.5-5 Future Project Siting: Future project shall be located, whenever possible or feasible, outside of known highly sensitive cultural resource areas. Before any projects are located, and before any construction activities begin, any proposed project that will result in ground disturbance to any area that does not have a complete cultural resource survey on record with the EIC office will conduct a site specific cultural resource evaluation and report prior to any ground breaking activity. Further, if cultural resources have been identified on the site, a qualified archeologist or paleontologist will be retained to devise an excavation and/or curation plan for the resources, and a qualified cultural resource monitor will be present onsite during all construction-related activities that could potentially uncover previously undiscovered resources. This monitor will examine excavated soils and have the authority to cease construction activities if resources are un-earthed.

4.5.5.2 Architectural Resources

4.5-6 Based solely upon this level of investigation and at this stage of project planning, it would be premature to propose specific mitigation measures. However, certain options can be presented presupposing a general level of knowledge regarding impacts. These options can be utilized to avoid impacts upon the cultural resources - the preferred result - or to lessen adverse effects. It should be emphasized that these options are not the only ones that may be applied. As such, these measures are not recommended as conditions of Project approval but are included for the Authority's consideration and implementation as appropriate.

a. Conduct a comprehensive historic building survey which is integrated with economic development programs;

b. Adopt a preservation ordinance and create a preservation board;

c. Ensure other planning programs, plans, and ordinances are compatible to the historic preservation goals and policies;

__d.__ __Direct existing funding sources and loan programs to historic neighborhoods in need of revitalization;__

__e.__ __Provide incentives and direction encouraging preservation and revitalization;__

__f.__ __Develop ongoing programs for enhancing public appreciation of historic resources; and__

__g.__ __Project Redesign__

A proposed project may be redesigned in either of two ways:

(1) Outside of site boundaries, thus avoiding impact to the site; or
(2) Restricting impacts to those areas of a site where previous impacts have already destroyed the integrity and research potential.

Other options may also apply and may include capping of the site, relocation of structures, and integration of extant buildings into project design.

4.5.5.3 Paleontologic Resources

4.5-7 Generally, the igneous and metamorphic rocks and those with Recent (Holocene) alluvium will not require any monitoring, although some of the Recent alluvium will need periodic monitoring for excavations deeper than five feet in case older alluvium is encountered beneath the younger alluvium. The areas with outcroping Ocotillo and/or Cabazon Ganglomerate will require periodic monitoring from the start of excavations to determine if any fossil-bearing soils are present. Outcrops of tertiary-age sedimentary rocks (Tcs, Tcf, Ti, Tpf and Tps) will require monitoring on a continuous basis during ground disturbance activities.

These measures ensure that the project area amendment will not cause significant impact to cultural resources. Mitigation will be accomplished through avoidance or recovery of all pertinent data from identified cultural resources sites within the project area. Implementing the above measures will contribute to routine environmental impacts associated with disturbing the ground during artifact and data collection.

Based on available data, it is concluded that the Vista and Terrace Reservoirs and the 1400 Zone well, booster pump and pipeline project may require periodic monitoring during land disturbance activities. The extent of monitoring for these sites and future sites will be determined after site specific soils and geotechnical reports are completed.

4.5.6 Cumulative Impact

Cumulative cultural resource impacts can only occur when such resources are not avoided or are not recovered, evaluated and their data value placed in the broader contest of such resources. Based on the requirement to ensure that such resources are avoided or otherwise protected and evaluated, no cumulatively significant cultural resource impacts are forecast to occur if the proposed project is implemented.

4.5.7 Unavoidable Adverse Impact

The cultural resource evaluation presented above indicates that, with implementation of appropriate mitigation measures, the proposed project will not cause any significant unavoidable adverse impacts. Therefore, no unavoidable significant adverse cultural resource impacts are forecast to occur if the proposed project is implemented.

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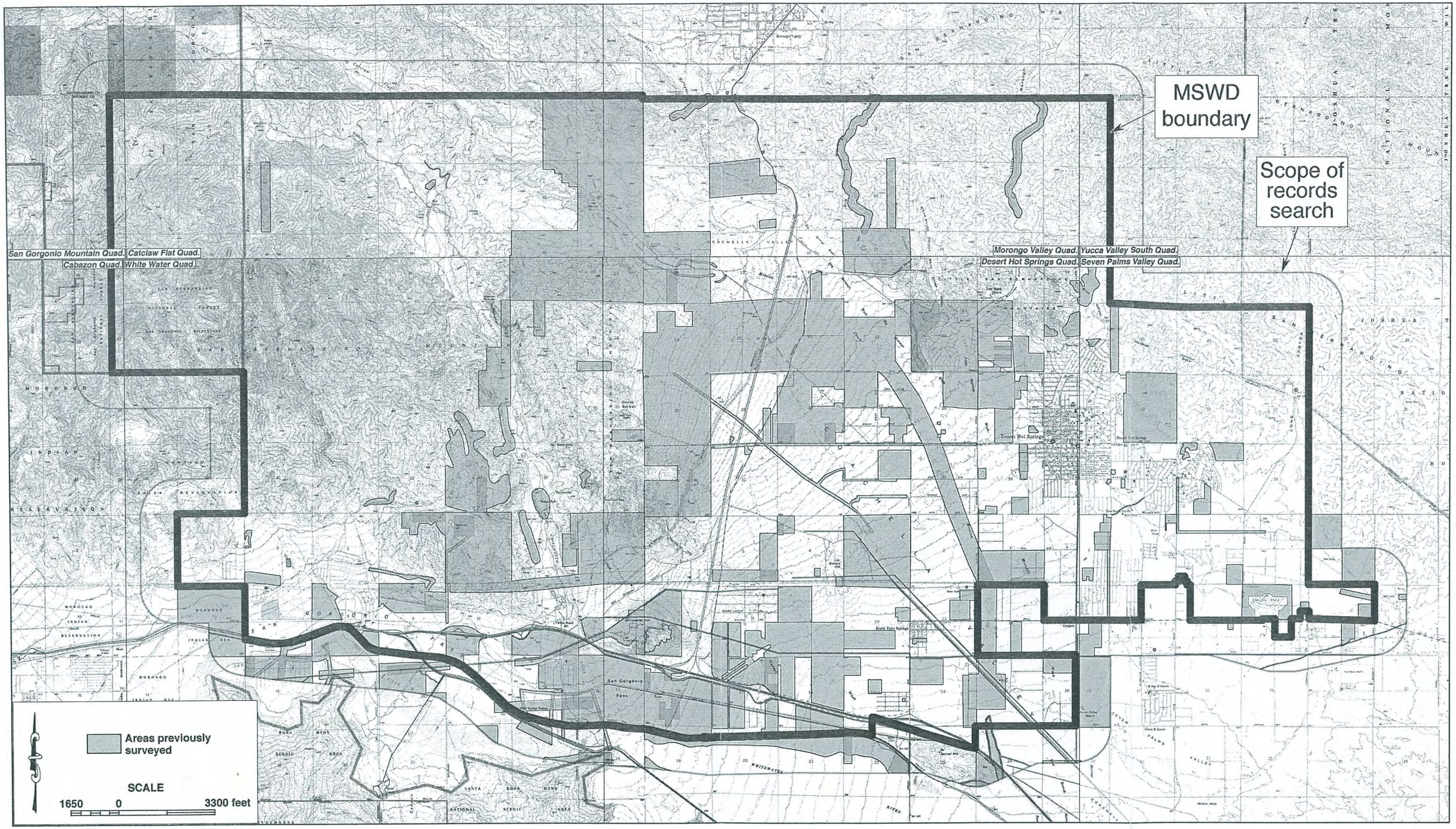

Figure 1. The study area, also showing areas previously surveyed for cultural resources. Based on USGS Cabazon, Catclaw Flat, Desert Hot Springs, Morongo Valley, San Gorgonio Mountain, Seven Palms Valley, White Water, and Yucca Valley South, Calif., 1:24,000 quadrangles. Locations of historical/archaeological sites are not shown as a protective measure.

FIGURE 4.5-1
Study Area Showing Areas Previously Surveyed for Cultural Resources

4.6 AIR QUALITY

4.6.1 Introduction

The project's potential impacts to air quality were included as a topic of evaluation based on the conclusions reached in the Initial Study prepared for the project and the comment letter received from the South Coast Air Quality Management District (SCAQMD) on the Notice of Preparation (NOP) circulated by the MSWD. The Initial Study determined potentially significant impacts may be associated with emissions generated by construction activities and equipment and operation of the facilities including energy consumption by the mechanical equipment. These emissions could contribute to the degradation of air quality in the local air basin and are, therefore, issue which will be evaluated in this PEIR.

The SCAQMD comment letter provided input on the type of evaluation and the methodology it suggested be utilized in the PEIR. The SCAQMD letter also identified that all feasible mitigation measures that minimize or eliminate significant adverse air quality impacts be provided in the PEIR.

This subchapter of the PEIR has been prepared using data obtained from the City of Desert Hot Springs General Plan, the Water Master Plan, MSWD, and SCAQMD. Air emissions were calculated using the California Air Resources Board (CARB) URBEMIS 2007 (version 9.2) and EMFAC 2007 on-road vehicle emission factors. Air Quality calculations are provided as Appendix E, Volume 2 of this PEIR.

4.6.2 Existing Environmental Setting

The proposed project is located within the Salton Sea Air Basin (SSAB). The SSAB boundaries include all of Imperial County and the western desert portion of Riverside County that were previously located within the Southeast Desert Air Basin (SEDAB). Because most of the air pollution in the SSAB is transported from the South Coast Air Basin (SoCAB), efforts to attain State and Federal air quality standards in the SSAB can only be achieved with major improvements in SoCAB air quality. Due to this condition, pollutant transport planning for compliance with air quality standards has been assigned to the Southern California Association of Governments (SCAG) and the South Coast Air Quality Management District (SCAQMD or District).

4.6.2.1 Meteorology and Climate

The climate of Southern California is classified as mid-latitude dry summer. This climatic type is characterized by a winter maximum in precipitation, a high percentage of sunshine, and a relatively small diurnal and seasonal temperature variation. The major influence is the presence of the Pacific High, a semipermanent high pressure system that migrates to its northernmost position off the southern California coast during the northern hemisphere summer.

During the summer, the Pacific High dominates the climate of the region. Clear skies predominate, with little to no precipitation, because the High tends to block migrating extratropical storms. The anticyclonic circulation is responsible for persistent temperature inversions and weak northwesterly air flow aloft. Heating of the land surface results in strong sea breezes, which account for the predominance of southeasterly flow in the coastal plain and westerly and southerly flow in the eastern and northern valleys, respectively. Occasionally, warm moist tropical air from off the coast of Mexico intrudes into southern California. When this occurs, thunderstorms may develop, bringing isolated showers, mainly over the mountains.

During the fall, the Pacific High begins to shift southward and its effect gradually weakens. In that season, Santa Ana conditions can occur, caused by high pressure buildup in the Great Basin area of Utah and Nevada. The clockwise circulation around this high produces northerly and north-easterly winds, which can persist from several hours to a few days and can reach sustained speeds of 27 meters per second (60 miles per hour, mph) in the canyons and passes surrounding the Los Angeles basin. Extreme high temperatures are recorded during these episodes, which are a result of compressional heating caused by the air descending into the inland valleys and coastal plains from the higher elevation deserts to the east and northeast.

During the winter, the Pacific High shifts to its southernmost position, which allows extratropical storms to move into southern California, thus increasing precipitation. The lower sun angle and increased cloud cover produce lower land-surface temperatures in comparison with sea-surface temperature. This has the effect of reducing the strength of the sea breeze and the extent of the marine intrusion into the inland valleys. Easterly drainage flows, except during frontal activity, tend to predominate during this period.

In the springtime, northerly migration of the Pacific High pushes the polar jet stream current to the north, which effectively puts an end to the short rainy season. A combination of low wind speeds and relatively low land-surface temperatures in comparison with the sea-surface temperatures results in the formation of fog in the evening and nighttime that persists into the mid-morning hours in the non-desert areas. The progressive heating of the land reinstates the sea breeze, causing extensive intrusion of marine air into the inland valleys, with accompanying fog, toward the end of this period.

The MSWD Service Area is generally sheltered by the San Bernardino and Little San Bernardino Mountains to the north and west, the Santa Rosa Mountains and the San Jacinto Mountains to the south. The Coachella Valley and the MSWD Service Area is located in meteorologically and geo-graphically unique area. The surround mountains isolate the valley from the coastal influences and create a hot, low-lying desert environment. The valley is susceptible to air inversions, in which a layer of stagnant air is trapped near the ground where it is further loaded with pollutants. This process, when trapped combined with chemical aerosols and other pollutants emitted by auto-mobiles, furnaces and other sources, can produce substantial haziness.

The MSWD Service Area is also subject to strong and sustained winds. As the desert floor heats up, it draws cooler coastal air masses through the narrow San Gorgonio Pass, generating strong winds which cross the most erosive area of the valley. These winds suspend and transport large quantities of sand and dust which can reduce visibility, damage property and constitute a significant health threat.

This geography gives the valley portion of the project area its famed warm, dry climate. Known for over 300 days of sunshine and less than 5.5 inches of rain, winter temperature average in the 70s with nights in the mid-40s. The dry desert heat of summer pushes daytime temperatures to the 100s. During spring and summer, winds pick up in mid-afternoon and blow at about 20 to 30 mph, a result of the unique topographic relationship between the coast and the Coachella Valley. Transport of cool coastal air to heated desert valleys during the late-afternoon throughout the spring and summer produces daily moderate to high winds through the Banning (San Gorgonio) Pass expanding into the Coachella Valley.

Meteorological data obtained from the nearest SCAQMD monitoring station in Palm Springs (Coachella Valley 1) shows that northwesterly winds (through the Banning Pass) are the most common, with southeasterly wind comprising the primary wind direction for the remainder of the time. Higher wind speeds are associated with the northwesterly winds.

Desert regions often experience high surface winds because minimal friction is generated between the moving air and the low, sparse vegetation. This allows the wind to maintain its speed crossing the desert plains. In addition, rapid daytime heating of the air closest to the desert surface leads to convective activity and the exchange of surface air for upper air which accelerates surface winds during the warm part of the day. Rapid cooling at night in the surface layers during the winter months results in a high frequency of calm winds during this season.

Surface-based inversions in the Coachella Valley are prevalent at night throughout the year and usually persist into the day during the winter months. Inversion conditions are associated with degraded air quality because the surface air is prevented from rising and dissipating the air pollutants that accumulate throughout the day. Inversions limit the mixing in the lower atmosphere to a height of 200 to 2,000 feet and persist through much of the day in winter but are destroyed early in the day in summer.

4.6.2.2 Regional Air Quality

The pollutants generated by industry and mobile sources in the coastal portions of the SoCAB undergo photochemical reactions while moving inland during the daily sea breeze cycle, particularly during the high solar insolation which occurs during the summer. The resulting pollution measured in the Coachella Valley regularly fails the state and national ozone standards during summer months.

In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NOx to form photochemical smog, or ozone. Peak concentrations occur at times of maximum sunlight intensity, generally near midday or late afternoon. In the late 1980s, more than 30 percent of all days experienced a violation of the California hourly ozone standard with 15 or more first stage alerts of 0.20 ppm called each year. Throughout the 1990s, there was a marked trend toward lower concentrations of pollutants, as emissions in the SoCAB and locally had been reduced annually, with a concurrent reduction in the frequency of ozone standard violations. However, the rate of decline in ozone standard violations has slowed in this decade.

Since the onset of the dominant daytime onshore wind pattern follows the peak hour morning travel period in the Los Angeles/Orange County area, the photochemical smog and precursors formed in these areas are transported downwind into Riverside County, San Bernardino County, and the Coachella Valley. This phenomenon occurs during periods of low inversions and low wind speeds, exacerbating the production of and trapping photochemical smog.

The prevailing marine air currents throughout the SoCAB typically carry polluted air inland as ozone-forming photochemical reactions proceed. For that reason, peak ozone concentrations in the SoCAB are found in the inland valleys and adjacent mountains (between the San Fernando Valley and the Riverside-San Bernardino area), miles downwind of the largest concentrations of precursor emission sources.

In the Coachella Valley, air flow is from the northwest much of the time. Peak oxidant levels occur in the late afternoon and evening (between 4:00 p.m. and 8:00 p.m.), as pollutants are blown through the San Gorgonio Pass. Oxidant concentrations in the 50-mile long and 20-mile wide Coachella Valley are highest closest to the SoCAB, and decrease steadily as the polluted air mass moves east and spreads throughout the Coachella Valley.

Other pollutants of concern in the SSAB is suspended particulate matter that is less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). PM_{10} is considered the respirable portion of particulate matter and can cause serious damage to the lungs. PM_{10} is produced from various natural (non-anthropogenic) and man-made (anthropogenic) sources and activities. Wind blown dust and other dust generating activities contribute the majority of the annual average PM_{10} measured in the Coachella Valley (2003 Coachella Valley PM_{10} State Implementation Plan, SCAQMD, 2003 PM_{10} SIP).

The SCAQMD has adopted its 2007 AQMP. A key component of the 2007 AQMP is attainment of federal standards for $PM_{2.5}$ through more focused control of sulphur oxide (SOx) directly emitted $PM_{2.5}$ and nitrogen oxides (NOx) supplemental with volatile organic compounds (VOC).

4.6.2.3 Attainment Areas

The California Air Resources Board (CARB) divides the state into air management region based on political boundaries and/or regions with similar meteorological conditions, called air basins. The SCAQMD maintains monitoring stations throughout the SoCAB and portions of the SSAB. These stations record ambient levels of regulated pollutants. If any monitoring station in an air basin records concentrations of an air pollutant which exceed state or federal air quality standards, the entire basin is generally determined to be a non-attainment area for that pollutant.

The U.S. Environmental Protection Agency (EPA) and CARB have designated the entire SoCAB, which includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties, as federal and state non-attainment areas for ozone and PM_{10}.

The highest concentration of carbon monoxide (CO) occurs in the immediate vicinity of the emission source; therefore, the attainment status for this pollutant is treated somewhat differently by CARB. Designation of attainment or non-attainment areas for carbon monoxide are generally by subarea, not basin. San Bernardino and Riverside counties are designated as attainment areas for both state and federal carbon monoxide standards.

The Coachella Valley is designated as a "serious" ozone non-attainment area and, as such, must demonstrate reasonable further progress and attainment according to federal Clean Air Act (CAA) requirements. The District's proposed control strategy includes two components: a strategy for the SoCAB and control of locally generated emissions in the Coachella Valley via regulations at the state and federal level.

In response to new planning requirements, recent revisions in air quality standards and significant new scientific data, the SCAQMD has developed its 2007 Air Quality Management Plan (2007 AQMP). The 2007 AQMP is an update of the 2003 AQMP and utilizes new data and includes, plans, goals and policies (see Chapter 8 of the 2007 AQMP) for meeting the latest air quality standards for the SSAB. The SCAQMD adopted the 2007 AQMP on June 1, 2007.

This portion of the Coachella Valley is designated unclassified-available data are not sufficient to support designation as attainment or non-attainment.

The 2007 AQMP requests that the SSAB be reclassified from a "serious" non-attainment designation for ozone to a "severe 15" designation thus extending the attainment date to 2019.

The Coachella Valley is still designated a "serious" non-attainment area for PM_{10}. According to the 2007 AQMP, the SSAB has not exceeded federal PM_{10} standards for the last 5 years and is eligible for redesignation under federal standards but is still in non-attainment for state standards.

The 2007 AQMP addresses the methods to be employed to reduce PM_{10} issues in the Coachella Valley to acceptable levels. The 2007 AQMP also address the methods of determining and mitigating $PM_{2.5}$ impacts in the SSAB.

4.6.2.4 Local Air Quality

To assess the significance of impacts to local air quality resulting from the proposed project, these impacts are compared to applicable air quality standards. Ambient Air Quality Standards (AAQS) are the levels of a pollutant in the air considered safe, with an adequate margin of safety, to protect the public health and safety. AAQS are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness and people engaged in strenuous work or exercise. These people are called "sensitive receptors."

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, establish more stringent standards, or to include different exposure period. The current national and California ambient air quality standards are shown in Table 4.6-1.

Table 4.6-1
STATE AND FEDERAL STANDARDS

	State Standards	Federal Standards
Ozone	0.09 ppm, 1-hour average 0.07 ppm, 8-hour average	0.12 ppm, 1-hour average (revoked) 0.08 ppm, 8-hour average
CO	9 ppm, 8-hour average 20 ppm, 1-hour average	9 ppm, 8-hour average 35 ppm, 1-hour average
NO_2	0.25 ppm, 1-hour average	0.053 ppm, annual average
SO_2	0.04 ppm, 24-hour average 0.25 ppm, 1-hour average	0.03 ppm, annual average 0.14 ppm, 24-hour average
PM_{10}	20 ug/m^3 annual average mean 50 ug/m^3, 24-hour average	50 ug/m^3, annual average mean 150 ug/m^3, 24-hour average
Sulfate	25 ug/m^3, 24-hour average	
$PM_{2.5}$	12 ug/m^3, annual average	15 ug/m^3 annual average

Existing levels of ambient air quality and historical trends and projections in the MSWD Service Area are documented from measurements made by the CARB and SCAQMD at locations in Coachella Valley. Air quality monitoring data for NO_2, PM_{10}, $PM_{2.5}$, CO, and Ozone are from the Palm Springs monitoring station (Coachella Valley 1). Air quality monitoring data for SO_2, is from the Riverside Rubidoux monitoring station(Metropolitan Riverside County 1), the nearest station monitoring for this pollutant. Air quality monitoring data representative of the project site for the period of 2002 through 2006, the latest available, are shown on Table 4.6-2.

Table 4.6-2
NUMBER OF DAYS ABOVE THE STANDARD FOR COACHELLA VALLEY

Year	Days > State Standard						Days > Federal Standard						
	1-hr		8-hr	24-hr		$PM_{2.5}$ Annual Avg	1-hr		8-hr		24-hr		$PM_{2.5}$ Annual Avg
	NO_2	Ozone	CO	SO_2	PM_{10}		NO_2	Ozone	Ozone	CO	SO_2	PM_{10}	
2002	0	49	0	0	3	0	0	2	48	0	0	0	0
2003	0	54	0	0	4	0	0	4	44	0	0	0	0
2004	0	36	0	--	2	0	0	1	31	0	0	0	0
2005	0	41	0	0	2	0	0	4	35	0	0	0	0
2006	0	37	0	0	2	0	0	--	23	0	0	0	0

Note: All data from Palm Springs Station except SO_2 from Rubidoux Station.
-- Denotes not monitored or revoked.

Blowsand is the major source of locally generated PM_{10} air contamination in the Coachella Valley. Blowsand is generated as a result of the most severe form of wind erosion, occurring when barren sand and sandy loam soils are exposed to high winds, in the absence of moisture. Blowsand can cause significant property damage and expensive clean-up procedures. It contributes to high suspended particulate levels and associated respiratory problems for sensitive receptors. The southerly portion of the MSWD Service Area is within the Coachella Valley Blowsand Region and is susceptible to severe wind generated soil erosion. However, none of the facilities proposed by the WMP will expose people or habitable structures to the adverse effects of blowsand.

From the data in Table 4.6-2, one can reasonably infer that baseline air quality levels within the MSWD Service Area are occasionally unhealthful. State and federal ambient air quality standards have not been exceeded for NO_2, CO, and SOx. However, exceedances of State and federal standards for Ozone continue to occur, as well as violations of the State PM_{10} standard.

4.6.2.5 Air Quality Planning Conformity

The issue of air quality conformity or consistency with the regional air quality planning process is determined by comparing the proposed project with the regional growth forecasts contained in those documents. Part of the overall air quality planning effort has been the compilation of a RCPG and its updates and revisions by the SCAG. For planning purposes, the AQMP's have assumed that if future population growth in the region is consistent with the forecasts contained in the RCPG, the measures identified in the AQMP will be sufficient to reduce emissions in the SoCAB to the point that ambient air pollutant concentrations will not exceed the federal NAAQS standards although there still maybe some violations of the California AAQS. However, the region should be near compliance for these stricter standards as well.

Given this assumption, the key to determining consistency with the AQMP and RCPG is to evaluate the project's contribution to growth projections by ascertaining, whether the project is being implemented consistent with the local general plans, and whether growth forecasts for the region are meeting or exceeding the forecast contained within the RCPG.

The WMP was developed to provide MSWD a planning tool to identify the water service facilities that will be needed to serve future water demand. The WMP utilized data obtained from the general plans of the cities of Desert Hot Springs and Palm Springs and the County of Riverside. Population and growth the CVAG, the SCAG, California Department of Finance, the Building Industry Association, Desert Chapter, local school districts and chambers of commerce and the U.S. Census Bureau to forecast the type, intensity and location of growth that could be expected in the MSWD Service Area over the life of the WMP. Based on data obtained from the above sources, the WMP established two potential growth scenarios. The baseline growth scenario forecast population growth based on past and anticipated future growth that would occur by the year 2020. The high growth scenario utilized the same growth projections, but estimated this growth would occur in a 5-year shorter period or by the year 2015.

The WMP is intended as a planning document to allow MSWD to plan for the location, type and timing of water facilities that will be needed to meet future demand based on available growth forecasts. To allow for an adequate lead time in the planning process, the WMP utilized the high growth scenario to anticipate when and what type of system improvements will be needed. However, the actual improvements will only be constructed when it becomes apparent they will be needed. Because the water system improvements identified in the WMP were based on growth projections contained in the local and regional planning documents and the improvements will only be implemented when approved growth dictates, the WMP is considered consistent with local and regional air quality planning documents.

A new issue, the effects of which on CEQA evaluations are not clear at this time, is that dealing with greenhouse gas emissions and their potential effects on climate change. Assembly Bill 32 (AB 32) adopted by the state legislature requires the Air Resources Board to adopt regulations limiting global warming emissions statewide. AB 32 requires that a statewide cap on CO2 be adopted, but to date, the state has not provided regulatory guidance on what constitutes a significant source of greenhouse gas (GHG) emissions. Similarly, CEQA provides no new guidance on significance criteria other than the existing SCAQMD daily emission thresholds of significance. Therefore, it is not possible to make a definitive determination on the significance of a projects GHG emissions. This PEIR will provide an evaluation of this projects potential effects based on data available at this time.

4.6.3 Air Quality Impact Analysis

This section assesses potentially significant environmental impacts to air quality resulting from implementing the proposed WMP. Section 4.6.3.2 assesses project impacts to air quality from construction emission sources. Section 4.6.3.3 assesses project impacts to air quality from operational emission sources. These two sections include comparisons to significance criteria outlined in Section 4.6.3.1 and shown on Table 4.6-3 and Table 4.6-4.

In addition to the regional significance thresholds, SCAQMD has also adopted Local Significance Thresholds (LST's) to evaluate a projects potential to affect receptors located near the projects. Emission calculations for the projects proposed by this WMP also include an identification of the LST's for particular activities and an evaluation of the projects potential to exceed Local Significance Thresholds.

The emissions calculations for this assessment were performed using the URBEMIS 2007 (version 9.2) model and EMFAC 2007 on-road vehicle emission factors for construction emissions. Potential operations emissions were forecast using the SCAQMD CEQA Handbook emission factors associated with the consumption of electricity to power new equipment. No other source of energy to power operations equipment is proposed by the WMP. The calculations sheets for these emissions are provided in Appendix E, Volume 2 of this PEIR.

4.6.3.1 Criteria for Determining Significant Impact

a. **The State CEQA Guidelines generally indicate that a project has a significant effect on air quality if the project violates any ambient air quality standard, conflicts with implementation of the applicable air quality plan, contributes substantially to an existing air quality violation, or exposes sensitive receptors to substantial pollutant concentrations. The SCAQMD includes criteria for determining the significance of potential air quality impacts in its "CEQA Air Quality Handbook" (CEQA Handbook) adopted in February 1993 and amendments.**

    In addition to the regional significance thresholds, a projects potential affect on air quality will also be considered significant if emissions exceed Local Significance Thresholds.

The quarterly and daily significance thresholds for air quality have been established by the SCAQMD for the Salton Sea Air Basin. Significance thresholds for the construction phase are shown on Table 4.6-3. If the daily or quarterly emission do not exceed the thresholds shown, the short term construction air quality impact of the project is considered to be less than significant. The Local Significance Thresholds (LST's) for projects within the WMP are provided in Tables 4.6-5 through 4.6-8.

Table 4.6-3
CONSTRUCTION THRESHOLDS

Pollutant	Threshold (lb/day)	Threshold (tons/quarter)
Carbon Monoxide (CO)	550	24.75
Sulfur Oxides (SO_2)	150	6.75
Volatile Organic Carbon (VOC)	75	2.5
Nitrogen Oxide (NOx)	100	2.5
Particulate Matter (PM_{10})	150	6.75
Particulate Matter ($PM_{2.5}$)	55	2.47
Source: SCAQMD CEQA Air Quality Handbook and AQMP.		

Operational emissions are considered to be significant in the SSAB if they exceed any of the thresholds shown on Table 4.6-4 during operation of the facility.

Table 4.6-4
OPERATIONAL THRESHOLDS

Pollutant	Threshold (lb/day)
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_2)	150
Volatile Organic Carbon (VOC)	75
Nitrogen Oxide (NOx)	100
Particulate Matter (PM_{10})	150
Particulate Matter ($PM_{2.5}$)	55
Source: SCAQMD CEQA Air Quality Handbook and AQMP.	

4.6.3.2 Construction Emissions

The WMP proposes a series of relatively small construction projects that will generally be implemented at different times throughout the life of the WMP. The construction phase of these proposed facilities can generally be separated into distinct activities that will be implemented in succession. Development of wells, reservoirs and booster pump stations will be accomplished in a similar manner at each location. The first phase of development will be site preparation. At this level, the site will be cleared, graded and compacted to accommodate the new structures. The new facilities will be installed (drill and outfit a well, construct a reservoir or booster pump station). The site will be finished (fenced, gated, landscaped, etc.) and placed in operation. The installation of new pipelines will be accomplished by excavating a trench, placing pipe within the trench and backfilling and compacting the trench. The surface of the pipe alignment will be finished (paved, landscaped, etc.) and the pipeline operated. Each of these activities will require the installation of appurtenant equipment and facilities such as valves, hydrants, telemetry equipment, etc. to operate.

Because these facilities will be installed in successive actions, the following emissions forecast are provided for each phase of development for the individual facilities. A summary of the construction activities and associated assessment of impacts to air quality during the construction phases is discussed as follows. The air emissions calculation sheets for this project are provided in Appendix E, Volume 2 of this PEIR.

Site Preparation

Well Site, Booster Pump and Reservoir Site and Well Development

Well and booster pump sites are generally small (generally 0.5 to 2 acres in size). Reservoir sites can be larger and may be up to 5 acres in size. However, the actual area disturbed for construction of most reservoirs is generally less than about 2 acres in size. Due to the small size of these projects, it is forecast that site preparation will involve the disturbance of about one acre of land on a given day. Site preparation includes clearing of the site and leveling or grading and compacting of the site to support the structures. For a well site, typically, the site is leveled and the well drilled and developed. These activities are short term (a few days to possibly about one month) and generally require about 5 workers on any given day. Using URBEMIS 2007 version 9.2, Table 4.6-5 provides the forecast daily unmitigated emissions for these activities. These emissions forecasts are considered conservative because they are based on 2008 emissions as forecast by URBEMIS. Emissions associated with activities after 2008 are expected be less than the 2008 emissions due to improved emission requirements of newer equipment..

Based on data provided on Table 4.6-5, unmitigated daily site preparation emissions are below the thresholds of significance for all criteria pollutants except for the LSTs for PM_{10} and $PM_{2.5}$ at a distance of 25 meters (about 75 feet) from the constructions activities. It is possible that development of the Terrace and Vista reservoirs could place receptors within 25 meters of the construction activities for limited periods of time. However, this exposure would only be sporadic for a few days during site preparation activities. It should be noted that as construction activities move about the site, the areas within 25 meters of construction activities change and will result in different receptors or no receptors within 25 meters of the activities.

No receptors are present within 25 meters of the 1400 Zone well and pump station site and no potential for exceedance or any LSTs is forecast to result from implementing that project.

Table 4.6-5
WELL SITE, BOOSTER PUMP, AND RESERVOIR SITE PREPARATION AND WELL DEVELOPMENT
(Unmitigated Emissions lbs/day)

Activity	VOC	NOx	CO	SOx	PM_{10} (Dust)	PM_{10} (Exh)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exh)	$PM_{2.5}$ (Total)	CO2
Fine grading	5.4	43.96	20.14	0	10.01	2.36	12.36	2.09	2.216	4.26	4,108.48
Building - construction	2.39	22.55	25.61	0.02	0.1	0.81	0.92	0.04	0.75	0.78	46,719.89
Max. Daily Emissions	5.40	43.96	25.61	0.02	10.01	2.36	12.36	2.09	2.16	4.26	46,719.89
Regional significance thresholds	75	100	550	150	150	150	150	55	55	55	--
Localized significance threshold - 25m	--	220	845	--	4	4	4	3	3	3	--
Localized significance threshold - 50m	--	277	1,328	--	13	13	13	5	5	5	--
Localized significance threshold - 100m	--	396	2,422	--	35	35	35	10	10	10	--
Localized significance threshold - 200m	--	627	5,687	--	80	80	80	24	24	24	--
Note: * Localized significance thresholds based on 1 acre of daily land disturbance.											

Mitigation is provided in Section 4.6.4 of this PEIR to reduce potential air emissions associated with implementation of this project to the greatest extent feasible. Table 4.6-6 provides the forecast mitigated construction emissions associated with site preparation.

The Vista and Terrace Reservoirs and the 1400 Zone well and booster pump will result in the disturbance of about one acre of land on a given day. Therefore, site preparation of these facilities will result in air emissions that are consistent with the less than significant emissions identified in Table 4.6-6.

Based on the data provided above, it is concluded that implementation of this project will result in short term air quality impacts associated with site preparation and well development that are less than significant with implementation of the mitigation provided in Section 4.6.4.

Tables 4.6-5 and 4.6-6 also provide the forecast GHG emissions associated with site preparation and well development. While there is no definitive method of determining the significance of a projects GHG emissions, it is concluded that due to the small size of the projects proposed and the limited number of equipment that will be used, potential impacts associated with the emission of GHG during site preparation and well development are considered less than significant.

Construction

Reservoir and Booster Pump Station Development and Pipeline Installation

These construction activities will generally require a longer period of time to complete than the site preparation and well development activities. Reservoir construction can take a few months to complete depending on the size and type of reservoir that is constructed. The length of time to install pipelines is dependant on the length and size of pipe and the location of the pipelines. Generally, about 300 feet of pipeline per day can be installed within developed roads. The limiting factors include the presence of other utilities, traffic and the type of construction employed. In open areas that do not contain obstructions, about 500 feet or more of pipeline can be installed per day.

Utilizing the URBEMIS 2007, version 9.2 and EMFAC 2007 emissions factors, it is forecast that these construction activities will generate the unmitigated daily air emissions shown on Table 4.6-7.

Table 4.6-6
WELL SITE, BOOSTER PUMP, AND RESERVOIR SITE PREPARATION AND WELL DEVELOPMENT
(Mitigated Emissions lbs/day)

Activity	VOC	NOx	CO	SOx	PM_{10} (Dust)	PM_{10} (Exh)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exh)	$PM_{2.5}$ (Total)	CO2
Fine grading	5.4	43.96	20.14	0.00	1.65	0.55	2.19	0.343	0.49	0.84	4,108.48
Building - construction	2.39	22.55	25.61	0.02	0.1	0.26	0.37	0.04	0.24	0.27	46,719.89
Max. Daily Emissions	5.40	43.96	25.61	0.02	1.65	0.55	2.19	0.34	0.49	0.84	46,719.89
Regional significance thresholds	75	100	550	150	150	150	150	55	55	55	--
Localized significance threshold - 25m	--	220	845	--	4	4	4	3	3	3	--
Localized significance threshold - 50m	--	277	1,328	--	13	13	13	5	5	5	--
Localized significance threshold - 75m	--	396	2,422	--	35	35	35	10	10	10	--
Localized significance threshold - 100m	--	627	5,687	--	80	80	80	24	24	24	--

Note: * Localized significance thresholds based on a project size of 1 acre.

Table 4.6-7
RESERVOIR AND BOOSTER PUMP STATION DEVELOPMENT AND PIPELINE INSTALLATION
(Unmitigated Emissions lbs/day)

Activity	VOC	NOx	CO	SOx	PM_{10} (Dust)	PM_{10} (Exh)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exh)	$PM_{2.5}$ (Total)	CO2
Fine grading	6.14	54.03	23.44	0.00	10.01	2.67	12.68	2.09	2.46	4.55	5,772.55
Building - foundation	2.00	18.02	22.04	0.03	0.51	0.73	1.25	0.41	0.68	1.08	3,242.97
Building - construction	1.59	11.89	22.64	0.02	0.10	0.46	0.57	0.04	0.43	0.46	45,079.23
Max. Daily Emissions	6.14	54.03	23.44	0.03	10.01	2.67	12.68	2.09	2.46	4.55	45,079.23
Regional significance thresholds	75	100	550	150	150	150	150	55	55	55	--
Localized significance threshold - 25m	--	220	845	--	4	4	4	3	3	3	--
Localized significance threshold - 50m	--	277	1,328	--	13	13	13	5	5	5	--
Localized significance threshold - 75m	--	396	2,422	--	35	35	35	10	10	10	--
Localized significance threshold - 100m	--	627	5,687	--	80	80	80	24	24	24	--

Note: * Localized significance thresholds based on 1 acre of daily land disturbance.

Based on data provided on Table 4.6-7, unmitigated daily site preparation emissions are below the thresholds of significance for all criteria pollutants except for the LSTs for PM_{10} and $PM_{2.5}$ at a distance of 25 meters from the constructions activities. It is possible that development of the Terrace and Vista reservoirs could place receptors within 25 meters of the construction activities for limited periods of time. However, this exposure would only be sporadic during construction activities when equipment such as cranes, etc. are operating under full load. Pipeline installation is continuously moving as are the air emissions. Therefore, the nearby receptors (within 25 meters) affected are continuously changing as the location of construction activities are constantly moving. This includes the 1400 Zone pipeline project which is located within existing roads. Portions of the project are adjacent to existing development while other portions are vacant. It is forecast that the maximum exposure of any receptor to emissions that exceed the LST for PM_{10} and $PM_{2.5}$ will be less than one day at any given receptor.

No receptors are present within 25 meters of the pump station site and no potential for exceedance or any LSTs is forecast to result from implementing that project.

Mitigation is provided in Section 4.6.4 of this PEIR to reduce potential air emissions associated with implementation of this project to the greatest extent feasible. Table 4.6-8 provides the forecast mitigated construction emissions associated with reservoir and pump station development and pipeline development.

Based on the data provided above, it is concluded that implementation of this project will result in short term air quality impacts associated with reservoir and pump station development and pipeline installation that are <u>less than significant</u> with implementation of the mitigation provided in Section 4.6.4.

Tables 4.6-7 and 4.6-8 also provide the forecast GHG emissions associated with these activities. While there is no definitive method of determining the significance of a projects GHG emissions, it is concluded that due to the small size of the projects proposed and the limited number of equipment that will be used, potential impacts associated with the emission of GHG during reservoir and pump station development and pipe installation preparation are considered <u>less than significant</u>.

Based on data provided in Tables 4.6-5 and 4.6-6 above, it is concluded that the projects proposed in the WMP can be constructed without causing a significant adverse air quality impact. The impacts identified above are substantially below identified thresholds of significance and it is possible that development of more than one facility can occur at a given time without causing a significant air quality impact. The MSWD should evaluate the timing of each project to determine if, when combined with other WMP projects being constructed at a given time, they could result in air emissions that exceed identified significance thresholds.

The seismic retrofitting of existing facilities has the potential to generate air emissions. Due to the type of structures operated by the MSWD, the only facilities that have a potential to result in substantial air emissions during seismic retrofitting are the water storage reservoirs. In the worst case, an existing reservoir could not be salvaged and would require demolition and reconstruction. This would result in air emissions that are similar to the less than significant emissions associated with construction of a new reservoir (see Table 4.6-6).

Table 4.6-8
RESERVOIR AND BOOSTER PUMP STATION DEVELOPMENT AND PIPELINE INSTALLATION
(Mitigated Emissions lbs/day)

Activity	VOC	NOx	CO	SOx	PM_{10} (Dust)	PM_{10} (Exh)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exh)	$PM_{2.5}$ (Total)	CO2
Fine grading	6.14	54.03	23.44	0.00	1.65	0.59	2.24	0.34	0.55	0.89	5,772.55
Building - foundation	2.00	18.02	22.04	0.03	0.51	0.49	1.01	0.41	0.46	0.86	3,242.97
Building - construction	1.59	11.89	22.64	0.02	0.10	0.21	0.32	0.04	0.19	0.22	45,079.23
Max. Daily Emissions	6.14	54.03	23.44	0.03	1.65	0.59	2.24	0.41	0.55	0.89	45,079.23
Regional significance thresholds	75	100	550	150	150	150	150	55	55	55	--
Localized significance threshold - 25m	--	220	845	--	4	4	4	3	3	3	--
Localized significance threshold - 50m	--	277	1,328	--	13	13	13	5	5	5	--
Localized significance threshold - 75m	--	396	2,422	--	35	35	35	10	10	10	--
Localized significance threshold - 100m	--	627	5,687	--	80	80	80	24	24	24	--
Note: * Localized significance thresholds based on 1 acre of daily land disturbance.											

As con be seen on Tables 4.6-5 through 4.6-8, short-term construction emissions are well below SCAQMD thresholds of significance for criteria pollutants. This includes Local Significance Thresholds. Due to the short term, mobile source nature of these emissions, potential impacts associated with the generation of GHG during the construction phase of this project are considered less than significant.

b. In addition to the above significance thresholds, an impact will be considered significant if it results in the exposure of a substantial number of people to objectionable odors.

The construction of water production and supply facilities have some potential to result in the generation of odors. These odors will be associated with the combustion of petroleum products by equipment delivering the materials and constructing the facilities. Such odors are common within urbanized areas. Based on the type can quantity of emissions and the local nature of these emissions, it is forecast that construction of the WMP facilities will not result in the exposure of a substantial number of people to objectionable odors. Potential impacts are considered less than significant.

4.6.3.3 Operational Emissions

The operation of the facilities proposed by the WMP will result in minimal air emissions. The wells, reservoirs and booster pump stations will require occasional visits to the sites by MSWD employees. These visits will be to inspect, maintain and monitor the facilities. Generally these activities will require up to one visit a day and result in minimal air emissions. This includes any facilities that have undergone seismic retrofitting.

Operation of the facilities proposed in the WMP include the use of pumps and motors at the wells, and booster pump stations. These pumps and motors will be powered by electricity obtained from the local grid. These motors will be used to transport water through the MSWD system. The WMP proposes the installation of 17 new water production wells and 7 new booster pump stations. The wells will typically be powered by 350 horse power (hp) motors and 75 hp motors will be used for the booster pumps. This includes the 1400 Zone well and booster pump station. It is forecast that these motors will operate about 12 hours per day and results in the following daily consumption of electricity in kilowatt hours (Kwh).

6,475 hp x 12 hrs x 0.7457 = 57,941 Kwh per day

Table 4.6-9 (Table A9-11-B of the CEQA Handbook) provides the emission factors for each criteria pollutant from the consumption of electricity.

Table 4.6-9
EMISSION FACTORS FOR EACH CRITERIA POLLUTANT
FROM CONSUMPTION OF ELECTRICITY
(pounds per megawatt-hours)

Pollutant Type	CO	ROC	NOx	SOx	PM_{10}
	0.20	0.01	1.15	0.12	0.04

The emissions provided in Table 4.6-9 are based on megawatt hours (Mwh) of electricity consumed. Therefore, the approximately 58,000 Kwh per day of electricity required to operate the proposed new WMP facilities, including the 1400 Zone well and booster pump station, will result in about the following additional new daily air emissions at build out of the WMP (Table 4.6-10).

Table 4.6-10
AIR EMISSIONS OF CRITERIA POLLUTANTS AT BUILDOUT OF WMP FACILITIES (Year 2025)
(in pounds per day)

Pollutant Type	CO	ROC	NOx	SOx	PM_{10}
	0.12	0.0006	0.70	0.007	0.003

As previously stated, to date no guidance has been provided on determining the significance of GHG emissions associated with a project. However, due to the small amount of emissions associated with generating the electricity needed to power future WMP facilities (see Table 4.6-10), this projects contribution to the generation of GHG associated with the generation of electricity to power the pumps and motors is considered to be less than significant.

No facilities that are forecast to consume natural gas are proposed by the WMP.

Implementation of this project will require the use of emergency backup generators to power the motors in case of an outage of power. Backup generators are specifically permitted by SCAQMD and compliance with the permit issued is considered by SCAQMD to be adequate mitigation to reduce potential air quality impacts to a less than significant level.

The other potential long-term operations air emissions would be those associated with facility maintenance and monitoring activities. This will generally be accomplished by District personnel and require about one daily vehicle trip to the site. In the event that replacement of equipment such as pumps and motors or work on a well is required, these activities would generate emissions that are similar to or less than the less than significant emissions associated with construction of the facilities.

Potential long-term operations air quality impacts associated with implementation of the WMP are considered to be less than significant based on SCAQMD thresholds for criteria pollutants including potential LSTs

Implementation of the WMP facilities will result in minimal air emissions and odors from District vehicles visiting the site. The storage and supply of water does not generate substantial odors. Therefore, the potential for operation of the facilities proposed by the WMP to expose a substantial number of people to objectionable odors is considered to be less than significant.

4.6.4 Mitigation

The impact forecast presented above concludes that construction and operation of the proposed project has the potential to result in short term significant air quality impacts to receptors within 25 meters of construction activities. Mitigation measures are provided to reduce impacts to a less than significant level or to the greatest extent feasible.

4.6.4.1 Mitigation of Construction Impacts

4.6-1 The following mitigation measures shall be implemented throughout construction activities in order to reduce project impacts.

- ***Use appropriate emission control devices on gasoline and diesel construction equipment and maintain construction equipment engines by keeping them tuned. This shall include the use of aqueous diesel fuel and particulate filters where feasible.***
- ***Prohibit idling and other unnecessary operation of equipment.***
- ***Utilize existing power sources (i.e., temporary power poles) and avoid onsite power generation where feasible.***
- ***Have sufficient equipment at the site to carry out dust-control measures in all areas covered by the contract work (not just the immediate area of construction). This includes watering of the site three times per day or when dust is observed migrating from the site. The goal is to keep all disturbed areas continuously damp during construction.***
- ***Maintain all work and access areas free from dust.***
- ***Cover loaded trucks used in construction operations with tarpaulins or maintain at least 2 feet of freeboard and wash off trucks leaving the site.***
- ***Sweep streets if silt is carried over to adjacent public thoroughfares.***
- ***Construction operations affecting offsite roadways shall be scheduled for offpeak traffic hours and shall minimize obstruction of through-traffic lanes.***
- ***Develop a traffic plan to minimize traffic flow interference from construction activities including advance public notice of routing.***
- ***Use low VOC asphalt and coatings when applicable.***

4.6-2 The proposed project shall comply with the provisions of the 2003 Coachella Valley PM_{10} SIP and the 2007 AQMP which establishes minimum requirements for construction activities to reduce fugitive dust and PM_{10} emissions.

4.6-3 The project proponent shall comply with all applicable SCAQMD Rules and Regulations. In particular, SCAQMD Rule 403 shall be adhered to, insuring the clean up of construction-related dirt on approach routes to the site. Rule 403 prohibits the release of fugitive dust emissions from any active operation, open storage pile, or disturbed surface area beyond the property line of the emission source. Particulate matter deposits on public roadways are also prohibited.

4.6-4 Any vegetative ground cover to be utilized onsite shall be planted as soon as possible to reduce the disturbed area subject to wind erosion. Irrigation systems needed to water

these plants shall be installed as soon as possible to maintain the ground cover and minimize wind erosion of the soil.

4.6-5 ***The maximum vehicle speed limit on unpaved roads shall be 15 mph.***

4.6-6 ***Grading operations shall be suspended during first and second stage ozone episodes or when winds exceed 25 mph***

4.6-7 ***Any construction equipment using diesel drive internal combustion engines shall use a diesel fuel with a maximum of 0.05 percent sulfur and a four degree retard when feasible.***

4.6-8 ***Construction personnel shall be informed of ride sharing opportunities.***

4.6-9 ***The District shall review the scheduling of WMP projects to ensure that projects occurring concurrently do not result in the generation of air emissions that cumulatively exceed applicable air emissions thresholds of significance.***

4.6.4.2 Mitigation of Operational Impacts

No significant adverse operations impacts were identified from implementing the proposed WMP. All potential impacts were determined to be less than significant. No mitigation is required or proposed.

However, the proposed project will result in the use of electricity to power new equipment, including the 1400 Zone well and booster pump. While this project in and of itself is not forecast to result in the need for new or substantially expanded electricity power generating facilities, it will contribute to the forecast doubling of electricity usage in southern California over the life of the WMP It is anticipated that doubling the power generating capabilities for southern California will result in the generation of a substantial amount of GHG emissions. Based on the relatively small contribution this project will have to the total demand for electricity, there is little this project can do to substantially reduce the overall demand for electricity and consequently, the anticipated GHG emissions.

The State of California Attorney General's (AG) office has filed lawsuits against potentially large GHG producing projects citing the failure of the CEQA documents to adequately address potential impacts associated with the generation of GHG and the potential of the project to contribute to climate change. In its lawsuits, the AG has requested that CEQA documents for projects consider the range of potential mitigation that may feasibly be implemented to reduce future GHG emissions.

The range of alternatives feasibly available to this project are limited. The AG's office has recommended carbon sequestration plans that include the planting of trees. However, in this desert environment, the added irrigation load for new trees would require the pumping of more water with the consequential use of more electricity and is not considered feasible or productive in reducing GHG. Except for the use of more energy efficient equipment, the mitigation proposed by the AG are not feasible for this project. This project does not propose the direct generation of electricity or any GHG and the implementation of a carbon capture system is not considered a feasible alternative.

To reduce the WMP's contribution to the demand for electricity to the greatest extent feasible, MSWD shall implement the following measures in addition to its water conservation measures identified in Section 4.3 of this PEIR

4.4-10 MSWD shall utilize the most energy efficient mechanical equipment feasibly available to reduce the demand for electricity by new equipment proposed by the WMP.

4.4-11 When feasible, MSWD shall utilize electricity generated by non or reduced GHG producing sources such as solar or wind generated electricity.

Implementation of the above measures will further reduce this projects less than significant potential direct impacts associated with the generation of GHG and climate change to the greatest extent feasible.

4.6.5 Cumulative Impact

Implementation of the proposed WMP will result in less than significant air emissions. The facilities proposed by the WMP have been determined to be compatible with local land use planning documents in that they will provide water service to development allowed by these local agencies and planning documents. The facilities proposed by the WMP will only be constructed when required to provide adequate water service. Local and regional air quality planning documents have been developed to provide methods of attaining air quality standards while accommodating future development and growth. To anticipate future development, these air quality planning documents relied on local planning documents such as general plans to forecast growth within the SSAB and the SCAQMD. Projects that are compatible with local general plans are, therefore, considered compatible with local and regional air quality plans.

While the facilities proposed by the WMP will contribute air emissions within the SSAB, this contribution is considered compatible with the regional air emissions projections. Therefore, implementation of this project is not forecast to cause or contribute to significant air quality impacts when considered on a cumulative basis and potential impacts are considered to be <u>less than significant</u>.

The increased demand for electricity proposed by this project does have the potential to contribute to the overall increased demand for electricity in southern California which is forecast to occur over the life of the project. Based on available data, it is forecast that this increased power generation will result in a substantial increase in GHG emissions which could have a potential to contribute to climate change. To date, no criteria has been established to determine the significance of a projects contribution to GHG emissions or the exceedance of the CO2 cap required by AB 32.

The actual amount of electricity needed by the year 2025 is not known. It has been forecast that in 2025, the demand for electricity will double that currently being supplied to southern California. The rate of increase in the use of electricity by MSWD will reflect the rate of growth within its service area and the demand that growth will place on water and electricity. The amount of electricity actually needed, as well as, the sources and methods of generating that electricity are, therefore, speculative at this time. However, based on available data, it is anticipated that suppling the future demand for electricity will result in the generation of a substantial amount of GHG's and this project will contribute to that increase. However, without guidance by the regulatory agencies on determining the significance of these additional emissions on climate change, it is not possible to determine the significance of this projects contribution to GHG emissions and climate change when viewed in the context of CEQA.

4.6.6 Unavoidable Adverse Impacts

The proposed project will result in neither short-term or long-term emissions of pollutants that exceed the SCAQMD and SSAB thresholds of significance. Mitigation has been provided, where available, to further reduce these already less than significant impacts. Therefore, while implementation of the WMP will result in air emission impacts that are unavoidable, these impacts are considered less than significant.

4.7 NOISE

4.7.1 Introduction

The project's potential to affect the existing noise environment was included in this PEIR based on the evaluation provided in the Initial Study prepared for this project. The Initial Study determined that implementation of the Water Master Plan (WMP) could result in an increase in noise generating activities over both the short and long terms. Short-term noise increases will be caused by construction activities and the long-term noise increases would be associated with facilities and activities operated in support of the WMP projects, such as production well pumps, booster pumps and system operations. The Initial Study determined that this project had no potential to expose people residing or working within an airport land use plan area or near an airport to excessive noise levels.

This subchapter relies extensively on the noise evaluations and data contained in the general plans of the local jurisdictions within the MSWD Service Area and the related general plan EIRs. The Master Plan encompasses land situated within three potential jurisdictions. The Mission Springs System, the largest system within the District, is located within the corporate boundaries of the City of Desert Hot Springs, the northerly portion of the City of Palm Springs and unincorporated land in the County of Riverside. The Woodridge and Cottonwood systems are located within unincorporated areas of the County of Riverside. These jurisdictions have developed noise ordinances to control and abate noise. These ordinances were developed in accordance with Section 46062 of the State Health and Safety Code. Therefore, the noise ordinances and standards are compatible between these jurisdictions.

This evaluation focuses on the existing noise environment of the MSWD Service Area, particularly transportation related noise levels that occur in the area, and the potential impacts to this environment from implementing the WMP. None of the responses to the NOP raised noise as an issue of concern, so the focus of the noise evaluation presented below is the project specific facilities and activities that may physically change the noise environment and the potential contribution of the Water Master Plan projects to the area wide increases of noise in the future.

4.7.2 Environmental Setting

4.7.2.1 Noise Rating Terminology

A-weighted decibels (dBA, a measure of sound energy) are the most common units used for measuring the loudness of a noise source/event. The human ear has different sensitivity to different frequencies of sound (noise). A-weighting is an attempt to give the noise monitor the same frequency sensitivity as the human ear. Technically, it is the measurement of the energy being received when listening to (or monitoring) a source of noise. For example, the loudness of a highway may be 65 dBA when measured 50 feet away. The sound decreases (less energy is received by the ear) as one moves away from the source, and the same highway would have a noise level of about 60 dBA at 100 feet. The relationship between how one perceives a sound and the actual sound energy emitted by the source of noise is very complex. However, a good rule of thumb is that if a noise increases 10 dBA, its apparent loudness will double. Therefore, a noise that is 70 dBA will appear twice as loud as a 60 dBA noise.

A number of noise rating scales using A-weighted decibels are used in California for land use compatibility assessment and are described as follows:

- The Equivalent Noise Level (L_{eq}) scale represents the energy average noise level over a sample period of time. It represents the average decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.

- The Day-Night Noise Level (L_{dn}) scale represents a time weighted 24-hour average noise level based on the A-weighted decibel scale. Time weighted refers to the fact that noise which occurs during certain sensitive time periods (such as night) is penalized for occurring at these times. For the L_{dn} scale, the nighttime period (10 p.m. and 7 a.m.) noises are penalized by 10 dBA.

- The Community Noise Equivalent Level (CNEL) scale is similar to the L_{dn} scale except that it includes an additional 5 dBA penalty for the evening time period (7 p.m. to 10 p.m.). Both noise rating scales are used by the local jurisdictions and the State in evaluating transportation noise, including airports and roadways..

4.7.2.2 Noise Standards and Criteria

Noise rating scales, noise standards, community noise assessment criteria and noise mitigation measures are discussed below to provide a brief overview of how noise is evaluated and to explain the noise standards used in the Noise Elements of the general plans of local agencies having land use jurisdiction within the area covered by the Water Master Plan. This information is needed to understand the existing background noise conditions in the project area.

A wide range of issues are addressed in the Noise Element of general plans, including those set forth in subsection (f) of the California Government Code Section 65302, which requires that the Noise Element identify and analyze noise problems in the community. The implementation of the CEQA, Section 21083.1, mandates adherence to the State Guidelines and empowers communities to determine whether or not a proposed project may have a “significant effect on the environment”. These significant impacts may range from excessive traffic noise in a residential neighborhood, to industrial manufacturing noise impacting a hospital or convalescent home.

A Model Community Noise Control Ordinance has been prepared by the California Department of Health Services, which was developed in accordance with Section 46062 of the Health and Safety Code to assist local agencies in the development of model ordinances to control and abate noise. State guidelines require that a community noise control ordinance be adopted, which set forth control policies and programs that “minimize the exposure of community residents to excessive noise.” These policies and program have been adopted by the local agencies having jurisdiction over land use issues in the project area. Because the majority of projects proposed in the Water Master Plan are within or near the City of Desert Hot Springs, much of the background data contained in this PEIR was obtained from the Noise Element of the City of Desert Hot Springs General Plan.

Noise is defined as unwanted or undesired sound. Airborne sound is the result of a very rapid change in air pressure from the surrounding “normal” atmospheric pressure. The combination of noise from all sources near and far is the Ambient Noise Level. For purposes of this discussion, the ambient noise level at a given location is termed “environmental noise”.

Understanding environmental noise requires some familiarity with the physical description of noise. The important physical characteristics of sound include its frequency range, intensity/loudness and temporal/time-varying aspect. The decibel (dB), A-weighted level (dBA), and Community Noise Equivalency Level (CNEL) are all units of measurement used to describe and numerically weight noise.

The unit of measurement describing the amplitude or strength of sound is the decibel. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to sound levels in the evening from 7 p.m. to 10 p.m., and the addition of 10 decibels to sound levels at night between 10 p.m. and 7 a.m. These additions are made during these time periods because during the evening and night hours, with the decrease in overall amount and loudness of noise generated when compared to daytime hours, there is an increased sensitivity to sounds. For this reason sounds seem louder and are weighted accordingly. Essentially, during these evening and night hours the maximum tolerable noise levels should be 5 to 10 dBA lower and the CNEL number is weighted to assure this bias.

Sources of noise can be divided into transportation sources and non-transportation sources. The existing noise environment within the project area is dominated primarily by transportation-related noise sources. These noise sources include traffic noise from nearby roadways, from adjacent railroad lines and the Palm Springs Airport. Secondary non-transportation noise sources include industrial, construction and mining activities, music, amplified sound and activities on private property. The predominant noise sources, however, are transportation related activities.

4.7.2.3 Ranges and Effects of Noise

The most common sounds vary between 40 dB (very quiet) and 100 dB (very loud). Normal conversation at three feet is roughly 60 dB, while loud engine noises equate to 110 dB, which can cause serious discomfort. Due to the logarithmic nature of the sound measuring (decibel) scale, doubling the sound energy of a noise source only increases the decibel rating by 3 dB. However, due to the internal mechanism of the human ear and how it receives and processes noise, a sound must be nearly 10 dB higher than another sound to be judged twice as loud. Physical health, psychological well-being, social cohesion, property values and economic productivity can all be affected by excessive amounts of noise.

The effects of noise on people can be grouped into three general categories: subjective effects, such as annoyance and nuisance; interference with activities such as conversation and sleep; and physiological effects, for example, a startle or hearing loss. Adverse reactions to noise generally increase with an increase in the difference between background or ambient noise and the noise generated from a particularly intrusive source such as a barking dog, traffic, aircraft or industrial operations. In most situations, noise control measures must reduce noise by 5 to 10 dBA in order to effectively lower the perceived sound. Therefore, loud, short duration noises from barking dogs and low-flying aircraft generally have little impact upon the CNEL levels of an area, due to the averaging techniques utilized to define CNEL.

4.7.2.4 Existing Community Noise Environment

In the project area, as with most of the Coachella Valley and the San Gorgonio Pass area, the primary source of noise is a consequence of motor vehicle traffic. The I-10/Southern Pacific Railroad corridor has a substantial impact on the southern portion of the MSWD Service Area. Other sources of community noise include mechanical equipment serving commercial land uses, resorts and other larger operations.

Motor Vehicle Noise – The principal noise source measured within the project area is vehicular traffic, including automobiles, trucks, buses, and motorcycles. The level of noise generated by vehicular traffic generally varies according to the volume of traffic, the percentage of trucks, and average traffic speed. The City of Desert Hot Springs identifies the following roadways within the MSWD Service Area where traffic generates noise that is above acceptable levels for sensitive receptors at 100 feet from the centerline:

- State Highway 62 (on both sides of Pierson Boulevard)
- Pierson Boulevard (on both sides of Little Morongo Road)
- Indian Avenue (on both sides of Pierson Boulevard)
- Palm Drive (south of Eight Street)

I-10 and Union Pacific Railroad Lines – In addition to traffic along Highway 62 and the other major arterial roadways impacting the project area, rail and vehicular traffic associated with the Southern Pacific Railroad line and I-10 affect the southerly portion of the MSWD Service Area. While the passage of trains is an intrusive noise event, it occurs only periodically and is limited in duration. The influence of traffic noise of I-10 is more significant and increases at night with persistent truck volumes combined with occasional atmospheric temperature inversions, which tend to reduce the acoustic attenuation typical of distance over open terrain. The 60 CNEL noise contour extends about one-quarter mile from the I-10 Freeway. The majority of the MSWD Service Area is not affected by noise generated by these transportation systems.

Aircraft Noise – Aircraft noise impacting the community emanates from commercial and general aviation operations at the Palm Springs International Airport, located south of the project area. The Airport Master Plan and Part 150 Noise Compatibility Study evaluated airport operations, monitored portions of the noise environment, and projected future noise impacts from planned expansions and increased operations. Flight tracks or patterns that aircraft are assumed to follow in the noise study indicate limited over flights in the project area.

The tracking of flight operations associated with the airport indicate that both arrivals and departures, whether during prevailing northwest or southeast winds, bring over-flights to the edge of I-10. The analysis conducted for the Airport Master Plan indicates that existing and future noise levels associated with airport operations will have no significant impact on the MSWD service area.

Mechanical and Industrial Noise – In addition to noise generated by vehicular traffic, there are other noise generators within the project area, which could create significant noise-related conflicts. Industrial operations related to such activities as rock crushing and construction activities can generate substantial noise. Loading and materials transfer areas, outdoor materials warehousing operations and other acoustically unscreened operations will also raise issues of impact and compatibility. Wind turbine operations can also be expected to be potentially significant noise generators.

The operation of mechanical equipment is another important source of potentially significant noise and includes chillers, refrigerator units and heating/air conditioning equipment associated with commercial centers. Noise from roof-mounted equipment is especially effective at penetrating into adjoining neighborhoods and impacting sensitive receptors. The constant hum associated with fans and compressors can substantially impact the enjoyment of the outdoors and adversely affect the quality of life.

4.7.2.5 Noise and Land Use Compatibility

In California, a CNEL of 65 dBA is used as a standard for maximum outdoor noise levels in residential areas. Typically, the noise impacts cited are “unmitigated” or have unobstructed transmission paths representing the worst-case noise impact. The compatibility of different land uses is directly related to the user’s sensitivity to noise and the potential for impacts to be mitigated.

Particularly sensitive land uses include residences, schools, libraries, churches, hospitals and nursing homes, and resort areas. In addition, parks, golf courses and other outdoor activity areas can be sensitive to noise disturbances. Less sensitive land uses include commercial and industrial uses, conventional hotels and motels, playgrounds and neighborhood ballparks, and other outdoor spectator sport arenas. Least sensitive to noise are heavy commercial and industrial uses, transportation, communication and utility land uses. Table 4.7-1 illustrates the ranges of allowable exterior noise levels for various land uses.

Future noise impacts within the MSWD Service Area are expected to be primarily generated by increasing traffic volumes. The City of Desert Hot Springs used computer modeling to estimate noise impacts due to the increased traffic volumes at buildout of the City. Table 4.7-2 lists the projected General Plan buildout noise contours along major City roadways within the MSWD Service Area. Table 4.7-2 also provides historic data from 1994 to provide a perspective on the contribution of increased traffic noise to the general noise environment.

Data obtained from the City of Desert Hot Springs is considered applicable to the WMP because most of the facilities proposed in the WMP are located within or adjacent to the City.

Table 4.7-1
COMMUNITY NOISE AND LAND USE COMPATIBILITY

Land Uses	CNEL (dBA)						
	50	55	60	65	70	75	80
Residential Land Uses: Single & Multi-Family Dwellings, Group Quarters, Mobile Homes							
Transient Lodging: Hotels & Motels							
School Classrooms, Libraries, Churches, Hospitals, Nursing Homes & Convalescent Hospitals							
Recreation Land Uses: Golf Courses, Open Spaces (with walking, bicycling or horseback riding trails, etc.)							
Office Building, Personal Business, and Professional Services							
Commercial Land Uses: Retail Trade, Movie Theaters, Restaurants, Bars, Entertainment Activities, Services							
Heavy Commercial/Industrial: Wholesale, Manufacturing, Utilities, Transportation, Communications							
Auditorium, Concert Halls, Amphitheaters, Music Shells (may be sensitive receptors or generators)							
Sports Arenas, Outdoor Spectacular Sports							

Source: Federal Highway Program Manual, Vol. 7, Ch. 7, Sec. 3, 1982

– Explanatory Notes –

Normally Acceptable: With no special noise reduction requirements assuming standard construction.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

Generally Unacceptable: New construction is discouraged. If new construction does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Land Use Discouraged: New construction or development should generally not be undertaken.

Table 4.7-2
1994 AND GENERAL PLAN BUILDOUT PROJECTED NOISE CONTOURS ON MAJOR ROADWAYS
(Distance to CNEL Contours in Feet from Centerline)

Roadway Segment	1994 Traffic			General Plan Buildout		
	60	65	70	60	65	70
Mission Lakes Boulevard						
East of Indian Avenue	112	R/W	R/W	492	230	109
West of West Drive	73	R/W	R/W	357	167	81
Pierson Boulevard						
East of State Route 62	56	R/W	R/W	695	324	154
West of Indian Avenue	107	R/W	R/W	1019	474	223
East of Indian Avenue	209	66	R/W	738	343	161
East of Little Morongo Road	405	130	R/W	586	273	129
East of Palm Drive	167	57	R/W	435	203	97
Hacienda Avenue						
West of Palm Drive	139	50	R/W	379	178	86
East of Palm Drive	240	79	R/W	263	123	59
West of Miracle Hill Road	174	55	R/W	450	209	99
West of Mountain View Road	195	62	R/W	423	197	93
East of Mountain View Road	148	R/W	R/W	471	219	103
West of City Limits	R/W	R/W	R/W	369	172	81
Two Bunch Palms Trail						
West of Palm Drive	214	71	R/W	267	125	60
East of Palm Drive	98	R/W	R/W	233	109	53
State Route 62						
North of Pierson Boulevard	1407	446	144	881	410	192
Indian Avenue						
North of Mission Lakes Boulevard	302	96	R/W	382	179	87
North of Pierson Boulevard	354	112	R/W	419	196	95
Little Morongo Road						
North of Pierson Boulevard	107	R/W	R/W	515	240	114
South of Two Bunch Palms Trail	151	R/W	R/W	750	350	166
West Drive						
North of Pierson Boulevard			60	R/W	R/W	R/W
South of Pierson Boulevard			55	R/W	93	46
Palm Drive						
North of Pierson Boulevard	415	R/W	R/W	429	200	96
North of Hacienda Avenue	599	64	64	520	243	118
South of Two Bunch Palms Trail	1017	104	104	874	407	192
Miracle Hill Road						
South of Hacienda Avenue	R/W	R/W	R/W	141	67	35
Mountain View Road						
North of Hacienda Avenue	R/W	R/W	R/W	293	137	66
South of Hacienda Avenue	71	R/W	R/W	233	109	53

Source: "Desert Hot Springs General Plan Update, Noise Background Study," Endo Engineering, March 2000.

As can be seen, traffic noise has and will continue to account for a substantial amount of the noise generated in the project area. For the MSWD System, it is primarily noise from local streets. In the Woodridge and Cottonwood systems it is primarily noise from the I-10 Freeway and to some extent, the Union Pacific Railroad.

The range of noise levels that can be experienced within an urban setting vary depending on the extent of development, the type of noise generating activities and the a receptors proximity to the noise generating activities. Table 4.7-3 provides a list of potential noise generating activities that can occur within an urban area and the general level of noise each activity could produce.

It should be noted that construction noise is of a temporary nature and most jurisdictions do not require that such noise be mitigated to the specific threshold levels identified in Table 4.7-1. However, they do require that noise reduction considerations be implemented during construction to minimize the effects of short-term noise increases associated with construction activities. Generally, these considerations include limiting construction to daylight hours and requiring proper muffling of equipment.

4.7.3 <u>Project Impacts</u>

The project's potential to generate noise was included in this PEIR based on the potential for specific projects identified in the WMP to cause short-term and long-term changes in the noise environment near the proposed facilities. Short-term increases could result from construction activities and long-term changes are associated with operation of the proposed facilities. Short-term noise changes are generally not considered significant because they are not permanent nor health threatening. Long-term noise increases can result in significant impacts because they can result in a permanent change in the noise environment.

4.7.3.1 Significance Criteria

Noise impact criteria are described in detail in subsection 4.7.2.2 and Table 4.7-1 above. The following criteria will be used to determine whether noise levels have been significantly increased.

For residential areas, an exterior noise level of up to 65 dBA CNEL is permitted, if the exterior areas are substantially mitigated and the interior noise exposures do not exceed 45 dBA CNEL with windows and doors closed. If windows and doors are required to be closed to achieve an acceptable interior noise level, then the use of air conditioning or mechanical ventilation will be required.

Table 4.7-3
SOUND LEVELS AND HUMAN RESPONSE

	dBA	
	145	
Physically Painful	140	Sonic Boom
Extremely Loud	135	
	130	
	125	
Discomforting	120	Jet Takeoff at 200'
Maximum Vocal Effort	115	Auto Horn at 3'
Very Annoying Hearing	110	Rock ‘n Roll Band
Hearing Damage	105	Power Mower at 3'
Very Loud	100	Garbage Truck
	95	Heavy Truck at 50'
	90	Food Blender, Pneumatic Drill at 50’
	85	Electric Mixer, Alarm Clock
	80	Freight Train at 50'
	75	Busy Street Traffic at 50'
Telephone Use Difficult	70	Freeway Traffic at 50', Vacuum Cleaner at 10'
	65	Dishwater at 10'
Intrusive	60	Air Conditioning Unit at 20'
	55	Normal Conversation at 5'
Quiet	50	Typical Daytime Suburban Background
	45	Refrigerator at 10'
	40	Bird Calls
	35	Library
Very Quiet	30	Soft Whisper at 15'
	25	
	20	Broadcasting Studio
	15	
Just Audible	10	Leaves Rustling
	5	
Threshold of Hearing	0	
	dBA	

Source: Adapted from William Bronson, “Ear Pollution,” California Health (October 1971), p.29

In community noise assessments, a long-term change in noise levels greater than 3 dBA is often identified as significant, while changes less than one dBA will not be discernible to the human ear. In the range of one dBA to 3 dBA, people who are very sensitive to noise may perceive a slight change in noise level. No scientific evidence is available to support the use of 3 dBA as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than one dBA. However, in a community situation the noise exposure is extended over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become intrusive, rather than discernible, is some value greater than one dBA, and 3 dBA is generally accepted as the appropriate threshold for most community noise situations.

For purposes of this evaluation, long-term noise impacts are considered significant if the project is forecast to increase noise levels by 3 dBA (CNEL) where: (1) the existing noise levels already exceed the 65 dBA (CNEL) residential standard or (2) the project increases noise levels from below the 65 dBA (CNEL) standard to above 65 dBA (CNEL).

4.7.3.2 Impact Analysis

The WMP proposes a series of water supply improvements that could be implemented over the 25-year life of the plan. These water system improvements include new water supply wells, water storage reservoirs, water booster pump stations, new pipelines to distribute the water and maintenance, upgrading and retrofitting of existing water supply facilities. The extent of the noise impacts will be dependent on the projects location and proximity to receptors. Construction and operation of water facilities in developed areas has a greater potential for impact than development of water facilities in remote areas. The development of facilities such as wells and reservoirs on individual sites poses greater potential for noise impacts to a receptor than installing pipelines which take less time at a given location. Generally, construction equipment used for development of water facilities can generate noise levels of 75 dBA to 90 dBA at a distance of 50 feet from the equipment when operating. Generally, without attenuation, noise diminishes at a rate of about 5dBA to 6 dBA for each doubling of the distance from the noise source. This occurs when there are no barriers such as walls or topographic features between the noise source and the receptor to attenuate noise levels. This project proposes construction and operation of the facilities using standard methods and equipment for such activities which are utilized throughout these industries. No explosive will be utilized by this project.

The facilities proposed by this WMP essentially fall within three types: water production wells; above ground structures (reservoirs, pump stations, etc.); and underground facilities such as pipelines, valves and other appurtenant equipment. The following is a discussion of the noise typically associated with these activities.

<u>Short-term Construction Noise Sources</u>

During the period of construction, noise levels would be increased over that of the ambient intermittently when the equipment is operating. However, this increase in noise levels would only be temporary. The temporary increase in noise exposure would cease at the completion of construction.

Long-term Operation Noise Sources

Under normal operating conditions the noise levels generated by the facilities outlined in the WMP are not expected to increase the ambient noise levels to a level of significance for sensitive receptors. However, a more detailed analysis should be conducted once design drawings become available and specific locations are selected.

Well Development and Operation

Typically, the potentially most intrusive noise levels generated by water facility development is the development of new water production wells. The District anticipates that new wells will be drilled to depths of about 1,000 feet. These activities will be ongoing 24 hours per day and take about one week to complete. The equipment used to drill and develop the well shaft can generate noise levels of about 85 dBA at a distance of about 50 feet from the equipment. The effect on noise receptors will be dependent on the distance to the receptors and if any noise attenuation objects are present. Generally, unattenuated noise decreases at rate of about 5 dBA for each doubling of the distance from the noise source. Therefore, it is forecast that unattenuated noise levels from the well drilling activities will be about 80 dBA at 100 feet, 75 dBA at 200 feet and 70 dBA at 400 feet from the noise source.

As shown on Table 4.7-1, 70 CNEL (dBA) is considered a conditionally acceptable exterior noise level at the most noise sensitive urban land uses. The noise levels identified in Table 4.7-1 are associated with permanent noise levels at the receptors. The noise increases associated with well drilling are temporary and are considered a nuisance and not health threatening. The MSWD employs standard measures that are included as mitigation in this PEIR to reduce the potential for short-term impact from well drilling to a less than significant level.

Other activities associated with well development include leveling of the site, the delivery and installation of gravel pack material, well casing, sanitary seal, pumps, motors and other appurtenant equipment. These activities are short term, not permanent and will occur during less noise sensitive daylight hours and will result in substantially lower CNEL levels. The well will be test pumped to remove silts and determine a pumping capacity. It is forecast that these activities will generate noise levels in the 70 dBA to 80 dBA range at a distance of 50 feet from the equipment. Land leveling will take less than one week. The installation of the well equipment will take about two weeks and the test pumping a few days. Mitigation provided in this PEIR will limit these activities to the less noise sensitive daylight hours and require the use of noise reduction devices.

Operation of the wells has the potential to generate noise over the long term through the operation of pumps and motors at the site. Typically, quieter electric motors are used at these facilities. These long-term noise sources do have the potential to conflict with local noise standards. This, however, is not an unusual condition in that the District and other water providers already operates such facilities throughout the project area without adverse noise effects to receptors. Implementation of standard District policies and the following mitigation is considered adequate to reduce potential long term noise impacts to a less than significant level. This includes the proposed 1400 Zone well and booster pump station.

At this time, the District has not selected specific sites for development of all the proposed new water production wells. However, well development activities and related noise level increases will be similar at each site selected. The potential short term noise increases at affected receptors will be dependent on the distance to the receptor and the extent of noise attenuating objects between the noise source and the receptor. Detailed analysis of the potential noise impacts associated with development and operation of each new well will be required to determine the extent of potential project specific noise impacts. However, it is forecast that implementation of the appropriate mitigation provided below will allow the development and operation of future production well facilities without causing significant adverse noise impacts.

- **1400 Zone Well and Pump Station** – The 1400 Zone well and booster pump station are located within a sparsely developed area. The closest development to the proposed well and booster pump station is commercial / light industrial development along the south side of Two Bunch Palms Trail. It is forecast that short-term noise levels associated with site development, well drilling and booster pump installation will be about 70 db at the nearest receptors. Such short-term noise levels are considered acceptable for the commercial type uses at the nearest receptors. The nearest residences are located about one-quarter mile from the site and potential short-term noise increases will be negligible.

  Potential short-term construction noise impacts associated with development of the 1400 Zone well and booster pump project are considered <u>less than significant</u> with implementation of the mitigation provided in this PEIR.

  This PEIR provides adequate mitigation for potential noise impacts associated with the operation of the proposed wells. This includes the 1400 Zone well and booster pump station. Potential long-term noise impacts associated with the 1400 Zone well and booster pump station are considered less than significant with implementation of the mitigation measures provided in this PEIR.

Reservoir Development and Operation

Construction of a water reservoir will require the grading, leveling and compaction of soil on the site. These sites will be less than 5 acres in size and require about two weeks to prepare. It is forecast that typical site preparation equipment (dozer, grader, scrapper, compactor and trucks) will be used. These pieces of equipment have the potential to generate noise levels of about 70 dBA to 85 dBA at a distance of 50 feet from the equipment when under full load. Once the site is prepared, concrete, steel, pipes and other materials and equipment will be delivered to the site. Equipment and materials used to construct the reservoir will be dependent on the type of reservoir constructed. The MSWD currently utilizes welded steel and pre-stressed concrete reservoirs. Construction of the pre-stressed reservoir will include the use of forklifts, a crane, trucks and a special piece of equipment to prestress steel bands to support the reservoir. The welded steel tanks will utilize essentially the same equipment without the pre-stressing machine. These pieces of equipment will be operated during the less noise sensitive daylight hours and will not operate continuously throughout the work day. This equipment can generate noise levels of about 70 dBA to 85 dBA at a distance of 50 feet from the equipment when under full load. It is also forecast that use of this equipment will be for about one to three months depending on the size of the reservoir being constructed.

Mitigation is provided below to reduce potential reservoir construction noise impacts to a less than significant level.

The storage of water in a reservoir will not generate any substantial long term noise. The only noise associated with operation of the reservoir will be occasional visits to the site by District personnel to monitor and maintain the facilities. This will require the use of street licensed vehicles and potential noise impacts are considered less than significant.

The MSWD has identified two sites upon which it proposes to construct WMP water storage reservoirs with appurtenant equipment. These facilities are:

- **Terrace Reservoir** – A 1.5 million gallon (MG) water storage facility will be constructed on or adjacent to the existing Terrace Plant. This facility is located within the District's 1240 pressure zone. Residential units exist within about 200 feet of the site. Potential construction noise levels could range up to between 60 dBA to 75 dBA at the nearest receptors when construction equipment is operating. These noise levels would be sporadic during the one to two month construction period and occur during the less noise sensitive daylight hours. With implementation of the mitigation provided below, these temporary noise level increases are considered less than significant.

- **Vista Reservoir** – A 1.5 MG water storage facility will be constructed on or adjacent to the existing Vista Plant. This facility is located within the District's 1630 pressure zone. Residential development exists within about 200 feet of the site. Potential construction noise levels , construction timing and impacts would be similar to those identified for the Terrace Tank above with implementation of the mitigation measures provided below. Potential impacts are considered less than significant.

Booster Pump Stations

Booster pump stations are typically located on sites that contain other water facilities such as reservoirs or wells. Construction of these type facilities include some soil excavations for footings and vaults, pipes and equipment, concrete for structures and vaults, pumps, motors, piping and valves. Equipment usually includes an excavator or backhoe, forklift or small crane and trucks. Once the footings or vaults are in place, the pumping equipment is delivered to the site and placed on or within the structures. Minimal construction and equipment is required. This equipment generates noise levels of about 75 dBA at a distance of 50 feet from the equipment when under load. Construction takes less than one month and will occur during the less noise sensitive daylight hours. Potential construction-related impacts are considered to be less than significant. This includes the 1400 Zone booster pump station which is evaluated in above with the 1400 Zone well.

Operation of the booster pump stations will generate long term noise through the use of motors to power the pumps. These motors will be powered by electricity and the noise generated could be in the range of about 70 dBA at a distance of 50 feet from the noise source. This includes the 1400 Zone booster pump station. These motors will generally be housed in structures and will not operate on a continuous basis but will be in use throughout a 24-hour period (about 12 hours/day). Mitigation is provided below to reduce the potential for impact to nearby receptors to a less than significant level.

Seismic Retrofitting

The WMP does not identify any specific facilities for seismic retrofitting nor the extent of retrofitting that may be required. This activity will be an ongoing activity that is implemented on an as needed basis. As such it is not possible to forecast the potential noise impacts that could result. This will be evaluated on a case by case basis to determine the potential for impact and the appropriate CEQA determination. This issue was provided in the WMP primarily for District budgetary planning purposes during the life of the WMP. The extent of CEQA compliance required will be dependent on the scope of each retrofitting activity. It is anticipated, however, that for noise issues, the worst-case potential impacts of seismic retrofitting will not exceed those identified above for construction and operation of the water facilities evaluated above. It is forecast that the worst-case seismic retrofitting activities would result in the demolition and reconstruction of an existing facility. Mitigation provided herein is considered adequate to reduce potential noise impacts to a less than significant level.

4.7.3.3 Summary of Noise Impacts

a. Will the project increase noise exposure for sensitive receptors from new noise sources?

Short-term Construction Noise

The short-term noise increases associated with construction of the facilities identified in the WMP are forecast to range from about 80 dBA at a distance of 100 feet from well drilling activities to about 65 dBA at a distance of about 100 feet from reservoir and booster pump construction activities. As stated above, construction noise is of a temporary nature and most jurisdictions do not require such noise to be mitigated to the specific threshold levels outlined above. However, they do require operational considerations (i.e., limitation of construction hours, the muffling of construction equipment, noise complaint response programs, etc.) to minimize noise impacts during the construction process. Construction noise levels affecting sensitive receptors may exceed the significance thresholds during the day, but eliminating this source of noise for non-well drilling activites at night can reduce these short-term impacts to a non-significant level. Mitigation measures are identified below which ensure that construction activities do not intrude on sensitive receptors in the evening or expose such receptors to damaging levels of noise at any time. The most effective method of controlling construction noise is generally by local limitation of construction hours to normal weekday working hours, typically from daylight to dusk. With implementation of these measures, short-term construction noise impacts, including those associated with the Vista and Terrace Reservoirs and the 1400 Zone well, booster pump and pipeline projects, are considered to be <u>less than significant</u>.

Long-term Operation Noise Sources

Under the WMP, no significant increase in noise levels is expected in the operation of the proposed facilities. Increase in existing noise levels due to the operation of the proposed facilities would be dependent on the specific site selected and their proximity to the closest sensitive receptors. Detailed analyses would be required to determine the operation impact once the specific sites are selected and plot plans become available.

As for the Vista and Terrace Reservoirs, these facilities will not generate any long-term noise should mechanical equipment be placed on those sites (i.e., booster pumps) adequate mitigation as provided herein to reduce potential noise impacts to a less than significant level.

Operation of the 1400 Zone well and booster pump station has the potential to generate noise over the long term. However, due to the distances to the nearest receptors and the mitigation provided in this PEIR, potential long term noise impacts are considered less than significant.

b. Will the project expose people to severe noise levels?

Based on the data provided in this PEIR, none of the permanent operation activities associated with implementing the proposed WMP projects are forecast to generate any severe noise levels that could adversely impact sensitive receptors within the MSWD Service Area or exceed the significance criteria provided in subsection 4.7.3.1. Potential impacts are considered less than significant.

4.7.4 Mitigation Measures

The evaluation of potential noise impacts presented above identified potentially significant noise impacts. The potential noise impacts from implementing the proposed project range from non-significant without mitigation to potentially significant unless mitigation or other measures are implemented. Construction, well drilling, grading, site clearance and building construction activities will generate the most noise. During operations/occupancy the noise analysis concluded that offsite noise impacts do have a potential to cause significant adverse impact to adjacent sensitive land uses. The following mitigation measures will be implemented to reduce noise impacts to the minimum level achievable.

4.7-1 ***All non-well drilling construction shall be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday, and between 9 a.m. to 6 p.m. on Saturday, and shall be prohibited on Sundays and federal holidays.***

4.7-2 ***To the extent feasible, MSWD will require utilization of construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.***

4.7-3 ***The MSWD shall respond to any noise complaints received for this project by measuring noise levels at the affected receptor. If the noise level exceeds an Ldn of 65 dBA exterior or an Ldn of 45 dBA interior at the receptor, the MSWD shall implement adequate measures such as the use of noise attenuating curtains or enclosing equipment within structures to reduce noise levels to the greatest extent feasible.***

4.7-4 ***All construction vehicles and fixed or mobile equipment shall be equipped with properly operating and maintained mufflers.***

4.7-5 ***Construction shall be scheduled such that the absolute minimum number of equipment would be operating at the same time.***

4.7-6 ***Maintain good relations with the school and community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and the expected temporary and intermittent noise increases during the construction period.***

4.7-7 All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided with adequate hearing protection devices to ensure no hearing damage will result from construction activities.

4.7-8 If equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account), portable noise barriers shall be installed that are demonstrated to be adequate to reduce noise levels at receptor locations below hearing damage thresholds.

4.7-9 All production wells or booster pumps shall have their noise levels attenuated to 50 dBA CNEL at 50 feet from the noise source.

4.7-10 Project facilities shall be constructed and operated so that noise levels from operations do not exceed 50 dB during night hours and 65 dB averaged over the 12 hours of day time when located adjacent to existing or future sensitive land uses. This can be achieved by siting relatively noisy operations a sufficient distance from sensitive noise receptors; by incorporating attenuation features in the facility or designing attenuation features at the boundary of the property.

These measures ensure that implementation of the WMP will not cause significant noise impacts during construction or cause hearing damage to employees or nearby receptors from severe noise levels. Potentially significant noise impacts where residential uses or other sensitive uses or sensitive biological resources abut major facilities will have noise impacts reduced to a non-significant level by implementing the above measures.

It should be noted that the noise criteria established above is also compatible with noise policies of the Coachella Valley Multi-Species Habitat Conservation Plan discussed in subchapter 4.4 of this PEIR.

4.7.5 Cumulative Impact

The noise forecast data contained in the local agency general plans demonstrates that future traffic noise levels from general growth (cumulative traffic increases) within the MSWD Service Area will result in significant noise impacts. However, the WMP is not forecast to cause or contribute to such cumulative noise impacts which can be attributed to the land use mix contained in the local agency general plans and the inability to reduce potential traffic noise impacts to a non-significant level. Any traffic generated by the WMP operations is considered an insignificant contribution to this traffic related noise impact (refer to the Initial Study and Notice of Preparation). Implementation of the WMP will not constitute a significant contribution to the cumulative increases in traffic and potential impacts are considered cumulatively less than significant.

4.7.6 Unavoidable Adverse Impact

The noise evaluation presented above indicates that the proposed project has a potential to cause unavoidable adverse noise impact from implementing certain facilities and activities. As noted above, mitigation measures have been identified that can reduce both short-term and permanent noise impacts to a less than significant level.

4.8 LAND USE / PLANNING

4.8.1 Introduction

Land use issues were included as a topic for evaluation in this PEIR because implementation of the Water Master Plan (WMP) will result in the installation of water management facilities throughout the project area. The Initial Study prepared for this project determined that implementation of the facilities proposed by the WMP are not of sufficient size to physically divide an established community. The NOP and scoping processes identified other land use issues that are evaluated in this subchapter of the PEIR. No comment letters addressing land use issues, other than potential conflicts with habitat conservation plans were received. It should be noted that California Government Code Section 53091 exempts water facilities from local zoning regulations and no such conflicts are forecast to result. The following land use issues have been identified as having a potential to experience significant impact and are evaluated in this subchapter:

- Growth inducement through the extension of infrastructure; and
- Conflict with applicable habitat conservation plan or natural community conservation plans.

This subchapter of the PEIR addresses the above issues and has been compiled by relying upon data contained in the WMP utilized general plans and other pertinent planning documents for the project area. These planning documents include the general plans for the following agencies: cities of Palm Springs and Desert Hot Springs, the County of Riverside, and the Southern California Association of Government publication Regional Comprehensive Plan and Guide (RCPG).

4.8.2 Environmental Setting

4.8.2.1 Existing Land Use Designations

To forecast potential land use impacts, data on existing land uses is required at two different scales. The first level of analysis is to provide land use data (existing land uses and general plan land use designations) at the broadest scale within the project area. To accomplish this it was necessary to compile information regarding the total area that may be impacted by implementing the WMP and the general land use patterns within the area of potential impact. The second level of analysis is to assess the types of land uses (existing and designated) within the vicinity of proposed WMP or related facility/infrastructure improvements. This brings the land use focus down to the impacts at a project specific level where individual facility land use compatibility issues can be addressed in relation to general scenarios and impacts. As this document is a PEIR, it documents potential impacts on a service area basis and general and typical impacts that may be experienced at the infrastructure project level. It is anticipated that a detailed analysis of land use issues would be provided in subsequent environmental documentation when specific project sites are proposed. However, from a land use perspective, it is generally assumed that as water facilities, the facilities proposed in the WMP will be exempt from land regulations and are considered compatible with all land uses.

The boundary of the Mission Springs Water District (MSWD), as illustrated in Figures 2-2, encompasses all the City of Desert Hot Springs, and portions of the City of Palm Springs and County of Riverside Western Coachella Valley Area Plan.

Table 4.8-1 lists the planning areas and agencies included within the study area. Using general land use data from the pertinent city and county area plans and general plan EIRs, the planning and land use data for the study area were compiled in the document. Both the City of Palm Springs and City of Desert Hot Springs have annexed unincorporated areas since revision of their General Plans. In addition, the Riverside County Integrated Project was adopted subsequent to the cities' general plans. Therefore, the general analysis presented is qualitative rather than quantitative in character.

Table 4.8-1
STUDY AREA DEFINITION AND PLANNING AGENCIES

Planning Area	Planning Agency
Western Coachella Valley Area Plan	County of Riverside
Desert Hot Springs (entire area)	City of Desert Hot Springs
Palm Springs (north-central portion)	City of Palm Springs
Mission Springs Water District Service Area	Coachella Valley Council of Governments
Mission Springs Water District Service Area	Southern California Council of Governments

County of Riverside

The Western Coachella Valley Area Plan

The County of Riverside adopted its current General Plan in the year 2003. In that plan it provides for the development of the land uses shown in Table 4.8-2. This includes some of the land annexed into the City of Palm Springs and the City of Desert Hot Springs since the current General Plans were adopted. A small part of this area plan is within MSWD Service Area (see Figure 2-2).

Table 4.8-2
WESTERN COACHELLA VALLEY AREA PLAN LAND USE PLAN
(Does not include areas within a City jurisdiction,
freeways, or Indian Lands at time of in 2003)

Land Use Category	Acres	% of Acres in Land Use Plan
Residential	48531	19.7
Commercial	1586	0.6
Industrial	4723	1.9
Public/Institutional	2314	1
Open Space	189602	76.8
Total	246756	100
Source: Psomas 2007		

The Western Coachella Valley Area Plan includes two policy areas that lie partially within the MSWD Service Area. These are the San Gorgonio Pass Wind Energy Policy Area and the Hot Springs Policy Area.

The San Gorgonio Pass Wind Energy Policy Area, located within, west and southwest of the MSWD Service Area, is one of the prime wind to electricity conversion areas in the nation. To make the most of wind energy generation opportunities, the Riverside County General Plan has included policies to protect the area and surrounding land uses (pages 25-26 of the Western Coachella Valley Area Plan). The policies include siting criteria and encouragement of coordination of wind-energy generation with other alternative energy source utilization.

The Hot Springs Policy Area located within and southeasterly of the proposed project area, is a thermal resource area with hot mineral water renowned for potential health benefits. As such, it attracts tourists and seasonal residents. In order to protect the economic benefits associated with the hot springs area, the Riverside County General Plan has included policies to protect the area and (pages 26-27 of the Western Coachella Valley Area Plan). The policies include encouragement of resort/spa developments, health and fitness facilities, commercial and infrastructure support facilities, and facilitation of these developments by allowing land with rural community foundation components to have their designations changed to a community development foundation component where the hot springs resource would be a focus of the resulting development.

The Pass Area Plan

A small portion MSWD (Cottonwood and Woodridge systesm) lies within the Pass Area Plan. A small area of low density residential development exists in this area with the rest of the area in conservation and rural mountainous and rural desert designations or subject to Indian jurisdiction.

Outside Area Plan

A small portion of Mission Springs Water District lies outside of an Area Plan. This area is designated for conservation.

City of Desert Hot Springs

The City of Desert Hot Springs adopted its current General Plan in the year 2000. In that plan it provides for the development of the land uses shown in Table 4.8-3. This does not include land that may have been annexed into the City since the plan's adoption. The City is within the MSWD Service Area and most of the water system improvements proposed are within the City of Desert Hot Springs.

Table 4.8-3
CITY OF DESERT HOT SPRINGS LAND USE PLAN

Land Use Category	Acres	Acres Developed/Vacant	% of Acres in Land Use Plan
Residential	22150	4,256 / 17,894	59.7
Commercial	1042	224 / 818	2.8
Industrial	4398	1,053 / 3.345	11.9
Public/Institutional	1009	581 / 428	2.7
Open Space	8360	345 / 8,015	22.7
Total	36959	6,459 / 30,500	100
Source: Psomas 2007			

The General Plan provides for an increase in population from 15,398 in 1999 to a peak seasonal population of 193,456 at buildout.

City of Palm Springs

The City of Palm Springs adopted its current General Plan in the year 1993. In that plan it provides for the development of the land uses shown in Table 4.8-4. This does not include land annexed into the City since the plan's adoption. A small part of the City is within the MSWD Service Area.

Table 4.8-4
CITY OF PALM SPRINGS LAND USE PLAN
(Does not include Roads)

Land Use Category	Acres	% of Acres in Land Use Plan
Residential	19055	19
Commercial/Industrial	6563	6.6
Public/Institutional	1080	1.1
Open Space	73361	73.3
Total	100059	100
Source: Psomas 2007		

4.8.2.2 Discussion of Regulations Controlling Water Facility Infrastructure Development

California Government Code Section 53091 specifies that water supply facilities, such as those associated with the WMP, are exempt from zoning restrictions. Specifically, the text of the Section 53091 states: *Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage or transmission of water....* The purpose of this section is to ensure that water system infrastructure can be installed to meet the demand by all water consuming land uses and it recognizes the universal role that water supply plays within our society.

The general plans within the WMP Study Area contain Infrastructure Elements or otherwise discuss water supply in only the most general terms. Adequacy of supply with sufficient delivery infrastructure and managing consumption and use of water are key issues of discussion within the general plans relative to the land uses and densities identified in the general plans. For the issue of water supply, it is not relative whether a purveyor is a private or public entity.

Based on the above referenced California Government Code section and the general support for water system infrastructure contained in the general plans, there are very few land use regulation constraints that will limit the future development of adequate water system infrastructure to support the WMP. It should be noted that most agencies carefully coordinate the implementation of water system infrastructure to meet existing and near future demand. It should be noted that MSWD also considers, to the extend feasible, siting of individual facilities in an attempt to meeting overall goals and objectives of the general plans. The Initial Study prepared for this project evaluated the potential impacts to aesthetics associated with implementation of the WMP and determined that potential impacts were less than significant with implementation of the identified mitigation measures. These measures were developed to address potential conflicts with other land uses and are provided in this subsection.

4.8.3 Project Impacts

Implementation of the WMP will result in a series of minor, direct physical changes in the environment over a 20-year period by adding pipelines (underground), wells, water storage tanks, and booster stations to existing land use settings within the study area. The purpose of these facilities is to meet projected water demand from development planned and approved by the County of Riverside, City of Desert Hot Springs, and City of Palm Springs within the MSWD Service Area. The MSWD is proposing these infrastructure improvements in order to provide an adequate water supply to meet long-term, ultimate growth and development projections within the study area. This includes a program of seismic retrofitting of existing MSWD facilities.

The potential environmental impacts from implementing the WMP can be divided into those that are considered growth-inducing and impacts from specific projects that the MSWD will construct and operate as a response to planned development within the Study Area.

The following text contains a list of potential projects that will be required to adequately meet the current and future water needs of the MSWD Service Area. This information is used to discuss environmental impacts throughout much of this subchapter and the remainder of the document.

913 Zone

The 913 Zone MDD (maximum day water demand) is expected to more than double (200%) over the next 20 years (2005 to 2025)

FUTURE SYSTEM IMPROVEMENTS FOR THE 913 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	none	none
Booster Stations	none*	none	none	none
Distribution – Major Pipelines	none	1,300 lf, 12-in or 1,218 lf, 16-in	none	none
Note: * Some appurtenant facilities maybe needed at the Garnet Booster Station.				

1070 Zone

The 1070 Zone MDD is projected to increase by approximately 48% during the 20-year period between 2005 and 2025. The following are the system improvements required in the 1070 Zone to meet future demands between the years 2010 and 2025. The future improvements for the 1070 Zone are expected to occur during 2010 and 2015.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1070 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 2.50 MG tank	none	none	none
Booster Stations	none	(1) 1.3 MGD	none	none
Distribution – Major Pipelines	3,200 lf, 16-in	none	none	none

1240 Zone

The 1240 Zone is expected to increase by 50 percent during the 20 years between 2005 and 2025. As shown below, the only major improvement anticipated for the 1240 Zone between the years 2010 and 2025 is a 20-in diameter pipeline.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1240 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 1.5 MG	none	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	12,900 lf, 16-in	none	none	none

1400 Zone

The 1400 Zone is expected to be the fastest growing zone in the entire MSWD water system. The MDD in the 1400 Zone is expected to increase by over five times (528%) during the 20-year period between 2005 and 2025. The following summarizes the system improvements required in the 1400 Zone to meet anticipated future demands between the years 2010 and 2025.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1400 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(2) 2,000 gpm	(3) 2,000 gpm	(2) 1,500 gpm	(1), 1,500 gpm
Storage – Tanks	(1) 5.0 MG, (1) 1.0 MG	(1) 5.0 MG	none	(1) 5.0 MG
Booster Stations	(1) 0.7 MGD	none	none	none
Distribution – Major Pipelines	9,500 lf, 8-in, 29,300 lf, 24-in	2,600 lf, 12-in or 2,800 lf, 16-in 2,700 lf, 20-in	none	none

1530 Zone

The 1530 Zone MDD is expected to increase by 73% during the 20 years between 2005 and 2025. The following are the recommended future improvements for the 1530 Zone.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1530 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(2) 2,000 gpm	(1) 1,500 gpm	none	none
Storage – Tanks	(1) 1.0 MG	(1) 4.0 MG	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	21,600 lf, 12-in, 19,000 lf, 16-in 19,700 lf, 24-in	2,600 lf, 16-in 2,800 lf, 20-in	2,800 lf, 16-in	none

1630 Zone

The 1630 Zone MDD is expected to increase approximately 2.8 times (280%) during the next 20 years from 2005 to 2025. The following are the recommended future improvements for the 1630 Zone.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1630 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	(1) 1,500 gpm (1) 1.0 MG	(1) 1,500 gpm	none	none
Storage – Tanks	(1) 1.5 MG (1) 2.5 MG	none	none	none
Booster Stations	(1) 1.5 MGD	none	none	none
Distribution – Major Pipelines	7,600 lf, 12-in,	none	none	none

1800 Zone

The following are the system improvements required for the 1800 Zone. The 1800 Zone is primarily a new pressure zone that will be created as growth increases beyond the extent of the existing system. The three wells shown in the 1800 Zone will also provide supply capacity to the 1975 Zone and the 2155 Zone.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1800 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	(1) 1,500 gpm	(1) 1,500 gpm	(1) 1,500 gpm
Storage – Tanks	none	(1) 1.0 MG	none	none
Booster Stations	none	(1) 7.5 MGD	none	none
Distribution – Major Pipelines	none	8,300 lf, 8-in 19,200 lf, 20-in	none	none

1975 Zone

The following are the system improvements required for the 1975 Zone, which primarily occur during 2020. The supply capacity for this zone is provided by well shown in the future 1800 Zone.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1975 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	(1) 2.0 MG	none
Booster Stations	none	none	(1) 3.5 MGD	none
Distribution – Major Pipelines	none	none	8,200 lf, 12-in	none

2155 Zone

The following are the system improvements required for the 2155 Zone, which exclusively occur during 2025.

FUTURE SYSTEM IMPROVEMENTS FOR THE 1975 ZONE

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	none	none	none	none
Booster Stations	none	none	none	(1) 3.5 MGD
Distribution – Major Pipelines	none	none	none	200 lf, 16-in

Cottonwood Zone

The following are the system improvements recommended for the Cottonwood Zone. Most of the future improvements for the Cottonwood Zone are expected to occur prior to 2010.

FUTURE SYSTEM IMPROVEMENTS FOR THE COTTONWOOD ZONE (1630-C)

System Components	2010	2015	2020	2025
Supply – Wells	(1) 1,500 gpm	none	none	none
Storage – Tanks	(1) 1.0 MG	none	none	none
Booster Stations	(1) 2.2 MGD	none	none	none
Distribution – Major Pipelines	none	none	3,500 lf, 20-in	none

Woodridge Zone

The following are the system improvements recommended for the Woodridge Zone. The future improvements for the Woodridge Zone are expected to occur prior to 2010.

FUTURE SYSTEM IMPROVEMENTS FOR THE WOODRIDGE ZONE (1800-W)

System Components	2010	2015	2020	2025
Supply – Wells	none	none	none	none
Storage – Tanks	(1) 0.5 MG	none	none	none
Booster Stations	none	none	none	none
Distribution – Major Pipelines	none	none	none	none

4.8.3.1 Significance Criteria / Threshold of Significance

- Would the project physically divide an established community?
- Would the project conflict with any applicable land use plan, policy or regulation or an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
- Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

Each of these significance thresholds will be applied to the potential land use impacts forecast to occur from implementing the WMP, and a conclusion regarding the significance of potential land use impacts will be presented in the following analysis.

4.8.3.2 Impact Analysis

a. Would the project physically divide an established community?

This issue was evaluated in the Initial Study prepared for this project. The Initial Study determined that due to the type and size of the facilities proposed by the WMP, this issue would not require further evaluation and was not included as a topic for evaluation in this PEIR. This evaluation is applicable to the Vista and Terrace reservoirs and the 1400 Zone well and pump station projects. None of these facilities are of adequate size to physically divide an established community.

b. Can implementation of the WMP cause significant conflict with the General Plan or zone designations?

The four main facilities that will be built in support of the WMP are booster stations, storage tanks, wells and pipelines. Other than the Terrace and the Vista reservoirs and the 1400 Zone well and pump station, specific locations for these facilities have not been selected at this time. The locations of the other WMP facilities will be determined on a case-by-case basis in the future. Each of these facilities is designed to enhance the ability of MSWD to provide a safe, high quality, and adequate supply of potable water to the MSWD service area. California Government Code Section 53091 provides that such facilities are not subject to building or zoning ordinances.

> *"(d) Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water....by a local agency. (e) Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water..."*

Each of these facilities, including the Terrace and Vista Reservoirs and the 1400 Zone well and booster pump station, are also consistent with the general goals, objectives and policies of general plans within the Study area that an "adequate supply of safe water" be provided for residents and that use and consumption of water is properly managed. Implementation of the WMP is not forecast to cause any significant conflicts with general plans or zoning designations in those jurisdictions within the Study Area. This conclusion is based on the findings outlined above and the recognition in the general plans for communities in the Study Area that adequate water system infrastructure is an essential component of planned future growth.

The WMP does not contain any policies or propose any activities that would modify or affect any general plan; it simply provides infrastructure improvements to provide water for current and future water demand in the study area as a result of implementing the County of Riverside, City of Desert Hot Springs, and City of Palm Springs land use plans within the MSWD service area. The activities that will be supported by the WMP are the design, construction and operation of the water systems required to meet the demand from future growth within the Study area communities. As such, the implementation of the WMP is consistent with the RCPG population forecast and has no potential to modify this forecast.

The ultimate vision of future growth and development within the project area was established in the governing study area general plans, and it is assumed in these general plans that the water supply required to support the population which will be in place as growth occurs in the future. The net effect of these general plans is to create a set of expectations regarding future land use and growth that may or may not occur depending upon the actual carrying capacity of the various utility and service resources required to meet future growth. It also seems clear that the established planning process and the overall growth pressures in southern California are the primary causes of future growth, i.e. they induce the actual growth that occurs, and the various utilities, are effectively forced to create urban water management plans that can accommodate such growth, at least within the limits of current or future resources that may be available. As the RCPG analysis of water resources indicates, there are sufficient water resources to meet future demand for the foreseeable future.

The position taken in this document is that the utility planning process is more appropriately playing a passive (accommodating) role, not an active (inducing) role, in future growth that is dictated by local land use plans and the continuing growth of population throughout southern California. If communities within the project area chose to restrict growth and maintain a certain vision of the future as a static or slowly growing entity, the land use planning agencies (cities and counties) had the opportunity during the general planning process to establish such plans. Under such circumstances, the utility providers would have designed their future service plans to accommodate a level of future growth consistent with available resources.

In reality, however, responsible water planning agencies, must plan for a level of future growth that appears to match available water resources with forecast growth through the planning horizon. Because the efficient operation of water systems requires that the system be designed and operated as a single, interrelated facility, it is necessary to plan the system components around the projected water demand of the entire service area. This allows the District to construct only those facilities that are needed to meet current and near future water needs. The purpose of this WMP is to provide a plan for the orderly and efficient development of water supply facilities to meet the demand of its customers. Based on this analysis, implementation of the WMP is not considered to be a significant growth-inducing action.

Some potential does exist for conflict with land uses adjacent to existing land uses. These potential conflicts are associated with noise and aesthetics. Potential noise impacts are evaluated in subsection 4.7.3 of this PEIR and determined to be less than significant with implementation of the mitigation measures provided.

Potential impacts to aesthetic values and visual resources would be associated with lighting and appearance of aboveground structures. These potential impacts were evaluated in Initial Study prepared for this project and determined to be less than significant with implementation of the mitigation measures provided therein and incorporated into this subsection of this PEIR. This evaluation and the mitigation provided is applicable to the Vista and Terrace reservoirs and the 1400 Zone well and pipeline. No further evaluation or mitigation is required.

c. Will the project create a significant conflict with applicable habitat conservation plans or natural community conservation plans?

The agency with jurisdiction over adoption and implementation of the WMP is the Mission Springs Water District which serves water customers within the study area. The applicable environmental policies that affect the study area are contained in the local jurisdiction general plans. These agencies include the California Department of Health Services (DHS) that regulates the water quality and use of wells and the Colorado River Basin Regional Water Quality Control Board, which establishes beneficial uses and water quality objectives for water resources in the Mission Springs Basin.

Regarding the environmental plans and policies contained in general plans of local land use agencies within the study area, implementation of the WMP has no potential for significant conflicts with policies or general plan elements. At this time, a Multi-Species Habitat Conservation Plan (MSHCP) is being proposed for the Coachella Valley. This Plan includes portions of the MSWD Service Area. This Plan has not been adopted nor has MSWD decided whether to participate in the Plan. If the Plan is adopted and MSWD participates, then implementation of the WMP will not conflict with this Plan. If the Plan is not adopted, no potential for conflict will result. If the Plan is adopted and MSWD does not participate, then some potential for conflict could result.

A determination on the potential to conflict with the MSHCP will be made when there is a final disposition of the MSHCP. This issue is evaluated in detail in subsection 4.4, Biology of this PEIR.

As with any project being implemented as part of a program extending over many years, a potential exists for plans and policies to change or for a specific project to result in a potentially significant conflict with existing plans and policies. Based on the type of projects envisioned for implementation under the WMP and the measures available to control or avoid such conflicts, the analyses in this PEIR indicate that such potential conflicts, as outlined above, can be managed, or reduced, to below a significant level of conflict. However, the California Environmental Quality Act (CEQA) process does provide a fail-safe mechanism for future projects by ensuring that each proposed specific project will be reviewed in the context of the findings and mitigation measures outlined in this document. Under the programmatic concept, WMP implementation will be carried out by ensuring that all future specific facility projects, or future WMP modifications, are evaluated under Sections 15162 and 15168 of the State CEQA Guidelines (copy attached for information in Appendix 8.2 of Chapter 8). Under this review process, if a specific project is identified as causing a significant impact in one of the issue categories addressed in this document or as causing a significant conflict with the plans and policies discussed above, that define significance thresholds, then a subsequent CEQA document must be prepared. Thus, the combination of the measures identified in this document and the mandatory CEQA procedures discussed above will ensure that no specific WMP project or future WMP amendment or modification will result in significant conflicts with plans or policies, without this information be made available to the decision-makers prior to a decision being made on such specific projects or amendments. Mitigation measures for specific issues outlined above are identified in the subchapter where the issue is evaluated in this PEIR.

4.8.4 Mitigation Measures

The analysis above indicates that implementing the WMP will not result in significant adverse land use impacts. The following mitigation measure is recommended for individual projects proposed as part of the WMP.

4.8-1 Following selection of alternative sites for construction of water infrastructure facilities, each site shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or a technical report shall be prepared that identifies the specific measures that will be utilized to reduce potential incompatible activities or effects to below thresholds established in the general plan for the jurisdiction where the facility will be located.

4.8-2 All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is completed, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.

4.8-3 Where facilities are proposed to be located adjacent to scenic highways, corridors or other scenic features identified in local agency planning documents, project implementation will conform with design requirements established in the applicable planning documents.

4.8-4 ***Where facilities will disrupt views from occupied areas with significant scenic vistas, a visual simulation analysis shall be performed of the facility's impact on the important view. If the analysis identifies a significant impact on a scenic vista, the facility shall be relocated, if feasible, redesigned to reduce the impact to a non-significant level, or a subsequent environmental evaluation shall be prepared.***

4.8-5 ***When above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility.***

4.8-6 ***All utilities for project facilities shall be placed underground unless such undergrounding is not technically feasible.***

4.8-7 ***Future project review and implementation shall implement the following:***

- ***Use of low pressure sodium lights where security needs require such lighting to minimize impacts of glare.***
- ***Height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.***
- ***Directing light and shielding shall be used to minimize off-site illumination.***
- ***No light shall be allowed to intrude into sensitive light receptor areas.***

4.8-8 ***All permanent lighting associated with the project will be directed towards the ground (shielded from the sky) and comply with the Mt. Palomar Lighting Policy so that light or glare does not fall off the property boundary.***

With implementation of this measure and the measures contained in other subsections of this PEIR, potential impacts associated with implementation of the WMP are considered less than significant.

4.8.5 Cumulative Impact

The WMP activities are specifically designed to provide a reliable water supply to meet current and future water demand within the MSWD Service Area. The proposed project has been evaluated as being fully consistent with the study area's general plans and adopted environmental conservation plans. Facilities proposed by the WMP are intended to provide adequate water service to meet future demand. As such, the WMP is only a planning tool used by the MSWD to anticipate future water demand. WMP facilities will only be constructed and operated in response to the demand for water created by growth allowed within its service area. Such growth is controlled by the local agencies with jurisdiction over land uses and the approval of projects which result in growth. The WMP activities are not forecast to contribute to any land use incompatibilities with existing or future uses within the study area based on implementing identified mitigation measures. There are no identifiable unavoidable cumulative impacts to land use issues associated with WMP implementation.

Finally, the WMP has been determined not to induce future growth. The provision of water to meet current and future demand is determined to be growth accommodating, not growth inducing. The WMP can be implemented without causing or contributing to future significant cumulative growth or development within the MSWD service area. Potential cumulative growth inducing impacts are considered less than significant.

4.8.6 Unavoidable Adverse Impact

The land use impact evaluation presented above indicates that implementation of the proposed project will be consistent with the study area general plan land use designations, environmental policies and growth allowed by the local agencies having jurisdiction over land use issues. Implementing the proposed project is not forecast to cause any direct or indirect significant unavoidable adverse land use impacts after implementation of the mitigation measure outlined above. Potential impacts are considered to be less than significant.

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4.9 POPULATION AND HOUSING

4.9.1 Introduction

The Initial Study determined that the provision of an adequate supply of water is not typically considered growth inducing and that water facilities generally accommodate growth by providing the needed services and do not displace housing or people. However, due to the large scope of the facilities and services proposed by the Water Master Plan, the Initial Study recommended that potential impacts to population and housing would be a topic evaluated in the PEIR prepared for this project. The NOP and scoping processes identified issues that are evaluated in this subchapter of the PEIR. The following population and housing issues have been identified as having a potential to experience significant impact:

- Displacement of existing housing or people
- Growth inducement

This subchapter of the PEIR addresses the above issues and has been compiled by relying upon data contained in general plans and other pertinent planning documents for the project area. These planning documents include the general plans for the following agencies: cities of Palm Springs and Desert Hot Springs, the County of Riverside; and the Southern California Association of Government publication Regional Comprehensive Plan and Guide (RCPG).

4.9.2 Environmental Setting

In order to forecast potential population and housing impacts, data on existing conditions is required. Information was compiled regarding the total area that may be impacted by implementing the WSMP and the population and housing forecasts within the area of potential impact. As this document is a PEIR, it documents potential impacts on a service area basis. It is anticipated that a detailed analysis of population and housing issues would be provided in subsequent environmental documentation when specific project sites are proposed.

The boundary of the Mission Springs Water District (MSWD), as illustrated in Figure 2-2, encompasses all the City of Desert Hot Springs, and portions of the City of Palm Springs and County of Riverside Western Coachella Valley Area Plan. Using general data from the applicable city and county area plans, general plan EIRs, and regional planning agencies, the population and housing data for the study area were compiled in the document. Both the City of Palm Springs and City of Desert Hot Springs have annexed unincorporated areas since revision of their General Plans. In addition, the Riverside County Integrated Project was adopted subsequent to the Cities' general plans. Therefore, there may be an overlap of numerical data. Consequently, the general analysis presented is based on trends rather than absolute numbers.

The planning areas within the MSWD service area are: The Western Coachella Valley Area Plan, The City of Desert Hot Springs, the north-central portion of Palm Springs, and the Mission Springs Water District Service Area.

The planning agencies referenced in this section are: the County of Riverside, City of Desert Hot Springs, City of Palm Springs, Coachella Valley Council of Governments, and the Southern

California Association of Governments (SCAG). The U.S. Census and California Department of Finance are also used as a source of data for the population estimates and projections.

4.9.2.1 Existing Population Estimates (2000 to 2007)

City of Desert Hot Springs

The City of Desert Hot Springs adopted its current General Plan in the year 2000. This does not include land that may have been annexed into the City since the plan's adoption. The City is within the MSWD boundary. The General Plan estimates a permanent 1999 population of 15,398.

The SCAG estimate of the 2000 population of Desert Hot Springs is 16,607. The SCAG estimate of the 2005 population of Desert Hot Springs is 21,192. The 2000 Census estimated the population of Desert Hot Springs as 16,582.

California Department of Finance population estimates for City of Desert Hot Springs:

2000	16,582
2001	16,777
2002	16,985
2003	17,398
2004	18,000
2005	19,507
2006	22,011 and 22,163
2007	23,544

City of Palm Springs

The City of Palm Springs adopted its current General Plan in the year 1993. In that plan it provides for the development of the land uses shown in Table 4.2-3. This does not include land annexed into the City since the plan's adoption. A small part of the City is located within the MSWD. The Palm Springs General Plan estimates a permanent 1990 population of 40, 181 and peak seasonal population of 79, 508.

The SCAG estimate of the 2000 population of Palm Springs is 42,890. The SCAG estimate of the 2005 population of Palm Springs is 44,822. The 2000 Census estimated the population of Palm Springs as 42,807.

California Department of Finance population estimates for City of Palm Springs:

2000	42,805
2001	43,414
2002	43,971
2003	44,552
2004	45,033
2005	46,000
2006	46,437 and 46,754
2007	46,858

4.9.2.2 General Population Forecasts (2005 through 2030)

City of Desert Hot Springs

The City of Desert Hot Springs General Plan provides for an increase in population from 15,398 in 1999 to a peak seasonal population of 193,456 at buildout.

SCAG population forecasts for City of Desert Hot Springs (2005-2030):

2005	21,192
2010	27,708
2015	34,400
2020	41,000
2025	47,325
2030	53,394

City of Palm Springs

The City of Palm Springs General Plan provides for an increase in population from 40,181 permanent residents in 1990 to 70,810 permanent residents and 134,698 peak seasonal population at buildout.

SCAG population forecasts for City of Palm Springs (2005-2030):

2005	44,822
2010	46,175
2015	49,997
2020	53,766
2025	57,378
2030	60,839

4.9.2.3 Population and Housing Forecasts Used for WSMP

The 2005 Master Plan examines the existing water supply system to determine its adequacy and provides findings and recommendations regarding future water facilities needed to allow MSWD to meet the projected demand for water within its service area for the next 20 years. In order to determine the need for future water facilities, population projections incorporating local/regional land use plans were reviewed in light of a 25-year planning horizon. A variety of historical data and projection scenarios were collected.

Data was collected from the U.S. Census Bureau, California Department of Finance, and Southern California Association of Governments. These organizations track population and total housing units (including occupied, vacant and seasonal homes) for each of the Coachella Valley cities – Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage. As these cities annexed additional lands and the new homes built on them since 1990, or as infill development progressed, these cities' populations and housing stocks have increased. Data was gathered for 1990, 2000, and 2005 where available.

To approximate the population and housing stock within MSWD's boundaries, data obtained from U.S. Census Bureau for MSWD's Census tracts in 1990 and 2000 and Southern California Association of Government (SCAG) projections for the six Census tracts in 2005 was used. The SCAG forecasts were completed in 2004. SCAG forecasts include land use information from City and County General Plans. Data was also collected at the U.S. Census tract level, including two tracts in 1990 and six tracts in 2000. MSWD's boundaries were closely approximated with Census tracts in 2000.

To project future growth in MSWD's service connections, data on growth and change in the Coachella Valley were obtained from MSWD, Coachella Valley Water District, California Department of Finance, Riverside County, Coachella Valley Economic Partnership, Coachella Valley Association of Governments, Desert Hot Springs Chamber of Commerce, City of Desert Hot Springs, Palm Springs Unified School District, Building Industry Association – Desert Chapter, Metropolitan Water District, and SCAG. Historical growth patterns in other Coachella Valley cities were also analyzed to determine what level of growth one might reasonably expect in MSWD's service zones.

Finally, projected population estimates for MSWD based on U.S. Census Bureau data from 2000 for the Census tracts in the District were made. An average occupancy rate was incorporated for the new housing units and an average population density, or persons per occupied housing unit, to estimate future populations. The service connection forecasts were then applied to the ultimate water demand projections.

Growth in service connections for the District-wide total has been substantial and accelerating across the District over the past 15 years. It is forecast that the demand for additional service connections will increase dramatically over the next 15 years.

Rates of population growth and water demand increase are unpredictable as many variables contribute to both. The WMP uses the high growth projection scenario to make system recommendations. This is done to ensure that water infrastructure facilities are available to meet demand when needed if growth rates are high. However, as new water facilities are built in response to actual growth and rely on funds from new service connections, the rate of implementation of the WMP system improvements will be controlled by the actual future rate of development. Although the forecast results in a vision of the water system required to serve customers in the buildout year, infrastructure improvements will only be made if and when they are needed to meet actual demand.

Historical Population and Housing Growth

Historical population and housing data for the Census tracts that encompass MSWD were obtained from the U.S. Census Bureau and from SCAG for 1990, 2000 and 2005, where available. The population of DHS grew by a little more than 500 persons per year between 1990 and 2005, at an annual average rate of 3.4 percent. The Census tracts that approximate the MSWD service area grew at an annual average rate of 3.5 percent, or nearly 900 persons per year. The population of DHS and these Census tracts grew more quickly between 2000 and 2005 than between 1990 and 2000.

The stock of total housing units in DHS – including single-family, multifamily, and mobile home housing units – grew by nearly 170 units per year between 1990 and 2005, at an annual average rate of 2.6 percent. The Census tracts that approximate the MSWD service area added housing stock at an annual average rate of 2.7 percent, or more than 350 units per year. Housing stocks grew more quickly between 2000 and 2005 than between 1990 and 2000.

Historical service connection data was obtained from MSWD for the three systems covered by the 2005 Master Plan.

Table 4-9.1
TOTAL DISTRICT- WIDE SERVICE CONNECTIONS, 1991 - 2005

Year	SFR	MFR	Commercial	Other	Total
1991	5,594	578	244	108	6,525
1992	5,803	599	257	175	6,834
1993	6,048	618	259	131	7,056
1994	6,431	651	273	139	7,494
1995	6,362	602	256	125	7,345
1996	6,347	614	260	136	7,356
1997	6,341	602	258	132	7,333
1998	6,298	595	256	148	7,297
1999	6,359	601	262	161	7,383
2000	6,464	605	308	168	7,545
2001	6,584	614	269	187	7,654
2002	6,700	616	276	179	7,771
2003	7,008	618	281	192	8,099
2004	7,543	620	280	217	8,660
2005	8,883	627	284	262	10,056

Growth in SFR and other service connections for the District-wide total has been substantial and accelerating across the District but primarily in what is referred to as the MSWD System (as distinct from the Palm Springs Crest and West Palm Springs Village systems within the District) over the past 15 years. Growth in MFR and commercial service connections has been slower as demand for that type of housing and the commercial services to meet residential growth has been limited. It is forecast that the demand for additional SFR service connections and the commercial services and other water uses, such as irrigation and tract construction water, will increase dramatically over the next 15 years.

<u>Projected SFR Service Connection Growth</u>

SFR service connections were forecast based on information from MSWD and the DHS Planning Department about new development in the DHS area. To forecast both service connections and water usage in MSWD, two scenarios: a baseline growth scenario that assumes all proposed SFR development as of May 2005 will occur by 2020, at a rate of roughly 820 new homes per year; and a second, high growth scenario that assumes this same level of SFR development will occur in only 10 years, by 2015, or at a rate of 1,230 new homes per year. These scenarios incorporate both new tract development and infill construction as proposed by developers and assume that growth would occur at a constant rate under both scenarios over the initial 10 to 15-year building period.

Future MFR, commercial or other types of service connections for this study were not forecast. Baseline forecasts of SFR service connections for the District-wide Total are presented in Table 4.9-2. The District-wide total under the High Growth scenario is provided in Table 4.9-3.

Table 4.9-2
PROJECTED SFR SERVICE CONNECTIONS, BASELINE SCENARIO, 2010 - 2035

Year	SFR Service Connections
2010	13,200
2015	17,300
2020	21,400
2025	22,400
2030	23,400
2035	24,400

Table 4.9-3
PROJECTED SFR SERVICE CONNECTIONS, HIGH GROWTH SCENARIO, 2010 - 2035

Year	SFR Service Connections
2010	15,300
2015	21,500
2020	24,600
2025	27,700
2030	30,800
2035	33,900

Projected Population Growth

The Water Master Plan projects the District's estimated population based upon the projections of SFR service connections and upon U.S. Census data from 2000 on occupancy rates and density in the Census tracts that encompass MSWD. MSWD's Census tracts had a year 2000 weighted average occupancy rate (weighted on occupied housing units) of 74 percent. This means that roughly 74 percent of total housing units in MSWD are occupied year round and are not temporarily vacant or vacant for seasonal use. MSWD's Census tracts had a year 2000 persons per occupied housing unit of 2.7. These averages were utilized to estimate the District's population from 2005 through 2035.

Forecasts of baseline scenario population for the District-wide total are provided in Table 4.9-4. The WMP projects that MSWD will add roughly 1,600 persons per year from 2005 through 2020 and 400 persons per year each year from 2020 through 2035. This growth is tied closely to new SFR service connections.

Table 4.9-4
BASELINE SCENARIO, MSWD
POPULATION PROJECTIONS, 2005 - 2035

Year	Persons
2005	23,000
2010	31,000
2015	39,000
2020	48,000
2025	50,000
2030	52,000
2035	54,000

Projections of high growth scenario population for the District-wide total are provided in Table 4.9-5. Under this scenario, it is projected that MSWD will add roughly 2,400 persons per year from 2005 through 2015 and 1,200 persons per year each year from 2015 through 2035. This growth is also tied closely to new SFR service connections.

Table 4.9-5
HIGH GROWTH SCENARIO, MSWD
POPULATION PROJECTIONS, 2005 - 2035

Year	Persons
2005	23,000
2010	35,000
2015	48,000
2020	54,000
2025	61,000
2030	67,000
2035	73,000

The projected future population in the District was used primarily as a means to verify the forecasts of SFR service connections.

4.9.3 Environmental Impacts

4.9.3.1 Significance Criteria

The project would be considered to have a significant adverse impact to population and housing if it would:

- Result in the displacement of a significant amount of existing housing or number of people; or
- Induces significant growth within the project area or in the region.

Each of these significance thresholds will be applied to the potential population and housing impacts forecast to occur from implementing the WMP, and a conclusion regarding the significance of potential impacts will be presented in the following analysis. The potential environmental impacts from implementing the WMP can be divided into those that are growth inducing and those impacts associated with individual projects that the MSWD will construct and operate as a response to planned development within the Study Area.

4.9.3.2 Project Impacts

a. Would the project result in the displacement of a significant amount of existing housing or number of people?

Implementation of the WMP will result in a series of minor, direct physical changes in the The potential environmental impacts from implementing the WSMP can be divided into those that are considered growth-inducing and impacts from specific projects that environment over a 20 year period by adding pipelines (underground), up to 17 new wells, up to 11 water storage tanks and up to 7 booster stations to existing land use settings within the study area in an effort to meet projected water demand from development planned and approved by the County of Riverside, City of Desert Hot Springs, and City of Palm Springs within the MSWD service area. Of these 17 new wells, 7 are needed to fill critical water surplus short falls and system redundancy needs in the present system. The MSWD is proposing these infrastructure improvements in order to provide an adequate water supply to meet long-term, ultimate growth and development projections within the study area. As a whole , these water facilities will occupy a considerable amount of land. It is roughly estimated that a total of perhaps 50 acres of land could be affected by these water system improvements. However, these facilities will be scattered throughout the MSWD Service Area and will affect from about 0.5 to perhaps 5 acres of land at any given site.

For economic reasons, the District selects vacant sites to construct new facilities and the removal of existing housing or the relocation of people to accommodate new water facilities is not proposed by the District in this WMP. It is remotely possible that a future new facility could affect existing housing, but this is considered highly unlikely and due to the relatively small size of the individual projects would not result in the displacement of a significant amount of new housing or number of people. The MSWD will construct and operate new facilities as a response to planned development within the Study area.

The WMP does not contain any policies or propose any activities that would modify existing or future housing or housing availability. It simply provides infrastructure improvements to deliver water for current and future water demand in the study area as a result of implementing the County of Riverside, City of Desert Hot Springs, and City of Palm Springs general plans, including the housing elements, within the MSWD Service Area. The activities that will be supported by the WMP are the design, construction and operation of the water systems required to meet the demand from future growth within the Study area communities.

As stated above, facilities may be built in residential neighborhoods, and may actually be built on a residential parcel, precluding the construction of a house on that property. In extremely rare instances, a property with an existing house or multi-family development may have to be purchased, and the residence(s) demolished, in order to accommodate a well or other water facility. However, these situations would not reduce the amount of housing available significantly or result in significant numbers of displaced residents. When specific facility sites are chosen, a more focused evaluation of this issue are would be in a subsequent CEQA analysis. It is anticipated that the impacts in this issue area will remain less than significant. No mitigation is required.

The sites identified for the Vista and Terrace Reservoirs and the 1400 Zone well and booster pump station are vacant parcels owned by the District. No housing exists on these sites and no housing is proposed. Implementation of these projects will not result in the displacement of any housing or people.

b. Would the project Induce significant growth within the project area or in the region?

Implementation of the WMP will result in a series of minor, direct physical changes in the environment over a 20 year period by adding pipelines (underground), new wells, reservoirs and pump stations. The WMP does not contain any policies or propose any activities that would directly induce growth; it simply provides infrastructure improvements to provide water for current and future water demand in the study area as a result of implementing the County of Riverside, City of Desert Hot Springs, and City of Palm Springs general plans within the MSWD Service Area. As such, the implementation of the WSMP is consistent with the RCPG population forecast and has no potential to modify this forecast in any manner

To understand the potential effect of the WMP on future growth and growth inducement within the Study Area, it is necessary to understand the role that the WMP will play if it is implemented. The purpose of the WMP is to provide an overall water master plan , tied to specific facilities and management actions, that will provide the MSWD with the infrastructure to adequately serve its current and future customer. The WMP is intended to facilitate supplying water directly to customers and, in fact, has a legal obligation to supply water (if available) to protect public health and safety. Thus, the Program and its implementation seeks to provide adequate water supplies in support of building-out each underlying jurisdictions' general plan.

In this analysis of future growth and potential growth inducement, it is this document's contention that growth decisions have already been made by local agencies governing land use decisions, and further, that the WMP does not remove any existing constraint on future development. This concept is embodied in policy principles adopted by the Metropolitan Water District of Southern California (MWDSC) Board of Directors and restated as part of the RCPG's Water Resources evaluation for southern California. These policy principles state:

1. *Water supply is not a reason in and of itself to limit or control growth in California. There are sufficient water resources to accommodate continued population and economic growth through better management, including conservation, voluntary transfers and additional storage and conveyance facilities. Water supply for urban, agricultural and environmental uses will be adequate and reliable.*

2. *Growth management and the allocation and direction of development should be the responsibility of general purpose government. Utilities, including water purveyors, should provide adequate facilities to serve the project growth at the state, regional and local levels.*

3. *For planning and infrastructure purposes, water supply should be treated as a utility not required to be a general purpose government plan element. However, water purveyors at the state, regional and local levels should be members of any proposed infrastructure planning structure to ensure optimum coordination and infrastructure resources investment...*

The net effect of these principles is to define water infrastructure as following, not leading or causing development. The question still remains as to whether the implementation of the WMP causes or accommodates growth and the related environmental impacts caused by the increased population that can occupy the study area in the future. The answer to this question can be found in the land use planning process which now determines the future vision of the region at build-out as defined by general plans for the Study Area and the regional planning documentation which already indicates that adequate water supplies are available to meet this future demand. As noted above, the WMP does not provide an overall increase in availability of water, it provides a management plan to provide infrastructure to utilize the existing water resources available.

The ultimate vision of future growth and development within the project area was established in the governing Study Area general plans, and it is assumed in these general plans that the water supply required to support the population will be in place as growth occurs in the future. The net effect of these general plans is to create a set of expectations regarding future land use and growth that may or may not occur depending upon the actual carrying capacity of the various utility and service resources required to meet future growth. It also seems clear that the established planning process and the overall growth pressures in southern California are the primary causes of future growth, i.e. they induce the actual growth that occurs, and the various utilities, are effectively forced to create urban water management plans that can accommodate such growth, at least within the limits of current or future resources that may be available. As the RCPG analysis of water resources indicates, there are sufficient water resources to meet future demand for the foreseeable future.

As noted above, the position taken in this document is that the utility planning process is more appropriately playing a passive (accommodating) role, not an active (inducing) role, in future growth that is dictated by local land use plans and the continuing growth of population throughout southern California. If communities within the project area chose to restrict growth and maintain a certain vision of the future as a static or slowly growing entity, the land use planning agencies (cities and counties) had the opportunity during the general planning process to establish such plans. Under such circumstances, the utility providers would have designed their future service plans to accommodate a level of future growth consistent with available resources

In reality, however, responsible water planning agencies, must plan for a level of future growth that appears to match available water resources with forecast growth. Based on this analysis, implementation of the WMP is not considered to be a significant growth inducing action.

4.9.4 Mitigation Measures

The analysis above indicates that implementing the WMP has only no potential to cause significant adverse impacts. All impacts in this issue area are less than significant. No mitigation measures are required.

4.9.5 Unavoidable Adverse Impact

The population and housing impact evaluation presented above indicates that implementation of the proposed project will be consistent with the study area population and housing projections and policies. Implementing the proposed project is not forecast to cause any direct or indirect significant adverse population and housing impacts. Therefore, no significant unavoidable adverse population and housing impacts are forecast to occur if the WMP is approved and implemented for the MSWD.

4.9.6 Cumulative Impact

The WSMP activities are specifically designed to provide a reliable water supply to meet current and future water demand within the MSWD Service Area. The proposed project has been evaluated as being fully consistent with the study area's general plans and population and housing forecasts. The WMP activities are not forecast to change growth projections, displace housing, change housing patterns or be inconsistent with local or regional housing policies. No unavoidable cumulative impacts to population and housing are forecast to occur from WMP implementation.

The provision of water to meet current and future demand is determined to be growth accommodating, not growth inducing. Since development of facilities proposed by the WMP will be driven by actual growth and the demand for water within the MSED Service area, the WMP can be implemented without causing or contributing to future significant cumulative growth or changes in population within the MSWD Service Area.

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4.10 PUBLIC SERVICES

4.10.1 Introduction

Public services are an important element in the safe operation of cities and counties. Projects that involve closing streets, street modification, or traffic diversion to complete construction have the potential to impede the access to or delivery of public services. Additionally, the project could have an adverse environmental effect if the project creates the need for alteration or construction/expansion of new public services.

No issues were raised under this topic in the NOP comment letters or from the scoping meetings.

4.10.2 Environmental Setting

Much of the following information comes from the City of Desert Hot Springs Comprehensive General Plan (September 2000), County of Riverside General Plan, Western Coachella Valley Area Plan (October 2003), The Pass Area Plan (October 2003), Riverside County General Plan PEIR (2003), and various websites (last visited in July 2007).

Within the MSWD public services are provided by the cities of Desert Hot Springs and Palm Springs and the County of Riverside.

4.10.2.1 Fire and Emergency Services

The City of Desert Hot Springs is provided fire protection and emergency medical response services by the Desert Hot Springs Volunteer Fire Department and the Riverside County Fire Department under contract with the California Department of Forestry. The Riverside County fire stations serving the City of Desert Hot Springs and the unincorporated areas are:

1. Station #37 - Desert Hot Springs, at 65958 Pierson Blvd., Desert Hot Springs
2. Station #36 - North Palm Springs, at 63755 Dillon road, North Palm Springs
3. Station #56 - Sky Valley, at 72985 Dillon Road, Sky Valley
4. Station #24 - Cabazon, at 14580 Broadway, Cabazon

Within the City of Palm Springs, fire protection is provided by the City of Palm Springs. There are five fire stations. The station serving the small area of MSWD within the City of Palm Springs is Station #3 at 590 E. Racquet Club. There are also interagency mutual aid agreements between local, regional and state agencies. The Coachella Valley Mutual Aid Fire Plan consists of an agreement for fire protection services between the California Department of Forestry, Riverside County Fire Department, Desert Hot Springs Volunteer Fire Department and the cities of Indio, Coachella, and Palm Springs. The City of Desert Hot Springs also has a mutual aid agreement with the fire station in Morongo Valley (San Bernardino County).

Hospital facilities providing 24-hour emergency medical care in the area include Desert Regional Medical Center and Eisenhower Medical Center. Desert Regional Medical Center has approximately 367 beds for in-patient care and is located in Palm Springs at 1150 N. Indian Canyon Drive and is the only designated trauma center in the Coachella Valley. Eisenhower Medical Center has approximately 250 beds for in-patient care is located in Rancho Mirage at 39000 Bob Hope Drive. Both hospitals are part of full service medical centers.

4.10.2.2 Police

The proposed project area police services are provided by the City of Desert Hot Springs, City of Palm Springs, and Riverside County Sheriff.

The City of Desert Hot Springs Police Department, located at 65950 Pierson Boulevard in Desert Hot Springs, has 20 sworn police officers and two community service officers. The department goal is to maintain a ratio of 1.2 officers per 1,000 in population. The City of Palm Springs Police Department has 94 sworn officers and is is located at 200 South Civic Drive in Palm Springs. To ensure enhanced police protection capabilities, the cities have mutual aid agreements with the Riverside County Sheriff and California Highway Patrol.

The Riverside County Sheriff stations serving the project area are the Cabazon Station at 50290 Main Street in Cabazon and the Palm Desert Station at 73520 Fred Waring Drive in Palm Desert.

The California Highway Patrol serves this project area through its Border Division with 900 uniformed officers. The San Gorgonio office (in Beaumont) and Indio office are the closest to the project area.

4.10.2.3 Schools

The Palm Springs Unified School District (USD) and Banning USD provide public education for the program area.

The Palm Springs USD serves approximately 22,000 students through 14 elementary schools, 4 middle schools, 3 comprehensive high schools, a continuation school, and an independent study school. It also has head-start preschools, childcare, and adult education programs. Schools within the project boundary include: Bubbling Wells, Julius Corsini, Two Bunch Palms and Wenzlaff elementary schools; Desert Springs Middle School; and Desert Hot Springs High School.

The Banning USD serves approximately 5,000 students through 4 elementary schools, 2 middle schools, 2 comprehensive high schools, and a continuation school. It also has head-start preschools, childcare, and adult education programs. No schools within the Banning USD are within the project area. However, some students within the project area are served by Banning USD schools.

The public community college serving the proposed project area is College of th Desert in Palm Desert.

4.10.2.4 Parks

The City of Desert Hot Springs has six parks: Wardman Park, Arroyo Park, Mission Springs Park, Skate Park, Memorial Park, and Coyote Park. There are also several private recreation areas that include golf courses and tennis facilities.

The City of Palm Springs has many parks, including a public golf course, tennis courts, Olympic-size pool facility, dog park, and baseball stadium. There are also numerous private recreation facilities in the City of Palm Springs.

Riverside County Regional Park and Open-Space District has no parks within the project area. The closest County park is Lake Cahuilla Park near La Quinta. The park is 710 acres with a 135 acre fishing lake and camping facilities.

In addition to the local and regional parks , Joshua Tree National Park is located just northeast of the project area.

4.10.2.5 Other Public Facilities

Libraries – There are two public libraries within or near the project area. These are the Desert Hot Springs Library at 11691 West Drive in Desert Hot Springs and the Palm Springs Public Library at 300 South Sunrise Way in Palm Springs. Desert Hot Springs Library is a branch of the greater Riverside County Library System and the Palm Springs Public Library is owned and operated by the City of Palm Springs. Residents in the project area would b eligible to utilize either library.

Medical Facilities – The MSWD is located in an area with many types of medical facilities ranging from basic, urgent care and preventive medicine providers to specialty behavioral clinics and institutes, cancer treatment centers, and convalescent centers. Desert Regional Medical Center and Eisenhower Medical Center are the two full service medical centers serving the project area. Desert Regional Medical Center has approximately 367 beds for in-patient care and is located in Palm Springs. Eisenhower Medical Center has approximately 250 beds for in-patient care and is located in Rancho Mirage.

4.10.3 Environmental Impacts

The environmental issues of concern under this topic are the increased demand for services without adequate existing capacity, or comparable increases in capacity with the need to develop more services. The WMP is a water system improvement that has some potential to result in adverse impacts to public services. These potential impacts are direct impacts associated with the physical development of the individual projects and facilities proposed by the WMP and indirect impacts associated with the projects contribution to population growth within the MSWD Service Area. The evaluation of this projects growth inducement characteristics is provided in subsection 4.9 of this PEIR. It has been concluded that the provision of an adequate water supply to meet the demands of growth allowed by the agencies with jurisdiction over land use issues within the MSWD Service Area is considered growth accommodating, not growth inducing. The water facilities proposed by this WMP will only be constructed when the demand for water service requires that additional water facilities be provided. Therefore, this projects potential effects on public services will only be evaluated based an their potential direct effects on such services. The effects on such services as a result of population growth allowed by the local agencies with land use jurisdiction must be evaluated by the approving agencies when the individual development projects are proposed.

4.10.3.1 Significance Criteria

Appendix G of the State CEQA Guidelines lists the following criteria for evaluating potential significant impacts to public services:

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Fire protection? Police protection? Schools? Parks? Other public facilities?

4.10.3.2 Project Impacts

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Fire protection? Police protection? Schools? Parks? Other public facilities.

Fire Protection – The proposed project is viewed as a potential benefit to fire protection services. The project will increase the reliability and amount of water available for fire fighting services by providing a supply, storage and distribution system that will provide adequate fire flow to meet existing and forecast future demand. Increasing the availability of water to support demands for fire protection will make fire suppression efforts safer, more effective and more efficient. The project will add some new structures, such as pump stations, and wells that could create demand for fire protection resources. However, such facilities rarely get involved with fire and pose a low hazard since they will be constructed to meet the most current fire codes. This includes the Vista and Terrace reservoirs and the 1400 Zone well and pump station.

No significant adverse impact to fire protection services is forecast to occur as a result of implementing the proposed WMP and no mitigation is required.

Police Protection – The proposed project facilities are not the kind of use that will likely attract significant criminal activity, other than trespass and vandalism. The additional above-ground permanent facilities, i.e.,storage reservoirs (above-ground tanks) and wells, will require security. This includes the Vista and Terrace reservoirs and the 1400 Zone well and pump station. These facilities will be fenced with locked gates, to restrict access only to MSWD staff. It should be anticipated that new sites will be covered in the City police and/or Sheriff's routine patrols. No significant new demand for police services is forecast to occur in the area as a result of this project. Other than installation of appropriate security lighting, fences, gates, etc., no mitigation is required.

Parks – The Water Master Plan program will benefit both public and private recreational facilities in the proposed project area by providing a more reliable source of water for irrigation uses. The proposed project will place no additional demand on recreational facilities beyond which is forecast to occur under current land use planning documents. The proposed project would improve water supply infrastructure in response to existing and eminent population growth in the area. The number of persons building and maintaining the facilities are within the population growth projections of the MSWD Service Area and will not add to the population using park facilities in the area beyond that which is forecast to occur.

Schools – Schools within the Palm Springs USD within the project boundary include: Bubbling Wells, Julius Corsini, Two Bunch Palms and Wenzlaff elementary schools; Desert Springs Middle School; and Desert Hot Springs High School. These schools could benefit directly from implementation of the proposed WMP as users of water for potable uses and irrigation of general grounds and sports/recreational use areas.

The proposed project would place no demand on school capacity beyond that forecast to occur by local land use plans. The proposed project would improve water supply infrastructure in response to existing and eminent population growth in the area. The number of persons building and maintaining the facilities would not add to the population with children to be served by public education providers in the area beyond that which is forecast to occur by local planning documents.

Mitigation in the form of conditions of approval of new developments and the payment of fees required by new development is considered adequate mitigation for the potential impacts associated with the generation of new students at area schools.

Libraries – The proposed project would place no demand on libraries beyond that which is forecast to occur with allowed development. The proposed project would improve water supply infrastructure in response to existing and eminent population growth allowed in the area. The number of persons building and maintaining the facilities would not add to the population using public library facilities in the area beyond that which is forecast to occur under current planning documents.

Mitigation in the form of conditions of approval of new developments and the payment of fees required by new development is considered adequate mitigation for the potential impacts associated with population growth to libraries.

Medical Facilities – The proposed project would place no demand on medical facilities beyond that which is forecast to occur with allowed development. The proposed project would improve water supply infrastructure in response to existing and eminent population growth in the area. The number of persons building and maintaining the facilities would not add to the population to be served by medical facilities in the area beyond that which is forecast to occur under current planning documents.

Medical facilities are built based on demand created by population growth and usually in reaction to growth that has already occurred. Providing a more reliable water infrastructure system to accommodate allowed population growth is not viewed as an adverse impact to the operation of hospitals and other medical facilities.

4.10.4 Mitigation Measures

All impacts to Public Services resulting from implementation of the proposed project, including the Vista and Terrace reservoirs and the 1400 Zone well and pump station are considered less than significant. No mitigation beyond that required of new development is required.

4.10.5 Cumulative Impacts

The proposed Water Master Plan is designed to provide a more efficient and effective distribution of potable water resources in the program area. The program will be implemented to serve existing and allowed future development and facilitate the provision of public services in support of this development, without causing or to contributing to the development of new or expanded facilities. Based upon this analysis, implementation of the program is not forecast to contribute to any significant increases in demand for public services that could be considered cumulatively considerable and adverse.

4.10.6 Unavoidable Adverse Impacts

The public services impact evaluation presented above shows that the proposed program will be consistent with the area jurisdictional general plan land use designations and policies regarding growth (under County of Riverside, City of Desert Hot Springs, and City of Palm Springs General Plans). Implementation of the proposed program is not forecast to cause any direct or indirect significant adverse public service impacts. Therefore, no significant unavoidable adverse public services impacts are forecast to occur if the proposed project is approved and implemented.

4.11 UTILITIES AND SERVICE SYSTEMS

4.11.1 Introduction

For each of the utilities and service systems included in this section, summaries of existing service are described, as well as any improvements required to accommodate the project-induced demand for additional utilities and services. This section identifies current levels of service or capacity to the extent that information is available, and assesses the quantities of services necessary for implementation of the Mission Springs Water District's (MSWD or District) Water Master Plan, including operation of the various infrastructure systems required to support future water supply to the project area. Cumulative impacts are determined with consideration of projected development in the study area. Where impacts on utilities and service systems are determined to be potentially significant, mitigation measures are recommended to ensure adequate delivery of such services to the project area.

4.11.2 Environmental Setting

Much of the following data regarding utilities and service systems is abstracted from the City of Desert Hot Springs General Plan and data provided by the District.

4.11.2.1 Electricity/Natural Gas

Southern California Edison (SCE) Company is the primary service provider of electric power and The Gas Company supplies natural gas to the project area. SCE has two transmission substations within the Desert Hot Springs service area. SCE obtains electricity from a variety of sources. However, with the exception of local wind power, most of the electricity for the Coachella Valley is generated outside of the project area. Electricity is brought into the project area through high-voltage transmission lines and the use of stepdown transformers at two substations with the Valley. The substations include the Devers Substation, located north of Dillon Road in the southwestern portion of the project area and the Coffee Substation, on Camino Aventura, west of Pal Drive and south of the District's service area.

The primary demand for electricity by the District is for well pumps to extract groundwater, booster pumps to transfer water through the service area (primarily pumping uphill) and for minor demands for lighting at District facilities. Based on existing water facilities, the current water production electricity consumption is about 40,715 Kwh per day and current booster pump electricity demand is about 16,100 Kwh per day. The total existing daily demand is estimated to be 57,500 Kwh per day, with the difference being attributable to routine lighting and cooling demands from District facilities.

Natural gas consumption by the District is related to building space and water heating and backup generators. Current annual consumption of natural gas is estimated at 500,000 cubic feet, for a daily average of 1,400 cubic feet. Natural gas is imported and is fully accessible to the project area from high pressure interstate transmission lines that pass through the Coachella Valley and the Company's local distribution system.

4.11.2.2 Communication Services

All telephone service is provided by Verizon. The service area includes the whole of the Coachella Valley. The District uses the phone system and maintains direct lines for monitoring various facilities of its water system.

4.11.2.3 Water Supply

The Mission Springs Water District provides water service to the City of Desert Hot Springs, a portion of the City of Palm Springs and surrounding areas in the County. The Desert Water Agency is the State Water Project water wholesaler for the project area. The detailed water supply capabilities of the MSWD are defined in the project description. The District's water system is summarized in Chapter 3 of this document and the Water Master Plan. The District currently has adequate water supplies to meet public health and safety requirements, but as the data in Chapter 3 and the WMP indicate, substantial additional infrastructure is required in both the near and long-term future to meet forecast waste demand within its service area.

4.11.2.4 Wastewater

MSWD also provides wastewater management within its service area. The Horton Wastewater Treatment Plant (WWTP), located on Verbena Road, can handle approximately 2 million gallons per day (MGD) of wastewater flow, primarily from the developed portion of Desert Hot Springs and certain portions of the County that are developed at higher density. The MSWD maintains and operates its own collection systems, and the wastewater is delivered to the Horton WWTP. A portion of the MSWD service area relies on septic tank system operations. The existing sewage collection system and the Horton WWTP currently provides adequate wastewater management facilities, but these facilities will need to be expanded in the future to meet the forecast generation of sewage by population increases anticipated within the District's service area.

4.11.2.5 Stormwater

The Riverside County Flood Control and Water Conservation District and the City of Desert Hot Springs provide limited flood control and storm drainage systems within the MSWD's service area boundary. The major drainage basins in the project area include Mission Creek, Big and Little Morongo Creeks, Blind Creek, Long Creek and its tributaries and other unnamed creeks that exist the foothills of the San Bernardino and Little San Bernardino Mountains. Stormwater runoff is managed in the framework of the 1982 Master Drainage Plan for the City of Desert Hot Springs, which established design volumes in cubic feet per second for the above referenced drainages. The District's operation do not directly affect stormwater management systems within the City, other than water pipelines that either do cross such facilities or that will cross stormwater facilities in the future.

4.11.2.6 Waste Disposal

Local solid waste collection and disposal services are provided by Desert Valley Disposal, Inc. Both residential and commercial disposal service is provided, and the company also provides resource recovery/recycling services for its service area. Solid waste is still being disposed of at the local Edom Hill Landfill, which is nearing the end of its useful life when it will be closed. Future waste management will require the use of a solid waste transfer facility, from which waste will be collected and delivered to regional landfills, in eastern Riverside County or Imperial County. These facilities have substantial long-term waste disposal capacity exceed 100,000,000 tons of disposal capacity. The District generates solid waste in small quantities from administrative operations; periodic disposal of equipment (recycled); and periodic generation of green waste from clearing vegetation from facility sites. No quantification of the solid waste generated by the District is available.

4.11.3 Environmental Impacts

4.11.3.1 Significance Criteria

The utility issues of concern in this evaluation are increased demand for utility capacity without adequate existing capacity, or comparable increases in capacity from implementing the proposed project. The following criterion will be used to determine whether a significant utility impact will be created by the proposed MSWD Water Master Plan Program:

1. Will the project result in significant impacts to utilities if it causes demand for a utility to exceed the system's capacity and creates a need to develop new utility system capacity without a means of funding the required system capacity expansion?

The measure above summarizes the issues of concern outlined in Appendix G of the State CEQA Guidelines and presented below as specific questions from Appendix G.

4.11.3.2 Project Impacts

a. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Implementation of the MSWD Water Master Plan has no potential to directly exceed wastewater treatment requirements that may be in place or issued in the future by the Colorado River Basin Regional Water Quality Control Board (RWQCB or Board). Indirectly, a portion of the additional water that will be used by future District customers will flow to the existing Horton WWTP. At a certain point the increased wastewater flows will require expansion of the WWTP. This expansion will, in turn, require modification of the District's existing waste discharge requirements from the Colorado River Basin RWQCB.

However, no basis exists to forecast a future violation or exceedance of the existing or future wastewater discharge requirements. The Horton WWTP currently operates in compliance with its existing wastewater discharge order and requirements. Typically, plant expansions are carried out when the treatment capacity of the existing WWTP reaches about 80% of its rated capacity. WWTP expansion most often involves the construction of additional treatment modules with comparable waste discharge requirements. Since any future expansion of the Horton WWTP must be planned as outlined in this paragraph, there is no need to establish a mitigation measure to ensure that any WWTP expansion is available prior to violation of any wastewater discharge requirements. Funding for such expansion are provided through an enterprise fund, where the District collects fees from each connection to the system to pay the cost of engineering, constructing and operating an expanded Horton, WWTP that can and will comply with future applicable wastewater treatment requirements. No significant adverse effect is forecast to result from such expansion as it can be carried out within the existing Horton WWTP site. However, such an expansion is beyond the scope of this WMP and will undergo a site-specific environmental review when proposed.

Directly another aspect of the proposed Water Master Plan will result in modifications of the existing Horton WWTP and issues or more stringent wastewater discharge requirements. The Water Master Plan envisions enhancing the treatment system with additional equipment to produce recycled water, treated wastewater effluent that meets Title 22 standards for recycled water that can be used in place of potable water for most uses. As in the case of expanding the WWTP to meet future wastewater generation within the District's service area, the process for producing recycled water includes a series of steps: first, compiling an engineering study to define the best mix of new equipment in conjunction with the existing treatment plant system to produce treated wastewater effluent that meets Title 22 standards for recycled water; obtaining concurrence on the design from the Regional Board through acquisition of a modified set of wastewater discharge requirements.

Based on this review process and the future treatment system design at the Horton WWTP, the potential for exceeding or violating any future wastewater discharge requirements is very low to non-existent. Thus, the potential for significant violations or exceedances of wastewater discharges under future conditions is forecast to be less than significant without mitigation.

b. Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

This question usually refers to new residential or industrial/commercial development projects, which might require new utilities services. This project is being proposed by the MSWD to expand its own capabilities to supply potable water supplies to its service area, through the year 2025. As noted in the previous discussion (Item 1 above), future growth and increased utilization of potable water will indirectly result in the need to expand the Horton WWTP at some point in the future. Thus, the adverse effects identified throughout this document for the proposed project reflect the construction of substantial water and wastewater management infrastructure. So, yes it will result in the expansion of existing water and wastewater facilities. For the most part, construction of these water infrastructure facilities will not cause unavoidable significant adverse impacts because of mitigation available to reduce such impacts to a less than significant impact level. However, for the groundwater aquifer that will supply water to future District customers, the impact is forecast to be unavoidably significant due to overdraft that will result from required water production.

c. Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The only adverse effect to stormwater drainage facilities in the future is related to the construction and installation of new water infrastructure facilities to support future water demand. Inevitably, future District pipelines will have to cross stormwater drainage or other natural stream channels, typically at a perpendicular angle, not parallel. To prevent installation of pipelines across such channels from causing significant effect to the channels, mitigation is identified below to prevent any significant damage to such channels. Regarding above ground facilities, the District would not install reservoir, well heads, booster pumps or other similar above ground facilities in an area where flooding could damage such facilities. To ensure that such siting does not occur in flood hazard areas in the future, mitigation is provided below to implement this requirement. However, if such facilities must be installed within the boundary of a stormwater drainage facility, additional mitigation is provided below to address this potential circumstance and ensure that no significant impact will result from such siting.

Neither the Terrace or Vista reservoirs or the 1400 Zone well and pump station will be installed within flood hazard areas nor adversely effect any drainage courses.

With implementation of the above measures, implementation of the Water Master Plan will not cause significant adverse effects to any stormwater drainages.

d. Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Based on the data provided in the Water Master Plan and the Hydrology Section of this PEIR, adequate water resources (groundwater, recycled water, imported water and water conservation) are available to meet the water supply requirements of the District over the life of the Master Plan. However, the impact to the groundwater stored in the local aquifer has been identified as being significant and unavoidable because if water consumption forecasts are accurate during the planning period, forecast groundwater extractions will contribute to a significant overdraft of the aquifer during this period. Unless additional water supplies become available, this potentially significant impact is unavoidable. To fully offset the forecast water demand over the Water Master Plan planning period, additional water entitlements will be required, but at this time there is no information on where such entitlements can be acquired. Other than maximizing use of recycled water, water conservation and imported water supplies during the Master Plan planning period (which is the purpose of the Water Master Plan), no other mitigation is available.

e. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

See responses to items 4.11.3.1 and 4.11.3.2 above. Over the life of the Water Master Plan, it is probable that the District will have to expand the capacity of the existing Horton WWTP to meet future demand for wastewater treatment capacity. However, that is a separate project which will undergo separate environmental review when needed and proposed.

f. Would the project be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

The only other solid waste that will be generated by implementing the proposed project is standard municipal solid waste from administrative activities, some waste from disposal of old facilities and green waste from removal of vegetation within the future facility sites and, possibly, some excavated soil from installing the proposed water system infrastructure facilities. Any excess soil would be made available as fill material to the public, by purchase, or for other District projects. The green waste will be chipped and diverted from the solid waste stream into the recycled green waste system and either used for firewood or chipped and stored for reuse in revegetating disturbed areas, where it will not contribute to the solid waste disposal system. Any excess excavated soil will be either stored adjacent to the sites or sold to the local market as fill. Little or no additional administrative solid waste will be delivered to the local landfill and the impact of this small quantity of material is estimated to be a few cubic yards per week. This is a *de minimus* amount of additional solid waste, and no significant impact will result and no mitigation is required.

g. Would the project comply with federal, state and local statutes and regulations related to solid waste?

This project will comply with all solid waste management requirements of all governmental levels and no adverse conflicts with such requirements will result from implementing the proposed project. No impact is identified and no mitigation is required.

h. Changes in energy consumption.

Data provided in subchapter 4.6.3.3 of this PEIR indicates that currently the MSWD System utilizes about 57,500 Kwh of electricity per day. Implementation of this project will about double existing consumption to about 115,500 Kwh per day by the year 2025.

The cumulative demand for energy in SCE's southern California service area is forecast to increase substantially (estimated to be 100%) during this period, driven by regional population growth and related growth in commercial and industrial activity, which provides jobs for the region. MSWD's demand for electricity to produce water is consistent with this future level of growth in southern California over the WMP planning period. This forecast for cumulative additional electrical power will require additional electricity generating facilities. It is not possible to identify how many or what type of facilities will be required to be installed by the year 2025.

Other than electricity generation by wind, no other major power facilities are likely to be constructed in the Coachella Valley, due to lack of water and the small overall demand within this region. Potentially significant and unavoidable environmental impacts are likely to be produced by additional electrical power generating facilities: air emissions, including greenhouse gases, and other site specific environmental impacts, such as biological resources, cultural resources, water demand, etc. It is beyond the scope of this project to provide a detailed evaluation of potential environmental impacts from future increases in electricity generation. However, it is appropriate to recognize that an indirect consequence of the proposed project's contribution to future electricity demand is likely to be cumulatively considerable and likely to result in unavoidable significant adverse environmental effects, particularly related to the generation of greenhouse gases . Some mitigation may be available to reduce future electricity demand and related environmental effects, but reducing such impacts below a significant level does not seem feasible at this time. Therefore, this projects contribution to the future demand for electricity in southern California is considered cumulatively significant.

The primary environmental concern regarding the generation of additional electricity is related to the air emissions associated with the additional power generation. Of particular concern is the generation of greenhouse gases (GHG) which are becoming of greater concern throughout the state and the nation. A more detailed evaluation of this concern is provided in sub-chapter 4.6, Air Quality of this PRIR.

Regarding demand for natural gas, the proposed Water Master Plan does not include additional administrative facilities or other structures that would require a significant increase in demand for this energy resources. It is possible that future backup generation systems may utilize natural gas, but it is more likely that diesel backup generators will be installed. Further, it is not possible to evaluate the potential demand for such backup systems since their use is random and not quantifiable. Based on the available information, no significant increase in future demand for natural gas will result from implementing the proposed project and no mitigation is required.

4.11.4 Mitigation Measures

The following mitigation measure are required to address stormwater drainage issues. These are the only mitigation measures identified as being required to reduce potential impacts for Utilities and Service Systems.

4.11-1 When pipelines must cross natural stream channels or stormwater drainages, the District will implement the following measures to minimize adverse environmental impacts from installing such facilities: a) first, the District will jack and bore such pipelines when feasible and avoid any surface disturbance; b) second, if jack and bore construction cannot be implemented, the District will install the channel crossing with the minimum area of above ground disturbance and shall return the channel bed to the same condition as before initiating construction. If above ground disturbance is required, the District will obtain all regulatory permits for discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.

4.11-2 The District will avoid installing any new above ground facilities within stormwater drainages or natural channels, unless such a site cannot be avoided. If future facilities must be installed within a stormwater drainage or natural channel, the District shall document the reasons which this is required and shall prepare a drainage system study to demonstrate the hazards to the proposed facility from locating it at such a location and shall identify the measures required to harden or elevate the facility to a point that the facility is protected from the 100-year flood hazard. If above ground disturbance is required, the District will obtain all regulatory permits for discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.

4.11.5 Cumulative Impacts

The MSWD Water Master Plan Program is designed to provide an adequate water supply for future water users in the District's service area. As the proposed project will substantially increase the volume of groundwater extracted from the local aquifer, in conjunction with the Coachella Valley Water District, implementation of the proposed project will make a cumulatively considerable contribution to unavoidable significant overdraft of this basin. In addition, the increased demand for electricity will also make a cumulatively considerable contribution to the demand for new electricity generation facilities in the future. All other utilities and service system effects are either less than cumulatively significant or can be reduced to a less than cumulatively significant impact based on implementation of the mitigation measures outlined above.

4.11.6 Unavoidable and Adverse Impacts

The utility impact evaluation presented above indicates that implementation of the proposed project places little or no demand on most utility systems that serve the Coachella Valley. The proposed project will result in a direct unavoidable significant impact on the water resources available to the District and implementation of the Master Plan is forecast to contribute to cumulatively considerable (significant and unavoidable) energy consumption demand within the region. Thus, implementing the proposed project is forecast to cause direct and indirect significant adverse utility/service system impacts, even with mitigation. Therefore, significant unavoidable adverse utility and service system impacts for the issues of water and electricity consumption are forecast to occur if the proposed project is approved and implemented.

CHAPTER 5 - ALTERNATIVES

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA) and the State CEQA Guidelines require an evaluation of alternatives to the proposed action. Section 15126(d) indicates that the "discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of not significant..." In this case significant adverse impacts have been identified. The State Guidelines also state that "a range of reasonable alternatives to the project...which could feasibly attain the basic objectives of the project" and "The range of alternatives required in an EIR is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice."

The proposed project consists of the implementation of a Water Master Plan that is designed to ensure adequate water supply to meet existing and future water demand in the most-efficient methods available. This is accomplished by master planning the entire water system so that it operates without unwanted redundancies which will minimize the waste of energy equipment and water in the MSWD system. Through this planning process, MSWD is able to identify the timing and location of future water system improvements that not only provide adequate service for future water demand but will enhance its existing water supply capabilities.

One of the alternatives that must be evaluated in an EIR is a "no project alternative" regardless of whether it is a feasible alternative to the proposed project, i.e., would meet the project objectives or requirements. Under this alternative, the environmental impacts that would occur if the proposed project is not approved and implemented are identified. Under a "baseline" or no project alternative the Water Master Plan would not be implemented and the existing management systems for the provision of water service in the MSWD Service Area would continue in their current status. The current baseline conditions are summarized below under the no project alternative discussion and the implications of proceeding forward without implementing the proposed Water Master Plan are evaluated. In addition to the no project alternative, one other alternative was determined to be a viable alternative and is evaluated in this chapter. These alternatives are:

1. No Project
2. Extract Groundwater From Additional Groundwater Subbasins

A slower growth alternative was considered in the WMP. The purpose of the WMP is to provide MSWD with a planning tool to anticipate the type and location of facilities to meet future water demands. The actual type, location and timing of development of facilities identified in the WMP will be determined by when they are needed. Therefore, for planning purposes the higher growth scenario was utilized in the WMP to anticipate the need for future water system improvements. Regardless of which growth scenario is used, the proposed facilities will be developed when needed. Therefore, the slower growth scenario was not considered the most effective planning tool and is provided no further evaluation.

The WMP did identify and consider the use of imported water to augment its supply needs. Imported water could be used to recharge the MCGS or treated for direct use in the MSWD System. Currently, MSWD is utilizing all the imported water available and it is anticipated that MSWD will utilize all the imported water made available in the future. The use of this water for groundwater recharge or treated for direct use will most likely be based on the amount and reliability of water available. The ability to control the importing of water for use in the MSWD system is beyond the scope of the WMP and will receive no further evaluation in this PEIR.

Other alternatives considered for further evaluation were a slower growth alternative and the greater use of imported water. These alternatives were also addressed in the WMP. However, these alternatives are not considered viable for the following reasons.

The WMP is a planning tool that is intended for use by MSWD to anticipate the water system improvements that will be needed to allow MSWD to meet its responsibility of providing a safe and reliable supply of water to customers within its service area. As a planning tool, the WMP should utilize the most aggressive, reasonable growth projections available to ensure that it is capable of meeting the future demand for water. The type of facilities identified in the WMP will most likely be required at sometime in the future regardless of the rate of growth in the service area. It should be anticipated that future water service facilities will be constructed as the demand for water increases. However, for planning purposes, it is considered a better alternative to over estimate the need for water facilities than to under estimate the demand. Therefore, while actual future population growth in the MSWD Service Area may occur more slowly than forecast in the WMP high growth scenario, using the high growth scenario to plan for future water system improvements is considered the better method of water system planning.

The amount of imported water available within the MSWD Service Area is not an issue that can be controlled by the WMP. The importation of water has occurred and can continue to occur whether or not the WMP is adopted and implemented. The amount of water imported into the basin is a function of the amount of water available. The WMP only acknowledges that there is an existing water importation program in place and that based on historic and anticipated future conditions, that a certain amount of imported water may be available. The WMP proposes use of the maximum amount of imported water available. Therefore, it is beyond the scope of the WMP to establish the amount of water that can be imported into the MCGS or any other subbasins. The WMP can only proposes use of what is considered a reasonable projection of available water based on current and anticipated future conditions.

The following evaluation will also include identification of an environmentally superior alternative as required by the State CEQA Guidelines.

Before proceeding with the analysis of alternatives, it is necessary to discuss the framework in which the WMP has been developed and is proposed for implementation. MSWD has developed the WMP to provide a rational approach to managing its water system. In an urban society such as exists and is developing within MSWD's Service Area, the demand for water will be generated in the future regardless of whether management systems are in place or not. Thus, the issue is not whether some form of management system and facilities will be required to successfully manage the water system because such systems are required. The issue for a management agency like MSWD is what systems are required to manage water usage, and how far in the future should the management systems required to meet the societal responsibility be planned to ensure that an adequate water supply is available.

Water service within the MSWD Service Area is MSWD's responsibility. The fundamental responsibility is to manage the production and provision of water within the MSWD Service Area and ensure that the water supplied meets mandated quality standards that are protective of public health.

MSWD has two choices to accomplish this responsibility. It can implement management systems in an ad hoc or incremental manner, or it can establish a coherent, long-range management plan to ensure that adequate infrastructure systems are in place to meet both existing and future demand. MSWD has committed itself to a coherent and comprehensive management approach, which has resulted in the preparation of the WMP being evaluated in this PEIR. Thus, MSWD has examined the infrastructure requirements for the management system through the projected near buildout of its Service Area (the year 2035) and identified the types of facilities required to provide adequate water service and to ensure that public health is protected.

This management approach is in contrast to a passive approach that would have MSWD only begin to plan for managing increased demand as the demand nears. It is this passive approach that leads to the issue of a no project alternative. The CEQA no project alternative requires an examination of maintaining the existing physical conditions, which would mean limiting the planning for the infrastructure system for managing the water system to that which presently exists. For an essential water management infrastructure system, the ultimate failure to expand the system will result in the inability of MSWD to meet its mandated responsibility to provide an adequate supply of water that meets health standards to its customers. These issues are discussed in the evaluation of the no project alternative that follows.

5.2 NO PROJECT

Under the no project alternative, it is assumed that existing water management system remains in its current configuration. This is unusual because in most circumstances a "no project alternative" simply means that a particular development is not implemented and the status quo is maintained. In this instance, the "no project alternative" means that the WMP and the facilities envisioned in the plan would not be implemented as a comprehensive plan and the goal of expanding and/or modifying the various system's capacity and capability to provide water may not be realized. However, failure to implement expanded water supply facilities does not negate the need for the expanded systems, it simply means that at a certain point the existing system will become inadequate if it is not expanded to meet forecast growth within the MSWD Service Area. It should be anticipated that the system improvements identified in the WMP would ultimately be built, just not as a part of this overall master plan for the water system.

The ultimate vision of future growth and development within the project area has been established in MSWD's Service Area by the governing land use plans (general plans) adopted by land use jurisdiction's (cities and county). These adopted land use plans, which establish each jurisdictions vision of the community that they ultimately will become, assume that the MSWD has identified the essential infrastructure required to support not only the existing communities served, but the growth allowed by each jurisdiction as it occurs in the future. Thus, the MSWD is effectively forced to create the WMP that can accommodate such growth, at least within the limits of current or future resources that may be available.

Without the WMP, individual land use jurisdictions would ultimately find it necessary or be forced to construct and install facilities similar to those proposed in the WMP to meet future water demand and water quality needs. The MSWD could also develop needed water infrastructure or an individual, as needed basis. If not implemented through MSWD, the local jurisdictions would be forced to provide comparable water supply facilities in the future. The costs of construction may not be economically feasible to individual jurisdictions without the benefit of regional financing mechanisms or because they would duplicate existing facilities. Finding locations for such individual facilities would, in itself, be a very difficult first step to overcome, since the MSWD Service Area contains three local jurisdictions.

It should be anticipated that implementation of separate or individual water management programs would occur more slowly, might never be fully realized, or might have a diminished regional benefit if left to individual jurisdictions. There would be no difference in permitted land uses or development densities within MSWD's Service Area. This is because the land uses will be developed in accordance with the land use designations and development policies contained in the affected jurisdiction's general plans. The primary difference between the proposed project and the no project alternative is the no project's inability to cohesively bring competing interests into alignment so that future water system improvements are managed in the most effective and efficient manner.

Under another no project alternative scenario, local jurisdictions (cities and county) could place a moratorium on future development and abandon their adopted general plans. This would negate the necessity to expand the water system (although the existing system would require continued management). However, this is a societal decision that is beyond the scope of this environmental document to impose. MSWD does not control growth within its service area, the local cities and county make all land use decisions. Under its adopted charter, MSWD is obligated to provide an adequate supply of water within its service area that meets water quality standards. If the various communities that make up MSWD's Service Area informed the District that they were not issuing any additional building permits, the MSWD master plan as proposed would no longer be needed. Instead, the master plans could be revised to address a different buildout scenario. But this decision is not MSWD's to make. So within the context of this no project alternative evaluation, a decision to stop growth and issue no more connections to the water system is considered speculative and beyond the scope of this document. In accordance with Section 15145 of the State CEQA Guidelines, this issue will not be given further consideration in this document.

The following discussion assesses the effects of implementing the no project alternative, as described above, on the environmental issues considered in this PEIR.

<u>Air Quality</u>: Proposed project air quality impacts were determined to be less than significant during construction and operation. Under the no project alternative the existing water supply facilities would continue to function at their current capacity. At some point in the future when the capacity of these facilities is exceeded, MSWD or another jurisdiction or party would need to construct new facilities. These new facilities would either be similar to those proposed by the WMP and compatible with the existing MSWD system or be developed as part of another water system. If developed in a manner similar to the WMP utilizing the existing MSWD water system, then both construction and operations air emissions impacts would be similar to those less than significant impacts identified for the proposed project.

Should future water system improvements be developed independent of the existing MSWD system, it is anticipated that redundant systems may be required. It is probable that redundant wells, pipelines, booster pump stations or other facilities would be required to operate the separate system. Therefore, it should be anticipated that under this scenario, that air emissions from construction and operation of the facilities would at a minimum be similar to those associated with implementation of the proposed WMP and would most likely be greater than the less than significant air emissions forecast for the WMP.

This conclusion is considered valid for potential greenhouse gas (GHG) emissions associated with the generation of electricity to power new mechanical equipment. The more energy needed to operate the water system, the more electricity that must be generated with the resulting GHG emissions. It was determined that implementation of the WMP and the resulting increase in demand for electricity would result in the potential for a substantial amount of GHG emissions. However, the state has not adopted standards to determine the significance of a project's GHG emissions.

Biological Resources: Proposed project biological resource impacts were found to be non-significant with implementation of mitigation measures for all issues except potential impacts associated with the lowering of groundwater in the MCGS. It was concluded that the proposed project's contribution to overdraft of the basin and consequently, the effect on groundwater dependent habitat that could result may have a significant adverse effect on that habitat and the biological species it supports. Under the no project alternative, facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the biological resource impacts would be less than the potential impacts under the WMP. No new water facilities sites would be developed and overdraft of the MCGS would be maintained at or near current levels. The potential for impact to biological resources that are dependent on groundwater would remain essentially the same as that which presently occurs.

Should future water system improvements be developed independent of the existing MSWD system, it is anticipated that redundant systems would be required. It is possible that redundant wells, pipelines, booster stations, etc. would be required and most likely additional sites disturbed. If MSWD were to develop an adequate system without adoption of the WMP, it is anticipated that it would be similar to the system identified proposed since the WMP was developed utilizing future growth projections for the service area. As previously stated, the purpose of the WMP is to plan the water system improvements that will be needed if allowed and planned for growth occurs in the MSWD Service Area. The water system improvements, including future wells, will only be constructed if future demand warrants their development. It is anticipated that an adequate supply of water will be made available to support existing and future growth regardless of whether the WMP is adopted. It is also anticipated that the amount of water extracted from groundwater basins will be that needed to supply the needs of consumers. Therefore, unless local land use plans are amended to reduce the amount of development that can occur within the MSWD Service Area and consequently, the amount of water consumed, the potential for impact to biological resources from continued overdraft of the MCGS is forecast to be similar to the proposed project if independent facilities or systems are developed.

Cultural Resources: Proposed project cultural resource impacts were found to be non-significant with implementation of mitigation measures. Under a no project alternative where no new facilities are ultimately constructed, fewer disturbances would result and potential for direct impacts to cultural resources would be reduced. Under the alternative where new facilities are constructed by local jurisdictions, or others, it is forecast that a greater potential for cultural resource impacts could occur because more water facilities than proposed by the WMP may be required, and the area disturbed could be greater. Thus, the potential for impacts to cultural resources under the no project alternative would likely be greater than would result from implementing the WMP.

Geology and Soils: Proposed project geology and soil impacts were found to be non-significant with implementation of mitigation measures. Under the no project where no new facilities would be constructed, the geology and soil resource impacts would be reduced and the potential for direct impacts to or associated with geologic and soils constraints would be fewer than less than significant impacts identified under the WMP. If it is assumed that new water facilities would be constructed by local jurisdictions or others, then the potential for adverse impact due to geology and soil constraints would be similar to or greater than that of the proposed project..

Hydrology and Water Quality: The proposed project's hydrology and water quality impacts were found to be less than significant with implementation of mitigation measures except for the reduction in groundwater from the MCGS due to basin overdraft. This impact associated with basin overdraft was determined to be significant for the WMP. Under the unlikely assumption that no new facilities would be constructed, the hydrology and water quality impacts associated with overdraft of the MCGS would be substantially reduced. Overdraft of the MCGS would continue at current levels which is substantially below that which would result from implementing the WMP. Should new water production facilities be developed separately to support the same level of development envisioned by the WMP, then groundwater extractions would be similar to those forecast for the WMP and potential impacts to the groundwater basin would be similar under both scenarios. Thus, the no project alternative would most likely result in similar impacts to hydrology and water quality as the proposed WMP projects.

Land Use and Planning: Proposed land use and planning impacts were found to be non-significant with implementation of mitigation measures. Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, at some point the local jurisdictions would encounter limitations on the number of connections to the water system. Significant conflicts with local General Plans would result from this situation. If local jurisdictions were to construct their own water supply facilities, potential impacts to land use and planning issues would be similar as those forecast for the WMP.

Noise: Proposed project noise impacts were found to be non-significant with implementation of mitigation measures. Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the noise impacts would be less than the non-significant potential impacts under the WMP. If it is assumed that water facilities would be constructed by local jurisdictions, then the potential for adverse impact due to noise could increase relative to the proposed project because additional areas could be exposed to the permanent noise emitted from new water facilities. Thus, the impacts due to noise under the no project alternative would vary depending upon the assumptions for this alternative. Potential noise impacts would be less than those forecast to occur under the WMP if no new facilities are constructed but could be similar to or greater if additional facilities are required.

Population and Housing: Proposed project population and housing impacts were found to be non-significant for the WMP project. Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the population and housing impacts would be less than the non-significant potential impacts under the WMP. As water supply becomes inadequate, a potential exists for a connection moratorium to be established by the regulatory agencies and significant impacts could then affect population and housing resources. If it is assumed that new water facilities would be constructed by local jurisdictions under this alternative, then the potential for adverse impact to population and housing would be essentially the same as would occur under the WMP. Thus, the impact to population and housing resources under the no project alternative would vary depending upon the assumptions for this alternative. It is forecast that the no project alternative could result in impacts to housing and population that are similar to or greater than those identified for the proposed project.

Public Services: Proposed project public service impacts were found to be non-significant. Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the public service impacts would be less than the potential impacts under the WMP. If it is assumed that new water facilities would be constructed by local jurisdictions under this alternative, then the potential for adverse impact to public services would be essentially the same as forecast for the WMP. Thus, the impact to public services under the no project alternative would vary depending upon the assumptions for this alternative.

Transportation and Traffic: Proposed project transportation and traffic impacts were found to be non-significant. Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the transportation and traffic impacts would be less than the non-significant potential impacts under the WMP because of less construction in roadways. If it is assumed that new water facilities would be constructed by local jurisdictions under this alternative, then the potential for adverse impact to transportation and traffic systems would be essentially the same as those forecast to occur under the WMP. Thus, the impact to transportation and traffic systems under the no project alternative would vary depending upon the assumptions for this alternative.

Utilities and Service Systems: Proposed project utilities and service system impacts were found to be non-significant except for impacts associated with the overdraft of the MCGS and the projects potential to result in the cumulative demand for a substantial amount of additional electricity by the year 2025 . Under the no project alternative facility operations would continue as they currently exist. Under the assumption that no new facilities would be constructed, the water supply system component of utilities would be significantly and adversely impacted. If it is assumed that new water facilities would be constructed by local jurisdictions under this alternative, then the potential for adverse impact to utilities and service systems and potential impacts to climate change would be similar to or greater than the proposed project depending on the extent of water system improvements that would be required to provide the same level of service obtained by the WMP facilities. Thus, the no project alternative could result in similar or greater adverse impacts to utility and service systems than the proposed WMP depending on the no-project alternative implemented.

Under the no-project alternatives identified, the ability to attain the goals and objectives as described in Chapter 3, Project Description, in this PEIR would be virtually eliminated. Essential resource management actions would not occur and the inclusive approach to managing the water system in the MSWD's Service Area would not be implemented. Thus, the no-project alternative, in either of its iterations, cannot meet project objectives to efficiently manage the water system and is not considered a feasible alternative to the proposed project.

Project-related impacts are forecast to increase under the no project alternative because of the lack of a coordinated approach to needed facilities within the MSWD Service Area and the consequences of not meeting water supply management objectives. Over the long-term new water facilities could be implemented if MSWD were not to implement the WMP, but this approach under the no project alternative has a potential to cause significant impacts that are equal to or potentially greater than the proposed project.

In the final analysis, the no project alternative clearly cannot be considered the environmentally superior alternative from a total environmental standpoint to the proposed project because the environmental damage from not implementing the WMP and/or implementing new water management actions on a case-by-case basis is forecast to be equal to or potentially more significant than implementing the proposed project.

5.3 EXTRACT GROUNDWATER FROM OTHER BASINS

The MSWD boundaries encompass five groundwater subbasins. These are the Desert Hot Springs Groundwater Subbasin (DHSGS), the Mission Creek Groundwater Subbasin (MCGS), the Garnet Hill Groundwater Subbasin (GHGS), the Whitewater River Groundwater Subbasin (WRGS), and the San Gorgonio Pass Groundwater Subbasin (SGPGS). Currently, the MSWD extracts water from the MCGS, the GHGS, and the SGPGS. It has no water production wells in the DHSGS or the WRGS.

The WMP proposes to install one new well in the SGPGS and 16 new wells in the MCGS. The WMP does not propose to install new wells in the DHSGS, GHGS or the WRGS. Use of the subbasins in addition to the MCGS is possible but it does pose certain constraints and, due to a lack of knowledge about these other subbasins, the viability of this alternative is not totally discernible. A brief discussion of these subbasins follows:

- Desert Hot Springs Groundwater Subbasin – DHSGS is located upgradient of the MCGS. DHSGS is separated from MCGS by the Mission Creek Fault which forms the northerly boundary of MCGS. Little data is available on the quantity and quality of groundwater in this subbasin or the geologic makeup. Most data indicates groundwater in DHSGS is high in Total Dissolved Solids (TDS) and fluoride. Water produced in DHSGS is termed "hot" and is primarily used for spas and similar non-potable uses. Based on available groundwater quality data, however, it is anticipated that water obtained from DHSGS would require extensive treatment and/or blending with higher quality water to meet potable water standards. Certain costs may increase through such treatment or blending processes. However, this subbasin is upgradient of MCGS and gravity flow of water may reduce some energy costs from pumping water into the portion of MSWD's system to be served by this project.

  The economic effect of the spa and other commercial activities that rely on the "hot water" in this subbasin is not known.

- Garnet Hill Subbasin – GHGS is located downgradient of MCGS. The Banning Fault which forms the southerly boundary of MCGS separates these two basins. A limited amount of data on the quantity and quality of groundwater is GHGS is available, however, MSWD is operating a well (Well #33) in the GHGS. This well has been operational since 2006 and produces about 800-900 gpm of high quality water. Disadvantages to development of wells in GHGS are that it is a small basin with limited water resources. Its location downgradient of MSWD Service Area where water is needed and would require the consumption of a significant amount of energy to "lift" the water to that zone. While the quality of water in GHGS is considered good, the quantity available for production is considered limited.

- Whitewater River Subbasin – WRGS is the largest of the subbasins within the MSWD boundaries. It is located downgradient of the GHGS. This subbasin is expected to contain the greatest amount of good quality water of the above identified subbasins. While WRGS is extensively used by water producers in the Coachella Valley, it is also the only subbasin to receive imported water for groundwater recharge. DWA and CVWD have percolated in excess of 600,000 AF of water obtained from the MWD Colorado River Aqueduct into WRGS. While this subbasin has the greatest potential to meet MSWD needs, it is also the furthest away and at the lowest elevation of the available subbasins. Utilization of WRGS by MSWD would require the substantial extension of infrastructure (transmission lines, booster pumps, etc.) and the consumption of the most energy to deliver the water to the portion of MSWD where water is needed and resolution of a complex set of legal, institutional and technical issues.

- San Gorgonio Pass Groundwater Subbasin – The SGPGS is located several miles westerly of the portion of the MSWD with greatest need for water service. This subbasin provides water to the MSWD's Cottonwood and Woodridge water systems. These systems are located on the easterly edge of the easterly edge of the SGPGS adjacent to the Coachella Valley

Use of subbasins down gradient of the MCGS would require essentially the same facilities as the proposed project. Wells, reservoirs and pump stations would be required to transport the water up gradient to the portion of the MSWD system for which the WMP proposes to provide water.

<u>Aesthetics</u>: The proposed project was determined to have less than significant impacts to visual resources. The project area does not contain any major scenic resources that could be affected by any of the proposed water facilities..

Extracting water from other subbasins would require essentially the same above ground facilities (wells, reservoirs, pump stations, etc.) but at other locations. Depending on the location of these above ground facilities potential impacts would be essentially the same as the less than significant impacts associated with the proposed project.

If treatment is required for water from DHSGS, potential impacts to visual resources would be similar or possibly greater than the less than significant impacts identified for the WMP depending on the size of the treatment plant. However, it is not anticipated that any water facilities developed in another basin would be of a substantially greater size and result in significant adverse impacts to visual resources.

<u>Agricultural Resources</u>: The MSWD Service Area does not contain any agricultural uses or land use designations. The proposed project was determined to have no potential for impact to such resources. Therefore, the placing of water facilities within other portions of the MSWD Service Area will have similar, less than significant effects on agricultural resources.

<u>Air Quality</u>: The proposed project was determined to have less than significant short-term and long-term air quality impacts. Mitigation was provided to reduce potential impacts to the greatest extent feasible. It was identified that the proposed project could result in the use of a substantial amount of electricity which could contribute to a forecast need for the generation of a substantial amount of

additional electricity over the planning life of the WMP. The generation of additional electricity to meet the forecast demand in the year 2025, including that of the WMP, has the potential to contribute to the generation of a substantial amount of greenhouse gas (GHG) emissions. However, the State has not provided any guidance on determining the significance of a projects GHG emissions. Therefore, while it is anticipated that implementation of the WMP could contribute to the need for a substantial amount of electricity over the planning period of the WMP, it is not possible to determine the significance of that contribution to climate change through the emission of GHG.

It is forecast that both short-term construction and long-term operation impacts associated with this alternative would be greater than the proposed project. Additional pipelines, booster pump stations, and possibly a water treatment plant would be required to provide water to the higher elevations of the MSWD. Additional electricity would be required to operate the additional mechanical equipment. However, it is anticipated that adequate mitigation is available to reduce the potentially greater air emission impacts associated with this alternative to a less than significant level.

The WMP proposes facilities to provide additional water to higher elevations of the MSWD System. The MCGS is the subbasin located at the highest elevation and is the nearest subbasin with potable water to the areas for which the WMP is primarily proposing to provide water. The uses of other subbasin which are located at lower elevations would require the use of additional electrical energy to lift water to the elevations needed. The use of these subbasins would also require the installation of more pipelines, booster stations and possibly reservoirs to supply water to the upper elevations of the MSWD System.

The use of the DHGS, which is located at a higher elevation would require the use of additional electrical energy to treat the non-potable water produced from that subbasin.

It is anticipated that production of water from other subbasins would require the greater use of electricity than the proposed project. The generation of that additional electricity would result in greenhouse gas (GHG) emissions that are forecast to exceed that which will result from implementing the proposed project.

<u>Biological Resources</u>: The proposed project was determined to have potentially significant impacts to biological resources on the WMP sites. However, adequate mitigation is provided in the PEIR to reduce potential onsite impacts to a less than significant level. The proposed project was determined to have the potential for both individual and cumulatively significant impacts to offsite biological resources. These impacts are associated with the project’s contribution to the ongoing overdraft of the MCGS and its potential to impact biological resources.

The pumping of groundwater from other subbasins could reduce the MSWD’s contribution to overdraft of the MCGS. However, due to the little data available on the amount of water in the other subbasins and the effects of pumping from those subbasins, it is not possible to determine the effects of additional pumping from those subbasins on dependent biological resources. It is anticipated that implementation of this alternative could reduce the rate of decline in the depth to groundwater in the MCGS, but could also increase this decline in the other basins by some unquantifiable amount. Therefore, a comparison of the significance of this alternatives potential impacts to biological resources to those of the proposed project is not possible at this time.

The potential site-specific biological impacts associated with this alternative would be dependent on the site selected for the water production facilities. Because it has been determined that site-specific impacts associated with the proposed project are less than significant level with implementation of identified mitigation, it should be anticipated that potential impacts at an alternative location would be similar with available mitigation.

Cultural Resources: The proposed project was determined to have less than significant impacts on cultural resources implementation of identified mitigation.

Because an alternative sites have not been selected, it is not possible to determine the significance of potential impacts to cultural resources at other sites. However, because potential impacts of the proposed project are considered less than significant with mitigation, it is anticipated that potential impacts at other sites would be similar and that adequate mitigation would be available to reduce impacts to a less than significant level.

Geology / Soils: The proposed project was determined to have potentially less than significant impacts associated with geologic and soils constraints and hazards.

The alternative subbasins alternative should result in similar less than significant impacts as the proposed project. Neither of these alternatives will result in human occupancy structures being developed and the facilities must be designed and constructed to current building standards to reduce the potential hazards from geologic and soil constraints to an acceptable level of risk.

Hazards and Hazardous Materials: The proposed project was determined to have a less than significant potential to create or cause hazard or hazardous conditions with implementation of identified mitigation.

The facilities needed to supply water from other subbasins will be essentially the same as the proposed project (well, pump station, reservoir, etc.). Therefore, the potential for exposure of people to the risk of hazardous materials or conditions is considered similar to the proposed project (less than significant). Should a water treatment plant be needed for water extracted from DHSGS, it is anticipated that some hazardous materials may be utilized. However, existing codes and regulations are considered adequate to mitigate the potential for exposure to hazards to an acceptable level of risk. Potential impacts would be considered less than significant.

Hydrology / Water Quality: The proposed project was determined to have less than significant impacts on the quality of surface water with implementation of identified mitigation and an anticipated less than significant impact on the quality of groundwater.

The proposed project was determined to have significant individual and cumulatively significant impacts on groundwater resources due to its contribution to ongoing overdraft of MCGS. No mitigation is currently available to reduce these impacts to a less than significant level.

Pumping water from subbasins other than MCGS would reduce the significant individual and cumulatively significant impacts to overdraft of the MCGS associated with the WMP. However, it would not eliminate the existing pumping from the MSGS. There is insufficient data on the other subbasins to determine the effects of extracting additional groundwater from the other subbasins. The potential impacts would be dependant on the amount of water extracted from a given subbasin relative to its groundwater storage capacity and the amount of water available to recharge the subbasin.

<u>Land Use Planning and Population / Housing</u>: The proposed project was determined to be consistent with existing land use plans and would have no impact on such issues. The project was also determined to not be a growth-inducing project, but rather, a plan that accommodates growth allowed by agencies with jurisdiction over land use issues.

The extraction of groundwater from other subbasins would require essentially the same water production and supply facilities. Therefore, these alternative facilities would also be considered growth accommodating, not growth inducing and compatible with current land use designations.

<u>Mineral Resources</u>: The proposed project was determined to have less than significant impacts on mineral resources due to the small size of the projects and the abundant supply of the resource occurring (sand and gravel) within other portions the Coachella Valley and San Gorgonio Pass area.

Because alternative locations, the MSWD Service Area would result in similar water facilities being developed on similar size sites, it is anticipated that potential impacts to mineral resources would be similar at any site selected within the MSWD Service Area.

<u>Noise</u>: The proposed project was determined to have less than significant short-term construction and long-term operations noise impacts with implementation of identified mitigation.

Because the facilities needed to supply water would be similar at any site selected, the potential to generate short-term construction and long-term operations impacts would be similar to the less than significant impacts associated with the proposed project.

<u>Public Services</u>: The proposed project was determined to have either no impact or less than significant impacts to public services. In the case of fire protection, the proposed project was determined to be a benefit in that it will provide increased fire flow within the MSWD.

The extraction of water from other subbasins would have the same purpose and use. Therefore, use of alternative subbasins would have similar less than significant or no impact to public services and would also be considered a benefit to fire protection services.

<u>Recreation</u>: The proposed project was determined to have no potential to impact recreation or recreational opportunities. No mitigation was required.

It is anticipated that a non-recreational use site would be selected for placement of the required water facilities within other subbasins. It is also anticipated that a sites of similar size to those needed by WMP projects would be required. Therefore potential impacts associated with this alternative are forecast to be similar to the proposed project and less than significant.

<u>Transportation / Traffic</u>: The proposed project was determined to have either no impact or less than significant impact on transportation/traffic issues. In the short-term, construction activities will generate some minor volumes of traffic, as well as create some potential for traffic hazards in roadways. Adequate mitigation for these hazards have been provided in this EIR. In the long-term, the proposed project will generate minimal trips by District personnel.

Because this alternative would result in the construction and operation of similar facilities of similar sizes, potential impacts are forecast to be similar and less than significant.

Utilities and Services Systems: The proposed project was determined to have either less than significant or no impact on these systems except for the potential increased demand for electricity. It is forecast that by the year 2025, that the demand for electricity could double from current levels. While it is anticipated this increased demand can be met using conventional power generation techniques, it is also a concern that meeting the anticipated demand for electricity could result in a substantial increase in GHG emissions and result in some unquantifiable contribution to climate change.

In general, the proposed project is considered a benefit to the water system by providing additional reliability and an adequate supply within the MSWD's Service Area.

The extraction of groundwater from other subbasins will reduce the potential individual and cumulative impacts to groundwater associated with the proposed project's contribution to overdraft in MCGS and, possibly reduce its potential for impacts to biological resources along the Banning Fault. The extraction of water from another subbasin using similar facilities (well, reservoir, pump station, etc.) would result in less than significant impacts that are similar to the proposed project for the following issues evaluated: aesthetics; agricultural resources; cultural resources; geology/soils; hazards and hazardous materials; land use/planning; mineral resources; noise; public services; recreation, transportation/traffic and utilities and services systems except for its potential contribution to the forecast increase in demand for electricity within southern California over the planning period of the WMP. The use of other subbasin located at lower elevations and at greater distances from the areas of the District which are forecast to need additional water supplies is anticipated to require additional pumping of water and consequently, the use of additional amounts of electricity. It is, therefore, forecast that the use of other subbasins to provide the water needed to meet future demand would result in the greater usage of electricity and result in the generation of more GHG.

Biological resources are generally similar throughout the MSWD Service Area. Onsite biological resources impacts are forecast to be similar to those which would occur under the WMP. These potential impacts are site specific but considered potentially similar under either alternative selected.

Potential impacts associated with air quality issues would likely be greater than the proposed project due to the need for larger and longer water transmission lines and more energy required to pump the water over greater distances and elevation changes and possibly, the need for a water treatment plant. These impacts, however, are anticipated to remain less than significant.

Utilizing other groundwater subbasins would reduce overdraft in MCGS but would increase extractions from the other subbasin; the significance of which would be dependent on the ability of the other subbasins to accommodate additional pumping. At this time, there is not sufficient data to determine the extent of the potential effects on these other subbasins.

The Extract Groundwater From Other Subbasins alternative could meet the basic project objectives and goals but would require additional construction and energy consumption. It would also result in the reduction in groundwater extracted from the MCGS but would increase the amount of water extracted from the other subbasins. This could reduce the amount of overdraft of the MCGS which could benefit biological resources along the Banning Fault. However, the extent of impacts to other subbasins and biological resources within those subbasins is not quantifiable at this time.

5.4 DISCUSSION OF ALTERNATIVES TO THE PROPOSED ACTION

Of the two alternatives considered, the Extraction of Groundwater from Other Basins would appear to be potentially the environmentally superior alternative. This alternative would reduce two potentially significant impacts (contribution to groundwater overdraft of the MCGS and potential impacts to biological resources that are dependent on groundwater in the MCGS) while meeting the project's goals and objectives.

Pumping groundwater from other subbasins would transfer some of the onsite and offsite impacts associated with the proposed project to other locations within the MSWD Service Area.. Impacts from this project's contribution to overdraft of the MCGS and its potential impact to biological resources would be reduced within the MCGS. However, it is not known what impacts would occur in the other subbasins or at other sites. Depending on the subbasin and the sites selected, potential impacts to onsite biological and cultural resources should be similar to the less than significant impacts identified for the proposed project with implementation of available mitigation. It is also anticipated that pumping water from other subbasins would increase energy usage and air emissions to construct additional facilities and pump and/or possibly treat water for delivery to the higher elevations of the MSWD Service Area.

However, without knowing the amount of water available from the other subbasins and the amount of water which would be pumped from the other subbasins, it is not possible to accurately forecast the effects that pumping groundwater from these other subbasins would have on groundwater and biological resources. It can be determined that this alternative would most likely reduce potentially significant impacts to groundwater and biological resources within the MCGS from implementing the WMP. However, the amount these impacts will be reduced or the degree of potential impact to such resources in other subbasins cannot be determined at this time. It is possible that implementation of this alternative could result in impacts to groundwater and biological resources that are similar to or greater than the proposed project, but at different locations.

The No-Project alternative would fail to meet the basic objectives of the project. The No-Project alternative eliminates potentially significant and less than significant impacts associated with construction and operation of the proposed project if no new water facilities are constructed.

In the long term, the demand for water in MSWD will continue. It should be anticipated the demand will be met in some manner (private mutual water company, private wells, etc.). The development of additional water systems to meet demand would be inefficient and probably result in a similar amount of groundwater being extracted. Therefore, under the others develop water systems no project alternative, potential impacts are expected to be similar to or greater than those associated with the proposed project. The No-Project alternative would not reduce the ongoing overdraft of MCGS it would only eliminate the proposed project's contribution to this condition if no new facilities are constructed. If new water facilities are constructed on an ad hoc basis, the potential impacts to the MCGS and biological resources that depend on that groundwater forecast to be similar to those identified for the WMP.

CHAPTER 6 - TOPICAL ISSUES

6.1 GROWTH INDUCEMENT

Traditionally, significant growth is induced in one of three ways. In the first instance, a project is located in an isolated area and when developed it brings sufficient urban infrastructure to cause new or additional development pressure on the intervening and surrounding land. This type of induced growth leads to conversion of adjacent acreage to higher intensity uses, either unexpectedly or through accelerated development. This conversion occurs because the adjacent land becomes more suitable for development and, hence, more valuable because of the availability of the new infrastructure. This type of growth inducement is typically termed “leap frog” or “premature” development because it creates an island of higher intensity developed land within a larger area of lower intensity land use.

The proposed project will not cause or contribute to “leap frog” or “premature” development because its purpose is to provide an overall management strategy, tied to specific facilities and management actions, that will provide the MSWD with a master plan to meet the future demand for water service it is mandated to provide in the most efficient and effective manner. The facilities envisioned in the WMP do not extend service to new undeveloped areas or lead to accelerated development within the MSWD service area by prematurely installing water service infrastructure. The WMP only provides MSWD a tool to plan for and anticipate the water service facilities that will be needed to meet future demand. These facilities were identified based on past growth data and potential future growth envisioned by the agencies with jurisdiction over potential population growth and future land uses within the MSWD service area. Implementation of the WMP cannot cause or contribute to leap frog or premature growth. The WMP only provides a method of planning for future growth allowed by the agencies having jurisdiction over land use issues.

A second type of growth inducement is caused when a project of large size, relative to the surrounding community or area, is developed within a community and impacts the surrounding community by producing a “multiplier effect,” which results in substantial indirect community growth, not necessarily adjacent to the development site or of the same type of use as the project itself. This type of stimulus to community growth is typified by the development of major destination recreation facilities, such as Disney World near Orlando, Florida, or around a military base, such as the Marine Corps Air Ground Combat Center near Twenty-Nine Palms. The proposed WMP project is not a new development that will cause growth through a “multiplier effect.” Development within the project area will be consistent with growth decisions already made by local agencies governing land use decisions, and further, the WMP project does not remove any existing constraint on future development because existing land use jurisdictions (cities and counties) have alternative means (perhaps not as cost or environmentally effective as the WMP project) to meet future water service demands. No new “large” projects are proposed or contingent on the implementation of the proposed WMP and no potential for this type of multiplier growth inducement can be caused by implementing the proposed project.

A third and more subtle type of growth inducement occurs when land use plans are established that create a potential for growth because the available land and the land uses permitted result in the attraction of new development. This type of growth inducement is also attributed to other plans developed to provide the infrastructure necessary to meet the land use objectives, or community vision, contained in the governing land use agencies' general plans. In this case, the ultimate vision of future growth and development within the project area was established in the governing study area general plans. It is assumed in these general plans that an adequate supply of water and the service infrastructure required to support the population will be in place as growth occurs in the future.

The net effect of these general plans is to create a set of expectations regarding future land use and growth that may or may not occur depending upon the actual carrying capacity of the various utility and service resources required to meet future growth. It also seems clear that the established planning process and the overall growth pressures in southern California are the primary causes of future growth, i.e. they induce the actual growth that occurs, and the various utilities, such as MSWD, are effectively forced to create master plans that can accommodate such growth, at least within the limits of current or future resources that may be available. As the RCPG analysis of growth in Section 4.8 indicates, a sufficient supply of water to meet future demand is considered an important component of the growth envisioned by adopted general plans.

The position taken in this document is that the utility planning process is appropriately a passive (accommodating) role, not an active (inducing) role, in future growth that is dictated by local land use plans and the unabated growth of population throughout southern California. As discussed in Chapter 5, if communities within the project area chose to restrict growth and maintain a certain vision of the future as a static or slowly growing entity, the land use planning agencies (cities and counties) had the opportunity during the general planning process to establish such plans. Under such circumstances, the utility providers, including MSWD, would have designed their future service plans to accommodate a level of future growth consistent with the defined growth in such plans.

In reality, however, MSWD acting as responsible water planning agency, must plan for a level of future growth that appears to match forecast growth through at least the 2025 planning year. The master plans project is designed to accommodate growth as envisioned in the study area general plans and SCAG's RCPG. Based on this analysis, implementation of the proposed project is not considered to be a significant growth inducing action.

6.2 CUMULATIVE IMPACTS

The intent of a cumulative impact evaluation is to provide the public and decision-makers with an understanding of a given project's contribution to areawide or community environmental impacts when added to other development occurring in the region. Typically, cumulative impacts are discussed in relation to a list of past, present and reasonably anticipated projects or in relation to broad growth projections contained in general or regional plans. For this project, the cumulative impact forecast was evaluated in the context of both types of cumulative impact forecasts. Most of the cumulative impact projections were made using regional planning documents. Some issues, such as noise, traffic, air quality, biology, hydrology, etc. were evaluated using a combination of planning documents and specific technical analysis. Cumulative impacts are discussed in each impact section of Chapter 4 to this document. Issues not included in the scope of evaluation of this EIR were evaluated in the Initial Study (see Chapter 8 of this EIR) and impacts were determined to be less than significant both individually and cumulatively.

The following is a summary of cumulative impacts that are forecast to occur if the proposed project is implemented as proposed for those issues evaluated in Chapter 4 of this PEIR.

6.2.1 Geology / Soils

Future development in accordance with the WMP will not cause any significant adverse cumulative geologic or soil impacts. With implementation of the mitigation measures provided in this PEIR, the proposed project is not forecast to contribute to individual or cumulative exposure of humans in occupied structures to seismic, liquefaction, or subsidence hazards. Therefore, cumulative geologic and soil impacts remain below a significant impact threshold. Potential cumulative impacts are considered less than significant.

6.2.2 Hydrology / Water Quality

Groundwater Quantity

MCGS

Implementation of the proposed WMP when combined with other water extractions will contribute to an increased overdraft of the MCGS. The timing and amount of overdraft will be dependent on when and how much water is extracted from the basin and the amount of inflow (including recharge) of water into the MCGS occurs. However, available data indicates that the amount of inflow (including recharge) and the affects of available mitigation will not be adequate to offset the cumulative amount of water extraction forecast to occur. Therefore, it is concluded that implementation of the WMP will contribute to a substantial reduction in the amount of groundwater stored in the MCGS. This reduction is considered a cumulatively significant adverse impact.

SGPGS

Limited available data provided in this PEIR indicates that implementation of the WMP will result in a less than significant cumulative impact on the quantity of water in the SGPGS.

Groundwater Quality

MCGS

The continued overdraft of the MCGS has the potential to result in the contribution to a substantial degradation of the quality of water in this basin. However, available data indicates that past and ongoing overdraft has not resulted in any substantial degradation. Water extracted from the MCGS is tested regularly and continues to meet state standards for drinking water quality. Therefore, based on available data the potential for substantial impact is speculative and potential impacts are considered individually less than significant.

The use of groundwater for human consumption is considered a beneficial use of the water. Should water quality degrade substantially in the future, water purveyors will be required to implement water treatment activities to ensure that its water supply meets state public health standards. The need to implement such treatment activities are speculative at this time and beyond the scope of this PEIR.

SGPGS

Data provided in this PEIR indicates that implementation of the WMP will result in a less than significant cumulative impact on the quality of groundwater in the SGPGS.

Surface Water Quality

Implementation of the WMP has the potential to contribute to some degradation of surface water runoff both during the construction and operation phases. Implementation of the mitigation provided in this PEIR is considered adequate to reduce potential cumulative impacts to a less than significant level.

6.2.3 Biological Resources

Construction Phase

Data provided in the PEIR indicates that construction of the WMP facilities will result in less than significant cumulative construction phase impacts to biological resources with implementation of the mitigation provided herein.

Operations Phase

Data provided in the PEIR indicates that operation of WMP wells not covered by the MSHCP will result in cumulatively significant adverse impacts to biological resources through their contribution to overdraft of the MCGS. While mitigation has been provided that will reduce or delay the potential impacts, these measures are not considered adequate to eliminate basin overdraft and maintain water dependent habitat and the species that rely on that habitat.

6.2.4 Cultural Resources

Cumulative cultural resource impacts can only occur when such resources are not avoided or are not recovered, evaluated and their data value placed in the broader contest of such resources. Based on the requirement to ensure that such resources are avoided or otherwise protected and evaluated, no cumulatively significant cultural resource impacts are forecast to occur if the proposed project is implemented.

6.2.5 Air Quality

Implementation of the proposed WMP will result in less than significant air emissions. The facilities proposed by the WMP have been determined to be compatible with local land use planning documents in that they will provide water service to development allowed by these local agencies and planning documents. The facilities proposed by the WMP will only be constructed when required to provide adequate water service. Local and regional air quality planning documents have been developed to provide methods of attaining air quality standards while accommodating future development and growth. To anticipate future development, these air quality planning documents relied on local planning documents such as general plans to forecast growth within the SSAB and the SCAQMD. Projects that are compatible with local general plans are, therefore, considered compatible with local and regional air quality plans.

While the facilities proposed by the WMP will contribute air emissions within the SSAB, this contribution is considered compatible with the regional air emissions projections. Therefore, implementation of this project is not forecast to cause or contribute to significant air quality impacts when considered on a cumulative basis and potential impacts are considered to be less than significant.

An issue associated with both air quality and utilities and service systems is that of this projects contribution to the increased demand for electricity that is forecast to occur over the nest 20 years. Available information suggests that the demand for electricity will double the current demand by the year 2025. Implementation of the WMP will result in a doubling of MSWD's current electricity usage to transport additional water throughout is system. The doubling of electricity usage in southern California is considered a significant increase in the demand for electricity and this project will contribute to this increased demand.

Using standard electricity generating methods will result in a substantial increase in the emission of air pollutants into the atmosphere. The amount of the increase is not quantifiable at this time but is forecast to be substantial. Implementation of the WMP will contribute to this increase and is therefore considered to have a potentially significant cumulative adverse effect on air quality.

Another air quality issue that is not currently considered under CEQA is a projects potential effect on climate change. To date, the State has not established any thresholds or regulations to determine the significance of greenhouse gas (GHG) emissions on climate change. However, this project will contribute to the generation of GHG, the significance of which is not determinable at this time.

6.2.6 Noise

The noise forecast data contained in the local agency general plans demonstrates that future traffic noise levels from general growth (cumulative traffic increases) within the MSWD Service Area will result in significant noise impacts. However, the WMP is not forecast to cause or contribute to such cumulative noise impacts which can be attributed to the land use mixes contained in the local agency general plans and the inability to reduce potential traffic noise impacts to a non-significant level. Any traffic generated by the WMP operations is considered an insignificant contribution to this traffic related noise impact (refer to the Initial Study and Notice of Preparation). Because implementation of the WMP will not constitute a significant contribution to the cumulative increases in traffic, the proposed project is not forecast to cause any cumulatively significant noise impacts.

It should be noted that local agencies land use planning documents assumed that an adequate supply of water would be available to support the population growth allowed by the local general plans and the resulting noise increases. The WMP is a planning tool for MSWD to provide an adequate supply of water to accommodate the land uses allowed by local agencies having jurisdiction over such issues. It should be anticipated that water will be made available to future development whether or not this WMP is adopted. This WMP only provides what MSWD believes to be the most efficient and effective method of suppling that water.

6.2.7 Land Use and Planning

The WMP activities are specifically designed to provide a reliable water supply to meet current and future water demand within the MSWD Service Area. The proposed project has been evaluated as being fully consistent with the study area's general plans and adopted environmental conservation plans. The WMP activities are not forecast to contribute to any land use incompatibilities with existing or future uses within the study area based on implementing identified mitigation measures. There are no unavoidable cumulative impacts to land use issues from WMP implementation.

Finally, the WMP has been determined not to induce future growth. The provision of water to meet current and future demand is determined to be growth accommodating, not growth inducing. The WMP can be implemented without causing or contributing to future significant cumulative growth or development within the MSWD service area. Potential impacts are considered less than significant.

6.2.8 Population and Housing

The PEIR determined that implementation of the proposed WMP would not result in the displacement of a substantial amount of existing housing or people or reduce the area available for future housing. The PEIR determined that the provision of an adequate water supply is not of itself growth-inducing but rather accommodates growth allowed by local agencies with jurisdiction over land use issues. See subsection 6.2.7 above. Potential impacts to population and housing were determined to be less than significant.

6.2.9 Public Services

This PEIR has determined that implementation of the WMP would not result in the need for expanded or new public services. Potential impacts were determined to be both individually and cumulatively less than significant.

6.2.10 Utilities / Service Systems

This PEIR determined that implementation of the WMP would not result in significant adverse impacts to utilities and service systems except for this projects potential to contribute to what is forecast to be a substantial increase in the demand for electricity in southern California over the next 20 years. Based on available data and projections, it has been concluded that implementation of the WMP will result in cumulatively significant adverse impacts to the electricity supply system. This impact is considered unavoidable and adverse. See subsection 6.2.5 for further discussion.

6.3 IRREVERSIBLE AND/OR UNAVOIDABLE ENVIRONMENTAL CHANGES

If the WMP projects are implemented, the following irreversible and/or environmental changes would be involved:

a. The construction, installation and maintenance of water facilities, pipelines, new wells, pump stations, storage facilities and other public facilities, as proposed in the WMP, will involve the irreversible consumption of natural resources in the form of construction materials, water, and energy sources. Money and manpower will be expended to develop and maintain the facilities.

b. The development or utilization of individual properties (such as the Terrace and Vista reservoirs and the 1400 Zone well and pump station), in accordance with land uses designated in the WMP, will, for all intents and purposes, eliminate the possibility of development of the land for other uses.

c. A commitment of economic and manpower resources will be required for the long-term implementation of the proposed project.

d. Building materials, including forest and mineral products, will be permanently committed in construction projects related to the long-term implementation of the proposed project.

e. Expenditures of money, manpower, and materials will be made to maintain adequate levels of public service to the greater community while those services are undergoing disruption and modification within the proposed project area.

All other potential adverse impacts from implementing the proposed project are reversible. Air pollutant emissions and impacts to water resources and water quality can be changed by both humans and nature over time by reducing air emissions, cleaning air and water and by reducing water consumption or providing alternative sources of water. Soils and geologic resources will be affected but can be modified in the future to suit different purposes. Noise associated with implementation of the WMP could be reduced by utilizing quieter vehicles and equipment or more efficient sound attenuation methods when available. As long as the proposed project does not contribute to the loss of any endangered plant or animal species (for which mitigation measures have been identified), biological resources can be maintained with provision of sufficient resources. <u>This impact would then be considered avoidable.</u>

Land uses and population growth can be considered irreversible on the short term, but the growth forecast for these two issues is not considered to be attributable to the proposed project. Thus, through the incorporation of recommended mitigation measures together with the implementation of the proposed project, no significant irreversible environmental changes will be caused within the project area that can be attributable to the proposed project. Implementation of the suite of mitigation measures in this document will insure that all irreversible and/or unavoidable environmental impacts, as identified above and described within Chapter 4 of this PEIR. The exception is the potential impacts to biological resources from lowering groundwater levels by projects not covered by the proposed MSHCP, if it is adopted as currently proposed. Compliance with the terms and conditions of the MSHCP would be considered adequate to avoid significant adverse impacts to biological resources.

If the proposed MSHCP is adopted as currently proposed and if WMP projects are covered by the Plan, then compliance with the terms and conditions of the MSHCP will be considered adequate to reduce potential impacts to biological resources to a less than significant level through avoidance of the significant impact. If the MSHCP is not adopted or a WMP project is not covered by the Plan, this PEIR forecasts that adequate mitigation is not available to reduce the potential for significant adverse effects on biological resources from lowering groundwater levels in the MCGS to a less than significant level. This conclusion is based on available data on the effects of lowering groundwater. The proposed WMP does not propose any groundwater recharge programs, but relies on the existing and possible future programs. The extent and significance of reducing the depth to groundwater in the MCGS from the activities proposed by the WMP will not be known until such a reduction occurs. However, available data indicates that the ongoing extraction of water from the MCGS at current and forecasted future rates without adequate mitigation is forecast to result in adverse impacts to groundwater levels within the MCGS whether or not this WMP is adopted and implemented.

CHAPTER 7 - PREPARATION RESOURCES

7.1 REPORT PREPARATION

7.1.1 Lead Agency

Mission Springs Water District

– Arden Wallum, General Manager
– Brent Gray, Director of Operations – Wastewater

7.1.2 MSWD Comprehensive Water System Master Plan

URS Corporation
8181 East Tufts Avenue
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– Tim Volz, Project Manager

7.1.3 EIR Consultant

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(909) 882-3612

– Bill Gatlin
– Pamela Wright
– Joanna Crombie
– Christine Camacho

Cultural Resources
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– Bai “Tom” Tang
– Harry Quin

MCGS Groundwater Flow Model
Psomas
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Los Angeles, CA 90064

– Jim Burton

7.2 BIBLIOGRAPHY

CRM TECH

2007a Paleontology Records Search & Literature Review, Mission Springs Water District Due Diligence Project, Desert Hot Springs Area, Riverside County, California, CRM TECH Contract No. 1998. April 9, 2007.

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Geotechnical Consultant (GTC)

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Gsi/Water

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Harding Lawson Associates (HLW)

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Montgomery Watson Harza (MWH)

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Psomas

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Richard C. Slade & Associates, LLC (RSA)

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Ron Barto Groundwater Consultant (RBGC)

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Tom Dodson & Associates (TDA)
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CHAPTER 8 – APPENDICES

8.1 NOTICE OF PREPARATION AND NOP MAILING LIST

8.2 NOTICE OF SCOPING MEETING

8.3 INITIAL STUDY

8.4 COMMENT LETTERS RECEIVED ON THE INITIAL STUDY AND NOP

APPENDIX 8.1

NOTICE OF PREPARATION AND NOP MAILING LIST

Mission Springs Water District

66575 Second Street, Desert Hot Springs, CA 92240 • www.mswd.org • p 760.329.6448 • f 760.329.2482

MEMORANDUM

July 20, 2006

FROM: Mission Springs Water District

TO: Responsible and Trustee Agencies/Interested Organizations and Individuals

RE: **Notice of Preparation of an Environmental Impact Report for the Water System Master Plan Project**

The Mission Springs Water District (MSWD or District) will serve as the Lead Agency under the California Environmental Quality Act (CEQA) and will coordinate the preparation of a focused Environmental Impact Report (EIR) that will evaluate the potential significant environmental impacts that may result from the adoption and implementation of an updated Water System Master Plan (Master Plan). The Master Plan encompasses an approximate 135-square mile service area that presently includes an estimated 9,600 customers. The MSWD service area is focused on the urban/suburban area of the City of Desert Hot Springs and surrounding area located east of State Highway 62 and north of Interstate 10. An Initial Study has been prepared for the proposed project which identifies the potentially significant environmental impacts of the project. Those issues with a potential to cause or experience significant impact are as follows: air quality, biological resources, cultural resources, geology and soils, hydrology/water quality, land use and planning, noise, population and housing, public services, and utilities/service systems. The District will serve as the Lead Agency for this document based on its responsibility for review and approval of the Master Plan, which is required before the Plan and related facilities can be implemented.

This transmittal constitutes a Notice of Preparation (NOP) for the proposed EIR and serves as a request for environmental information that you or your organization believe should be addressed in the proposed environmental document. A detailed Initial Study with substantiation is attached for review to assist you in providing comments on the scope of the EIR. In addition to any general comments, please be sure to address the scope and content of environmental information or issues that relate to your agency's statutory responsibilities in connection with the proposed project. A scoping meeting will be conducted for this project and you will be notified of the specific date for the meeting.

Comment Period: Based on the time limits defined by CEQA, your response should be sent at the earliest possible date, but no later than 30 days from receipt of this notice. All comments and any questions should be directed to:

Mission Springs Water District
Attn: Mr. Brent Gray
66575 Second Street
Desert Hot Springs, CA 92440

Project Location: As noted above, the project area encompasses approximately 135 square miles at the north end of the Coachella Valley. The Plan area is specifically located from just west of State Highway 62; north to San Bernardino County/Riverside County boundary located in the Little San Bernardino Mountains; east to approximately the western boundary of the Indio Hills; and south to approximately Interstate 10. A detailed map of the District's boundary is provided in the attached Initial Study.

The purpose of this Notice of Preparation, project description and the Initial Study, which contains a discussion of probable environmental effects, is summarized below for use in focusing your or your agencies comments for consideration in the EIR.

Purpose of the Notice of Preparation (NOP): The purpose of this NOP is to fulfill legal notification requirements, and inform the public and CEQA Responsible and Trustee Agencies that an EIR will be prepared. This NOP solicits agency and interested party concerns regarding the potential environmental effects of implementing the proposed Master Plan for the Mission Spring Water District over the next 25 years. CEQA encourages early consultation with private persons, agencies and organizations that may have information or may be concerned with any potential adverse environmental effects related to physical changes in the environment that may be caused by implementing the project. Responses to the NOP that specifically focus on potentially significant environmental issues are of particular interest to the District.

All written responses to this NOP will be included in the appendices to the EIR. The content of the responses will help guide the focus and scope of the EIR in accordance with State CEQA Guidelines.

I. NOP PROJECT DESCRIPTION

The Master Plan forecasts future water use under two growth scenarios: growth based on data from MSWD and historical growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected systemwide demand through the year 2025.

Wells	17
Reservoirs	11

Booster Pumps	7
Pipelines	177,000 lineal feet

Please refer to the detailed project description attached as part of the Initial Study for this proposed project. Each element of this project is outlined in detail and graphics are attached to the Initial Study to assist the reviewer in understanding the potential impacts addressed in the Environmental Checklist Form.

Thank you in advance for any comments you may submit in response to this NOP. For agencies, please include the name of a contact person in your agency if you submit comments. If you have any questions, please contact Mr. Brent Gray (760) 329-5169, ext. 131.

Mr. Arden Wallum
General Manager

Attachment

STATE CLEARINGHOUSE

overnight - 15 copies

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ATTN ENVIRONMENTAL REVIEW
65-950 PIERSON BLVD
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BOARD OF SUPERVISORS - 5th DISTRICT
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RIVERSIDE CA 92501

CALIFORNIA DEPT OF FISH & GAME
4665 LAMPSON AVENUE SUITE J
LOS ALAMITOS CA 90720

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PALM SPRINGS CA 92264

CITY OF PALM SPRINGS
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PALM SPRINGS CA 92262

COACHELLA VALLEY ASSOCIATION OF GOVERNMENTS - CVAG
ATTN ENVIRONMENTAL REVIEW
73-710 FRED WARING DRIVE
PALM DESERT CA 92260

CITY OF CATHEDRAL CITY
ATTN ENVIRONMENTAL REVIEW
68-700 AVENIDA LALO GUERRERO
CATHEDRAL CITY CA 92234

CITY OF PALM DESERT
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RIVERSIDE COUNTY FLOOD CONTROL
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APPENDIX 8.2

NOTICE OF SCOPING MEETING

TOM DODSON & ASSOCIATES
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SAN BERNARDINO, CA 92405
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E-MAIL tda@tdaenv.com

MEMORANDUM

August 28, 2006

From: Mission Springs Water District

To: Distribution

Subj: **Notice of Public Scoping Meeting for the District's Water System Master Plan Project**

On July 24, 2006 Mission Springs Water District (District) distributed a Notice of Preparation (NOP) of an environmental impact report (EIR) that is being prepared for the District's Water System Master Plan Project. The mandatory 30-day public comment period on the NOP will end on August 23, 2006. All written comments on the scope of the EIR are required to be submitted to the District by the 23rd. However, an additional opportunity to submit comments on the scope of the EIR will be provided by the District because a public and agency scoping meeting will be held at the District's office in Desert Hot Springs at 6 p.m. on September 12, 2006. The meeting will be held in the District Board Room and all interested parties and agencies are invited to attend and provide verbal comments on the content and scope of the EIR that will be prepared for the Water System Master Plan. The District's address where the scoping meeting will be held is 66575 Second Street in Desert Hot Springs. If you have any questions or need directions, please contact Mr. Brent Gray at 760-329-5169, extension 131.

Tom Dodson

Tom Dodson

APPENDIX 8.3

INITIAL STUDY

INITIAL STUDY

FOR

MISSION SPRINGS WATER DISTRICT'S

WATER MASTER PLAN PROJECT

Prepared by:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Preparation assistance by:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

July 2006

Notice of Completion

State of California
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

Mission Springs Water District Water System Master Plan Project

Project Title

The project area encompasses approximately 135 square miles at the north end of the Coachella Valley. The Plan area is specifically located from just west of State Highway 62; north to San Bernardino County/Riverside County boundary located in the Little San Bernardino Mountains; east to approximately the western boundary of the Indio Hills; and south to approximately Interstate 10. A detailed map of the District's boundary is provided in the attached Initial Study.

Project Location – Specific

Desert Hot Springs , CA

Project Location – City

Riverside County

Project Location – County

Description of Nature, Purpose, and Beneficiaries of Project

The Master Plan forecasts future water use under two growth scenarios: growth based on data from MSWD and historical growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected systemwide demand through the year 2025.

Wells	17
Reservoirs	11
Booster Pumps	7
Pipelines	177,000 lineal feet

Mission Springs Water District

Lead Agency

N/A

Division

Mission Springs Water District, 66575 Second Street, Desert Hot Springs, CA 92240

Address Where Copy of NOP/Initial Study is Available

July 24, 2006 through August 23, 2006

Review Period

Mr. Brent Gray

Contact Person

760-329-5169, ext. 131

Area Code / Phone / Extension

Revised March 1986

Notice of Completion and Environmental Document Transmittal Form

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 — 916/445-0613

See NOTE below

SCH # ______

1. **Project Title:** Comprehensive Water System Master Plan Project
2. Lead Agency: Mission Springs Water District
3. Contact Person: Mr. Brent Gray
3a. Street Address: 66575 Second Street
3b. City: Desert Hot Springs, CA 92240
3c. County: Riverside County
3e. Phone: 760-329-6448

Project Location As noted above, the project area encompasses approximately 135 square miles at the north end of the Coachella Valley. The Plan area is specifically located from just west of State Highway 62; north to San Bernardino County/Riverside County boundary located in the Little San Bernardino Mountains; east to approximately the western boundary of the Indio Hills; and south to approximately Interstate 10. A detailed map of the District's boundary is provided in the attached Initial Study.

4. County: Riverside County
4a. City/Community: City of Desert Hot Springs
4b. Assessor's Parcel No.: N/A
4c. Section: many Twp.: Many Ranges: Many
5a. Cross Streets: Pierson Boulevard/Palm Drive
5b. For Rural, Nearest Community: N/A
6. Within 2 miles: 6a. State Hwy #: State Highway 62/Interstate 10
6b. Airports: N/A
6c. Railways: N/A
6d. Waterways: Mission Creek

7. Document Type

CEQA: 01. ■ NOP; 02. ☐ Early Cons; 03. ☐ Neg Dec; 04. ☐ Draft EIR; 05. ☐ Supplement/Subsequent EIR (Prior SCH No.: ______); 06. ☐ NOE; 07. ■ NOC; 08. ☐ NOD

NEPA: 09. ☐ NOI; 10. ☐ FONSI; 11. ☐ Draft EIS; 12. ☐ EA

OTHER: 13. ☐ Joint Document; 14. ☐ Final Document; 15. ☐ Other ______

8. Local Action Type

01. ☐ General Plan Update
02. ☐ New Element
03. ☐ General Plan Amendment
04. ■ Master Plan
05. ☐ Annexation
06. ☐ Specific Plan
07. ☐ Community Plan
08. ☐ Redevelopment
09. ☐ Rezone
10. ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. ☐ Use Permit
12. ☐ Waste Mgmt Plan
13. ☐ Cancel Ag Preserve
14. ■ Other: Water Master Plan

9. Development Type

01. ☐ Residential: Units ______ Acres ~1
02. ☐ Office: Sq.ft. ______ Acres ______ Employees ______
03. ☐ Shopping/Commercial: Sq.ft. ______ Acres ______ Employees ______
04. ☐ Industrial: Sq.ft. ______ Acres ______ Employees ______
05. ■ Water Facilities: MGD ______
06. ☐ Transportation: Type ______
07. ☐ Mining: Mineral ______
08. ☐ Power: Type ______ Watts ______
09. ☐ Waste Treatment: Type ______
10. ☐ OCS Related
11. ☐ Other: ______

10. Total Acres several hundred

11. Total Jobs Created N/A

12. Project Issues Discussed in Document

01. ☐ Aesthetics/Visual
02. ☐ Agricultural Land
03. ■ Air Quality
04. ■ Archaeological/Historical
05. ☐ Coastal Zone
06. ☐ Economic
07. ☐ Fire Hazard
08. ☐ Flooding/Drainage
09. ■ Geologic/Seismic
10. ■ Jobs/Housing Balance
11. ☐ Minerals
12. ■ Noise
13. ■ Public Services
14. ☐ Schools
15. ☐ Septic Systems
16. ☐ Sewer Capacity
17. ☐ Social
18. ■ Soil Erosion
19. ☐ Solid Waste
20. ☐ Toxic/Hazardous
21. ☐ Traffic/Circulation
22. ■ Vegetation
23. ■ Water Quality
24. ■ Water Supply
25. ☐ Wetland/Riparian
26. ■ Wildlife
27. ■ Growth Inducing
28. ☐ Incompatible Land Use
29. ■ Cumulative Effects
30. ☐ Other ______

13. Funding (approx.) Federal $ N/A **State** N/A **Total $** N/A

14. Present Land Use and Zoning: Mixed uses encompassing the City of Desert Hot Springs and nearby unincorporated areas of Riverside County

15. Project Description The Master Plan forecasts future water use under two growth scenarios: growth based on data from MSWD and historical growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected systemwide demand through the year 2025: Wells = 17; Reservoirs = 11; Booster Pumps = 7; and pipeline = 177,000 lineal feet.

16. Signature of Lead Agency Representative ______ **Date** 7/20/06

Reviewing Agencies

- ☐ Resource Agency
- ☐ Boating / Waterways
- ☐ Conservation
- ■ Fish and Game
- ☐ Forestry
- ☐ Colorado River Board
- ■ Dept. Water Resources
- ☐ Reclamation
- ☐ Parks and Recreation
- ☐ Office of Historic Preservation
- ■ Native American Heritage Commission
- ☐ S.F. Bay Cons. And Dev't. Commission
- ☐ Coastal Commission
- ☐ Energy Commission
- ☐ State Lands Commission
- ☐ Air Resources Board
- ☐ Solid Waste Management Board
- ■ SWRCB: Sacramento
- ■ RWQCB: Region # 9
- ☐ Water Rights
- ■ Water Quality
- ☐ Caltrans District 8
- ☐ Dept. of Transportation Planning
- ☐ Aeronautics
- ☐ California Highway Patrol
- ☐ Housing and Community Dev't.
- ☐ Statewide Health Planning
- ☐ Health
- ☐ Food and Agriculture
- ☐ Public Utilities Commission
- ☐ Public Works
- ☐ Corrections
- ☐ General Services
- ☐ OLA
- ☐ Santa Monica Mountains
- ☐ TRPA
- ☐ OPR — OLGA
- ☐ OPR — Coastal
- ☐ Bureau of Land Management
- ☐ Forest Service
- ■ Other Dept. Of Health Services
- ☐ Other ______

For SCH Use Only:

Date Received at SCH ______	Catalog Number ______
Date Review Starts ______	Applicant ______
Date to Agencies ______	Consultant ______
Date to SCH ______	Contact ______ Phone ______
Clearance Date ______	Address ______

Notes: ______

INITIAL STUDY

FOR

MISSION SPRINGS WATER DISTRICT'S

WATER MASTER PLAN PROJECT

Prepared by:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Preparation assistance by:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

July 2006

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FIGURES

INITIAL STUDY ENVIRONMENTAL CHECKLIST FORM

This form and the descriptive information in the application package constitute the contents of an Initial Study pursuant to County Guidelines under Ordinance 3040 and Section 15063 of the State CEQA Guidelines.

PROJECT DESCRIPTION:

1.	Project title:	Mission Springs Water District Comprehensive Water System Master Plan Project
2.	Lead agency name and address:	Mission Springs Water District 66575 Second Street Desert Hot Springs, CA 92440
3.	Contact person and phone number:	Mr. Brent Gray (760) 329-6448
4.	Project location:	City of Desert Hot Springs, City of Palm Springs, County of Riverside, and Coachella Valley, California
5.	Project sponsor's name and address:	Mission Springs Water District 66575 Second Street Desert Hot Springs, CA 92440

6. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary support, or offsite features necessary for its implementation. Attach additional sheets if necessary.)

The genesis for the Mission Springs Water District (MSWD), located in Desert Hot Springs, California is a water well that was dug in the Desert Hot Springs area in or around 1913. Over the next 10 years, this well was subsequently lost or abandoned, and in the 1920s, a homesteader named Bill Anderson dug and drilled a new well to the depth of 170 feet. This well provided a steady and quality source of water. In 1933, L. W. Coffee, with the help of Earl Howard, a local well driller, drilled a new well at the Anderson Well site to a depth of 333 feet to meet the increased water supply needs of the area. This well provided the needed resources to begin development of the local area. Development continued to increase, and by 1940, a water distribution system was established to deliver water to various properties. Growth in the 1940s led to the development of the Old Mutual Water Company to provide groundwater to the community of Desert Hot Springs, California. In May 1948, the Old Mutual Water Company was incorporated into the Desert Hot Springs Water Company (DHSWC). In 1953, the Desert Hot Springs County Water District (DHSCWD) purchased the DHSWC and in 1987 renamed it the Mission Springs Water District to symbolize and reflect the fact that the local water supply source is from the Mission Creek Groundwater Sub-basin via deep wells.

The population growth in and around the Desert Hot Springs area has continued to increase at varying rates over the years. In 1953, the MSWD water system provided service to 504 customers that encompassed approximately one square mile. In 2004, the MSWD water system has grown to include over 9,600 customers covering approximately 135 square miles. Today, MSWD water supply and distribution system includes three separate and distinct water supply and distribution systems with the largest of these three systems serving the community of Desert Hot Springs and surrounding communities including West Garnet, located south of Interstate 10 (I-10) and West of Indian Avenue, and North Palm Springs. The two smaller systems; Palm Springs Crest System and West Palm Springs Village System, are located approximately 5 miles west of Desert Hot Springs. These two communities are located on the north side of I-10 abutting the Morongo Indian Reservation.

Figure 1 is a Regional Location Map showing the entire MSWD service Area. Figure 2 shows the Existing MSWD Water System.

The MSWD has and is experiencing very rapid population growth particularly over the last 5 years. This trend is expected to continue into the foreseeable future and therefore planning for new water supply will be very critical. MSWD has for many years recognized the need to properly plan and implement improvements to meet existing and future domestic water needs but in conjunction, provide and enhance water distribution system facilities that will maintain their function during seismic events. The purpose for the Comprehensive Water System Master Plan (Water Master Plan) is to build on the previous water resources planning efforts commissioned by the MSWD to address the District's current and future water supply, treatment, and distribution system needs over the next 25 years.

The Water Master Plan provides an evaluation of the existing water system and addresses the District's needs over the next 25 years. The comprehensive water system master plan goals and objectives are to:

a. Review and update population projects incorporating local/regional land use plans for a 25-year planning horizon period.

b. Review and update domestic water requirements based on historical water use and incorporating possible water conservation strategies.

c. Evaluate the need for additional water supplies to meet current and future water demands, including the importation of water from outside MSWD.

d. Evaluate water quality issues identified in other reports to determine current and future water treatment requirements.

e. Update an existing hydraulic model (H2Onet) of MSWD water supply and distribution system and calibrate the model using flow measurements taken from selected MSWD fire hydrants.

f. Conduct an evaluation of the existing water distribution system utilizing the calibrated hydraulic modeling software.

g. Evaluate existing water distribution system facilities to meet the current and projected 25-year Maximum Day water demands plus fire flow requirements and identify improvements (2010, 2015, 2020, and 2025) to address deficiencies.

h. Evaluate the seismic reliability of existing water facilities and recommend improvements for increasing the reliability of the system to remain operational after a seismic event.

i. Prepare a 20-year System Improvement Plan in 5-year increments that identifies improvements and related costs for recommended water supply and distribution facilities.

The Water Master Plan forecasts future water use under two growth scenarios: growth based on data from MSWD and historical growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected systemwide demand through the year 2025.

Wells	17
Reservoirs	11
Booster Pumps	7
Pipelines	177,000 lineal feet

Based on the analysis provided in the Water Master Plan, it is forecast that the MSWD district-wide system will require the following improvements:

SUMMARY OF FUTURE IMPROVEMENTS

Zone	Components	2010	2015	2020	2025
913	Supply Storage Boosters Distribution	none none none none	none none none 1,300 lf, 12-in	none none none none	none none none none
1070	Supply Storage Boosters Distribution	none (1) 2.50 mg tank none 3,200 lf, 16-in	none none (1) 1.3 MGD none	none none none none	none none none none
1240	Supply Storage Boosters Distribution	none (1) 1.5 mg none 12,900 lf, 16-in	none none none none	none none none none	none none none none

Zone	Components	2010	2015	2020	2025
1400	Supply	(2) 2,000 gpm	(3) 2,000 gpm	(2) 1,500 gpm	(1) 1,500 gpm
	Storage	(1) 5.0 mg (1) 1.0 mg	(1) 5.0 mg	none	(1) 5.0 mg
	Boosters	(1) 0.7 MGD	none	none	none
	Distribution	9,500 lf, 8-in 29,300 lf, 24-in	2,600 lf, 12-in 2,800 lf, 16-in 2,700 lf, 20-in	none	none
1530	Supply	(2) 2,000 gpm	(1) 1,500 gpm	none	none
	Storage	(1) 1.0 mg	(1) 4.0 mg	none	none
	Boosters	none	none	none	none
	Distribution	21,600 lf, 12-in 19,000 lf, 16-in 19,700 lf, 24-in	2,600 lf, 16-in 2,800 lf, 20-in	2,800 lf, 16-in	none
1630	Supply	(1) 1,500 gpm	(1) 1,500 gpm	none	none
	Storage	(1) 1.0 mg (1) 2.5 mg	none	none	none
	Boosters	(1) 1.5 MGD	none	none	none
	Distribution	7,600 lf, 12-in	none	none	none
1800	Supply	none	(1) 1,500 gpm	(1) 1,500 gpm	(1) 1,500 gpm
	Storage	none	(1) 1.0 mg	none	none
	Boosters	none	(1) 7.5 MGD	none	none
	Distribution	none	8,300 lf, 8-in 19,200 lf, 20-in	none	none
1975	Supply	none	none	none	none
	Storage	none	none	(1) 2.0 mg	none
	Boosters	none	none	(1) 3.5 MGD	none
	Distribution	none	none	8,200 lf, 12-in	none
2155	Supply	none	none	none	none
	Storage	none	none	none	none
	Boosters	none	none	none	(1) 3.5 MGD
	Distribution	none	none	none	200 lf, 16-in
Cottonwood (1630-C)	Supply	(1) 1,500 gpm	none	none	none
	Storage	(1) 1.0 mg	none	none	none
	Boosters	(1) 2.2 MGD	none	none	none
	Distribution	none	none	3,500 lf, 20-in	none
Woodridge (1800-W	Supply	none	none	none	none
	Storage	0.5 mg	none	none	none
	Boosters	none	none	none	none
	Distribution	none	none	none	none

The above facilities are also summarized in the WMP on page 2.13. Figure 3 of this document shows the locations of the facilities in the Proposed Water Master Plan System.

In addition to these water system improvements, the Water Master Plan also identifies the potential use of recycled water from its treatment plants and the use of imported water for direct treatment and inclusion in its distribution system or basin recharge. At this time, the District has not determined if these options will be implemented. If any or all these alternative will be utilized, the EIR will evaluate the potential environmental effects of utilizing these water resources.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	■ Geology / Soils
☐ Hazards & Hazardous Materials	■ Hydrology / Water Quality	■ Land Use / Planning
☐ Mineral Resources	■ Noise	■ Population / Housing
■ Public Services	☐ Recreation	☐ Transportation / Traffic
■ Utilities / Service Systems	■ Mandatory Findings of Significance	

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

☐ The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because adequate mitigation has been provided to reduce potential impacts to a less than significant level. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it may analyze only the effects that remain to be addressed.

☐ Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Tom Dodson — 7/20/06

Prepared by
Tom Dodson & Associates — Date

7/20/06

Mission Springs Water District
Lead Agency — Date

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
I.	**AESTHETICS** – Would the project:				
a.	Have a substantial adverse effect on a scenic vista?	❑	■	❑	❑
b.	Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	❑	■	❑	❑
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	❑	■	❑	❑
d.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	❑	■	❑	❑

SUBSTANTIATION:

Visual resources include natural and man-made features that give a particular environment its aesthetic qualities. Criteria used in the analysis of these resources include visual sensitivity, which is the degree of public interest in a visual resource and concern over adverse changes in its quality. Visual sensitivity is categorized in terms of high, medium or low levels.

High visual sensitivity exists in areas where views are rare, unique, or in other ways special, such as in remote or pristine environments. High-sensitivity views would generally include landscapes that have landforms, vegetative patterns, water bodies, or rock formations of unusual or outstanding quality.

This evaluation relies extensively on the aesthetics/scenic resources/open space and light and glare evaluations contained in the general plans for the following: the cities of Palm Desert and Palm Springs and the County of Riverside. The evaluation focuses on the potential aesthetic and visual resource impacts from implementing the Water Master Plan.

Implementation of the Water Master Plan will include installing new water infrastructure systems to provide water services in a more efficient and effective manner to support development of existing land uses consistent with the existing general plans and zone designations. The aesthetic and visual resource issues of focus in this evaluation are related to the alterations in the existing visual character of the visual setting that exists within the Project Area or views to external areas that may be impacted from implementing the plan.

The preservation and enhancement of the positive visual aspects, as well as the assurance that new development is aesthetically pleasing, are key features of the general plans within the project area. New construction has the potential to conflict with the views of and from existing neighborhoods and structures. Determination of the visual impact of new development will ultimately have to be made at the specific project level, but guidelines are discussed and established below to ensure that future Water Master Plan facilities and activities do not cause significant adverse aesthetic impacts.

a-c. Future facilities proposed by these master plans will be underground (pipes) and aboveground in the form of typical water facilities structures, such as reservoirs, pump stations, wells, and possibly water treatment facilities. The proposed project facilities and activities are not forecast to cause any significant adverse impacts to a scenic vista or scenic highway because these facilities will not be of a sufficient size to adversely impact such vistas or scenic highways.

The area encompassed by the proposed Water Master Plan is located within the City of Desert Hot Springs, unincorporated land in the County of Riverside and the sparsely population northerly portion of the City of Palm Springs. The City Desert Hot Springs General Plan (DHSGP) does not specifically address State Scenic Highway issues. The City Palm Springs General Plan (PSGP) does address scenic corridors and highways, but none are located within or near the Water Master Plan area. The Riverside County General Plan includes maps and information that address the project area regarding scenic highways and resources. The elements of the County General Plan and the Western Coachella Area Plan of the Riverside County General Plan, which includes the project area, are referenced throughout this document when relevant. According to Figure 9 of the Riverside County General Plan Western Coachella Valley Area Plan (hereafter, WCVAP), Highway 62 is a State Designated Scenic Highway. Highway 62 is located within the western portion of the area covered by the Water Master Plan. Development has and is continuing to occur along the portion of Highway 62 within the Water Master Plan area. Existing urban development is located adjacent to Highway 62 and large residential development is under construction both easterly and westerly of the highway in the vicinity of Pierson Boulevard. These new developments along with existing development are forecast to over power the visual effects of the Water Master Plan facilities (wells, reservoirs, etc.) in the vicinity of Highway 62.

The most significant visual resources are the surrounding hills and mountains and the open landscape that occurs in the Water Master Plan area. The activity with the highest potential to conflict with local agency design guidelines is construction disturbance of the landscape. Such disturbance can be reduce to an acceptable level by landscaping or revegetating disturbed areas (pipelines and areas around aboveground structures) either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area.

The proposed facilities will utilize a combination of existing facilities, underground systems and new facility construction both above and below ground. Installation of surface facilities has a potential to modify the existing view or visual setting at future specific project sites which could cause a negative visual impact. Mitigation measures provided below can ensure that construction disturbance is mitigated by replacing vegetation and controlling potential negative aesthetic effects due to landscape scarring. For above ground structures, such as wells, reservoirs, treatment plants, etc., compliance with District and local agency design guidelines will ensure that new facilities do not cause significant negative aesthetic effects. Compliance with the measures provided below will also reduce potential impacts to a less than significant level.

d. According to Figure 6 of the WCVAP, the site is located within the Mt. Palomar Lighting Policy Area Zone B. The following policies apply:

WCVAP 15.1 *Where outdoor lighting is proposed, require the inclusion of outdoor lighting features that would minimize the effects on the nighttime sky and wildlife habitat areas.*

WCVAP 15.2 *Adhere to the lighting requirements of Riverside County for standards that are intended to limit light leakage and spillage that may interfere with the operations of the Palomar Observatory.*

Some of the proposed facilities will require the installation of night lighting, possibly including areas where little or no night lighting currently exists. Glare from new light fixtures that may be installed as part of proposed master plans improvements have a potential to cause a significant negative impact upon adjacent uses, including sensitive receptors such as residential, rural or wildlife habitat portions of the project area. Such impacts can be fully mitigated by implementing measures for street lighting and down shielded commercial lighting which are generally an accepted element of urbanization. Lighting can increase nighttime visibility and thereby achieve a greater degree of safety for motorists, residents, and business owners.

Future specific projects will include facilities located at developed and undeveloped sites that may require the installation of infrastructure improvements that require lighting. Night lighting installed in support of future projects will be mitigated to a non-significant level consistent with existing regulations controlling lighting requirements in each jurisdiction by controlling the amount of night light (lumens), by the positioning of lights, by selecting the appropriate type of lighting for the specific site and location, and by directing the lights through use of hoods and other directional controls to comply with the Mt. Palomar Lighting Policy Area Zone B.

To reduce potential impacts to visual resources (aesthetics and light and glare), the following measures shall be implemented:

I-1 ***All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is completed, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.***

I-2 ***Where facilities are proposed to be located adjacent to scenic highways, corridors or other scenic features identified in local agency planning documents, project implementation will conform with design requirements established in the applicable planning documents.***

I-3 ***Where facilities will disrupt views from occupied areas with significant scenic vistas, a visual simulation analysis shall be performed of the facility's impact on the important view. If the analysis identifies a significant impact on a scenic vista, the facility shall be relocated, if feasible, redesigned to reduce the impact to a non-significant level, or a subsequent environmental evaluation shall be prepared.***

I-4 ***When above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility.***

I-5 ***All utilities for project facilities shall be placed underground unless such undergrounding is not technically feasible.***

I-6 ***Future project review and implementation shall implement the following:***

- ***Use of low pressure sodium lights where security needs require such lighting to minimize impacts of glare.***
- ***Height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.***
- ***Directing light and shielding shall be used to minimize off-site illumination.***
- ***No light shall be allowed to intrude into sensitive light receptor areas.***

I-7 All permanent lighting associated with the project will be directed towards the ground (shielded from the sky) and comply with the Mt. Palomar Lighting Policy so that light or glare does not fall off the property boundary.

Occasional, temporary lighting may be used during the construction phase in emergency situations, but it must comply with established requirements to ensure that the lighting does not conflict with adjacent residents or with operations at the Mt. Palomar Observatory. No further mitigation is required because of the short term nature the temporary lighting and the measures regarding possible temporary lighting must be implemented to protect adjacent uses from light and glare and to protect astronomical observing activities from night lighting. The issues of aesthetics, visual resources, light and glare will not be a topic evaluated in the PEIR.

The aesthetics and visual resources evaluation presented above indicates that although the proposed project has a potential to cause changes in visual settings, no significant adverse impact to aesthetics or visual resources are forecast to occur based on implementation of mitigation measures. Therefore, no significant, adverse aesthetic, visual resource or light and glare impacts are forecast to occur if the proposed project is implemented as outlined above. The issues of aesthetics, visual resources, light and glare will not be a topic evaluated in the PEIR.

II. **AGRICULTURE RESOURCES** – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland) to non-agricultural use?	❑	❑	❑	■
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	❑	❑	❑	■
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	❑	❑	❑	■

SUBSTANTIATION:

a-c. Exhibit III-1 of City of Desert Hot Springs General Plan shows that no land within the City is zoned for agricultural use. Figure OS-2 of the County General Plan Open Space element shows that the Water Master Plan is not located on Farmland of Statewide Importance, Prime Farmland, Unique Farmland, Farmland of Local Importance or Grazing Land. The City of Palm Springs General Plan does not address farmlands or agricultural resources. However, OS-2 of the County General Plan does overlap the City of Palm Springs and does not identify any agricultural lands or resources.

No agricultural activities or resources are known to exist within the area covered by the Water Master Plan area. No agricultural resources will be affected by this project. No further evaluation or mitigation is required. The issue of agricultural resources will not be a topic of evaluation in the PEIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
III.	**AIR QUALITY** – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?	■	❑	❑	❑
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	■	❑	❑	❑
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	■	❑	❑	❑
d.	Expose sensitive receptors to substantial pollutant concentrations?	■	❑	❑	❑
e.	Create objectionable odors affecting a substantial number of people?	■	❑	❑	❑

SUBSTANTIATION:

a-e. Implementation of the Water Master Plan has the potential to generate a substantial amount of air pollutants within urbanized areas during the construction and operations phases. Due to the potential for significant adverse air quality impacts from construction and operation of the facilities proposed by the Water Master Plan, potential air quality impacts will be a topic of evaluation in the PEIR being prepared for the project.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES** – Would the project:				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	❑	❑	❑
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	❑	❑	❑
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	■	❑	❑	❑
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	■	❑	❑	❑
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	■	❑	❑	❑
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	■	❑	❑	❑

SUBSTANTIATION:

a-f. Implementation of the projects identified in the Water Master Plan have the potential to adversely affect biological resources. Potential impacts will be associated with alteration of sensitive habitat and impact to listed plant and animal species through implementation of project's identified in the Water Master Plan. Potential impacts to biological resources will be topic evaluated in the PEIR.

V. **CULTURAL RESOURCES** – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	■	❑	❑	❑
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	■	❑	❑	❑
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	■	❑	❑	❑
d. Disturb any human remains, including those interred outside of formal cemeteries?	■	❑	❑	❑

SUBSTANTIATION:

a-d. The area covered by the Water Master Plan is known to contain sensitive areas for cultural resources. Throughout the project area there is a significant potential for encountering both surface and subsurface (buried) cultural resources. Implementation of the projects identified in the Water Master Plan will result in construction and excavation activities that could encounter sensitive resources. Therefore, the topic of potential affects to cultural resources (archaeologic and paleontologic) will be evaluated in the PEIR prepared for this project.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
VI.	**GEOLOGY AND SOILS** – Would the project:				
a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	■	❑	❑	❑
	• Strong seismic ground shaking?	■	❑	❑	❑
	• Seismic-related ground failure, including liquefaction?	■	❑	❑	❑
	• Landslides?	■	❑	❑	❑
b.	Result in substantial soil erosion or the loss of topsoil?	■	❑	❑	❑
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	■	❑	❑	❑
d.	Be located on expansive soil, as defined in Table 18 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	■	❑	❑	❑
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	❑	❑	❑	■

SUBSTANTIATION:

a-d. The project area is located within a seismically active area. Three known fault zones exist within the project area. It is anticipated that facilities proposed by the Water Master Plan will be subjected to strong seismically induced groundshaking. Construction and operation of proposed facilities have the potential to result in substantial soil erosion.

Based on the potential for significant impacts associated with geologic hazards and soil constraints, these issues will be topics of evaluation in the PEIR prepared for this project.

e. The Water Master Plan being evaluated does not propose the use of septic tanks or other onsite subsurface disposal systems. Therefore the issue of soil not being capable of adequately supporting septic or other alternative wastewater disposal systems will not be a topic evaluated in the PEIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
VII.	**HAZARDS AND HAZARDOUS MATERIALS –** Would the project:				
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	■	☐	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	■	☐	☐
d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	■	☐	☐
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	■	☐	☐
h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	■	☐

SUBSTANTIATION:

a-c. The projects will create a less than significant hazard to the public or the environment through the routine transport and use of hazardous materials. In the short term, the only hazardous materials that will be used or stored by the project are petroleum products used by construction equipment. Unmanaged releases of hazardous materials during construction are readily controlled to a non-significant level of hazard through control or remediation of accidental releases of petroleum products.

The following mitigation measure will be implemented to prevent any significant hazard through the "routine transport, use or disposal" of petroleum products during construction.

VII-1 ***If petroleum products are accidentally released to the environment during any phase of construction, MSWD shall require the area of contamination to be defined; shall require the removal of any contaminated soil or material from the contaminated area; and ensure that any area exposed to accidentally released contaminants are remediated to a threshold that meets regulatory requirements established by law or agencies overseeing the remediation.***

Operation of this facility will result in the use and storage of chlorine and sodium or calcium hypochlorite. The transport use and storage of these chemicals are controlled by state and federal regulations. These regulations have been adopted by the regulatory agencies to reduce the potential risk of exposure of people to these substances to acceptable levels of risk. Permitting of the use of such substances requires that adequate containment of the substances is provided to reduce the potential for release to the environment to acceptable levels. These regulatory agencies have determined that compliance with the regulations governing the transport, storage, and use of these substances is adequate to mitigate the potential risk of release to a non-significant level. Compliance with applicable regulations and the securing of required permits is a requirement of project implementation.

d. Based on available plans, none of the projects are located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment. The following mitigation measure will ensure that final engineering plans for future facilities will be reviewed to verify that no such sites are affected, or that if they are affected, appropriate measures will be taken to ensure that exposing such contaminated sites will not cause any safety hazard to humans working in such areas.

VII-2 ***Prior to initiating construction on any future District facility, the District will ensure that the various computer data bases are checked to determine whether any contaminated locations are known to occur within the construction footprint of the facility. If a known location with contamination is identified, the District shall proceed with construction only after conferring with a licensed professional (such as an industrial hygienist) and identifying any specific construction and employee protection measures that will be observed if the contamination is encountered during construction activities. The performance standard shall be the protection of all employees involved in construction from health hazards associated with the type of contamination that may be encountered.***

e&f. Per Figure C-6 of the Circulation Element of the County General Plan and Figure 5 of WCVAP, the project site is not located within an airport influence area. No impact is forecast and no mitigation is required.

g. Major evacuation routes are located within the Water Master Plan area along major interstates, freeways and major north-south and east-west roads. The proposed project activities and facilities have no potential to permanently impact emergency evacuation plans or emergency response plans over the long-term. In the short-term, construction activities related to pipeline and other infrastructure system improvements located within existing road rights-of-way have a potential to interfere with such plans. Mitigation is identified below to ensure that roads under construction remain passable or that alternative routes are available both during daily construction and at the end of the day after construction is completed. This measure ensures that the proposed project will not significantly interfere with the existing emergency response plans or the emergency evacuation plans maintained by the local jurisdictions.

VII-3 During construction activities within existing road rights-of-way or other easements where continuous access is required, a road operation management plan shall be prepared and implemented. Continuous access shall be provided to all sites that may require emergency access and potential safety hazards on roadways shall be controlled to the maximum extent feasible.

At a minimum this plan shall define how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of traffic at all times, but particularly during periods of high traffic volumes; adequate signage and other controls, including flagpersons, to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; and at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining.

h. The projects will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. Due to sparse nature of the vegetation in the project area, the projects are not located in proximity to areas where wildland fires will occur. No mitigation measures are required.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
VIII.	**HYDROLOGY AND WATER QUALITY** – Would the project:				
a.	Violate any water quality standards or waste discharge requirements?	■	❑	❑	❑
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	■	❑	❑	❑
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?	■	❑	❑	❑
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?	■	❑	❑	❑
e.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	■	❑	❑	❑
f.	Otherwise substantially degrade water quality?	■	❑	❑	❑
g.	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	❑	❑	❑	■
h.	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	■	❑	❑	❑
i.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	■	❑	❑	❑
j.	Inundation by seiche, tsunami, or mudflow?	❑	❑	❑	■

SUBSTANTIATION:

a-f &
h-i. Implementation of the Water Master Plan will include the development of additional ground water extraction wells, and additional water storage and transmission facilities. The Water Master Plan also identifies the use of imported water for percolation, ground water recharge and possibly treatment for District use in the MSWD water distribution system. In addition, the Water Master Plan identifies the potential use of recycled water to help meet the projected future demand for water in the District's service area.

Implementation of any or all of these options has the potential to affect the quality and quantity of water in the MSWD service area. The construction of certain water facilities could also affect existing drainage and flooding regimes. Therefore, the issues of water quantity, water quality and alteration of existing drainage and flooding patterns will be evaluated in the PEIR prepared for this project.

g&j. The proposed project does not include the development of any new housing. Therefore, this project has no potential to place housing within a 100-year flood hazard area.

The MSWD service area is located over 100 miles from the Pacific Ocean. No large water bodies are located upstream of the MSWD service area. No human occupancy structures are associated with this project which could be affected by mudflow from adjacent hillsides or other flooding concerns. Because no new housing is associated with this project and no large water bodies exist in the project area, no impact be identified and no mitigation is assigned. The topics of placing housing within 100-year flood hazard zones or exposing people to inundation by seiche, tsunami or mudflow will <u>not</u> be evaluated in the PEIR prepared for this project.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
IX.	**LAND USE AND PLANNING** – Would the project:				
a.	Physically divide an established community?	☐	☐	■	☐
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	■	☐	☐	☐
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	■	☐	☐	☐

SUBSTANTIATION:

a. The facilities identified in the Water Master Plan are not of sufficient size to divide an established community. The largest above structures will be water storage reservoirs and, possibly, a surface water treatment unit which will have a maximum diameter of about 150 feet and height of less than 40 feet. Water treatment units are typically about two stories in height and occupy an area of about 150 feet x 150 feet. Such facilities are common in urban areas and do not adversely affect established communities. Because no significant impact can be identified, no mitigation is required. This issue will <u>not</u> be evaluated in the PEIR prepared for this project.

b&c. The facilities proposed by this Water Master Plan has some potential to divide a community. The projects proposed in the Water Master Plan have some potential to conflict with habitat or natural conservation plans and result in changes to land use and land use designations. Due to these potential conflicts with land use plans, including the issue of growth inducement, land use and planning will be a topic of evaluation in the PEIR prepared for this project.

X. **MINERAL RESOURCES** – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	❑	❑	❑	■
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	❑	❑	❑	■

SUBSTANTIATION:

a&b. According to the City of Desert Hot Springs General Plan Open Space and Conservation Element, important mineral deposits are found in the region as a whole. However, within the floor of the Coachella Valley, which is the area included in the Water Master Plan, the only known mineral deposits are sand, gravel and construction aggregates. This determination is consistent with the Minerals Element of the City of Palm Springs General Plan and the Open Space and Conservation element of the County of Riverside General Plan. The Water Master Plan encompasses an area designated by the State Mining and Geology Board as MRZ-3, indicating that the available database is inadequate to determine whether significant mineral resources are present. However, the primary source of sand, gravel and aggregate is recent alluvium found in active flood channels and drainages. Alluvium found in other portions of the valley floor may also be of adequate quality for use as construction material.

The facilities proposed by the Water Master Plan are not located within active channels. Reservoirs, pump stations, wells, etc. will located outside active channels. Some underground pipelines will cross beneath active channels but will occupy a minimal area beneath the channel and no significant potential for lose of resources will result. In general, none of the facilities proposed by the Water Master Plan have a potential to result in a permanent lose of any mineral resource. Should it be determined that the value of the minerals is greater than the water facilities, the water facilities can be moved to another location and, therefore, not result in a permanent lose of availability of any mineral resources. Based on information contained in the cities and County's general plans and the Water Master Plan, no significant adverse effects to the availability of mineral resources will result and no mitigation is required. The topic of potential adverse effects on Mineral Resources will not be evaluated in the PEIR prepared for this project.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
XI.	**NOISE** – Would the project result in:				
a.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	■	☐	☐	☐
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	■	☐	☐	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

SUBSTANTIATION:

a-d. Implementation of the projects proposed by the Water Master Plan have the potential to generate noise in both the long and short term. Short-term noise will be associated with construction activities. Long-term noise will be associated with the operation of the facilities constructed (motors, equipment, vehicles, etc.) including the potential for locating facilities within high and sensitive noise areas. Based on the potential for significant noise impacts to result from implementing the projects proposed by the Water Master Plan, noise will be a topic of evaluation in an PEIR prepared for the project.

e&f. The area covered by the Water Master Plan is not within an airport land use plan. The nearest airports are the Palm Springs International Airport located about 5 miles southerly of the southerly boundary of the Water Master Plan. The Banning Municipal Airport is located over 10 miles westerly of the westerly boundary of the Water Master Plan boundary. Adoption and implementation of the Water Master Plan does not include the development of any human occupancy structures. Therefore, this project has no potential to expose people residing or working within the project area to excessive airport-related noise levels. No impact can be identified an no mitigation required. The topic of airport-related noise issues will <u>not</u> be a topic of evaluation in the PEIR.

XII. POPULATION AND HOUSING – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	■	❑	❑	❑
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	■	❑	❑	❑
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	■	❑	❑	❑

SUBSTANTIATION:

a-c. Typically, the provision of an adequate supply of water is not considered growth inducing. Such facilities generally accommodate growth by providing the needed services and do not displace housing or people. However, due to the large scope of the facilities and services proposed by the Water Master Plan, potential impacts to population and housing will be a topic evaluated in the PEIR prepared for this project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
XIII. PUBLIC SERVICES – Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?	■	❑	❑	❑
b. Police protection?	■	❑	❑	❑
c. Schools?	■	❑	❑	❑
d. Parks?	■	❑	❑	❑
e. Other public facilities?	■	❑	❑	❑

SUBSTANTIATION:

a-e. The Water Master Plan proposes improvements to MSWD water systems that could result in physical changes to existing land uses and change land use designations. These changes will result if the provision of a more efficient and effective water supply system indirectly results in revisions to land uses and land use designations. As a result, implementation of the projects proposed have the potential to increase the demand for public services in the affected area and the issue of public services will be a topic of evaluation in an PEIR prepared for the project.

XIV. RECREATION –	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	■	☐

SUBSTANTIATION:

a&b. The demand for recreational opportunities is typically associated with the population of an area. The greater the population or the growth in population, the greater the demand for recreational opportunities.

The MSWD, as the area's water service purveyor, is required to provide customers within its service area with an adequate supply of domestic water. The amount of water consumed is determined by the type and density of development within the service area. The type and density of land uses within the service area are established by local planning documents such as the general plans and zoning regulations which establish the demand for these services. The provision of these services is viewed as growth accommodating not growth inducing in that the demand drives the need to provide the service.

While the Water Master Plan provides a schedule for development of proposed facilities, actual implementation will be based on demand for water in the service area. MSWD forecasts that implementation of the proposed projects could result in the need for up to 50 new employees to operate the new facilities proposed. MSWD anticipates that most of these new jobs will be filled from the local workforce and will not induce a substantial number of people to move into the area.

Based on the above, it is concluded this project has no potential to substantially increase the demand for parks or other recreational opportunities or affect any existing such facilities or opportunities. No mitigation is required and recreation will not be a topic evaluated in the PEIR.

XV. TRANSPORTATION / TRAFFIC – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	■	☐
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	■	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	■	☐	☐
e. Result in inadequate emergency access?	☐	■	☐	☐
f. Result in inadequate parking capacity?	☐	☐	☐	■
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	■

SUBSTANTIATION:

a,b
&d. In the short term, construction activities will result in no more than a maximum of up to 100 additional vehicle trips on any given day by construction personnel and the delivery of construction materials and equipment in the Water Master Plan study area. These trips will be short term (a few months for any given construction activity) and isolated to roads affected by construction activities. This short-term increases in traffic are not considered substantial in relation to existing traffic loads, road capacities or result in congestion at intersections.

No new roads or existing road redesign is proposed by the Water Master Plan. No new roadway design hazards will result.

Construction activities have a potential to create short-term hazards to motorists. This results when pipelines or other facilities are placed within or adjacent to public roads. Again, these construction activities could result in lane closures or detours for limited periods of time at any given location. This, however, is not an unusual condition for construction activities in roads. Implementation of Mitigation Measure VII-3 will reduce potential short-term impacts to a less than significant level. To mitigate potential long-term impacts to the transportation/circulation system, the following measure shall be implemented:

XV-1 MSWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Desert Hot Springs/Palm Springs and/or County of Riverside standards.

Implementation of the above measures are judged adequate to reduce potential hazards to traffic, pedestrians, bicyclists, and congestion to a non-significant level.

Over the long term, implementation of the Water Master Plan will not directly increase traffic volumes or affect existing roadways. Facilities proposed by the Water Master Plan will accommodate approved development that will increase traffic that could adversely affect level of service standards. However, traffic generated by projects serviced by facilities identified in the Water Master Plan has been evaluated during the environmental review process for those projects. Implementation of the Water Master Plan will not alter those traffic projections, change the severity of impact forecasts or require mitigation beyond that already required of the projects which will generate the additional traffic.

Operation of the facilities proposed by the Water Master Plan will not substantially increase traffic within the MSWD service area. District staff will visit the wells, reservoirs, percolation basins and pump station to inspect and monitor the facilities on a routine basis. The District forecasts that no more than two trips to the facilities will occur on any given day. Such trip generation is not sufficient to result in any substantial adverse effects on the area's transportation/circulation system.

Operation of a water treatment facility could result in up to 20 vehicle trips on a given day to deliver treatment material (resins, filter materials, etc), to remove wastes and to staff such a facility. While the exact location of a treatment facility has not been selected, it is forecast that the addition of about 20 vehicle trips on a given day will not result in a significant adverse effect on the area's transportation and circulation system.

The only potential impacts to the transportation system are associated with long- and short-term roadway hazards associated with implementing the individual projects contained in the Water Master Plan. Implementation of Mitigation Measures VII-3 and XV-1 will reduce the potential for both short- and long-term impacts to a less than significant level.

The issue of impacts to the Transportation/Circulation system will <u>not</u> be a topic evaluated in the PEIR prepared for this project.

c. No airports are located within or near the Water Master Plan study area. The nearest airport is in Palms Springs and is located several miles from the nearest portion of the Water Master Plan area. Implementation of the projects in the Water Master Plan will not generate an increase in air traffic volumes or affect air traffic patterns. No impact can be identified and no mitigation is required and this topic will <u>not</u> be evaluated in the PEIR.

e. Implementation of projects proposed by the Water Master Plan will not result in any long-term affects on emergency access with implementation of Mitigation Measure XV-1. Short-term construction impacts will be reduced to a less than significant level with implementation of Mitigation Measure VII-3. No further mitigation is required and the topic of emergency access will <u>not</u> be evaluated in the PEIR.

f. The only long-term parking needs that will be generated by implementing projects proposed by the Water Master Plan will those to accommodate MSWD staff during visits to reservoirs, treatment plants, pump stations, etc. Standard design and construction of these facilities includes provision of adequate parking on the sites. In the short term, construction activities can generate the need for parking of construction-related vehicles. Implementation of Mitigation Measure VII-3 will reduce any potential for impact to a less than significant level. Parking will not be an issue evaluated in the PEIR prepared for this project.

g. The proposed above ground infrastructure will not be located within roadway easements, and the underground pipelines will not adversely affect any alternative or other transportation plans. Implementation of Mitigation Measure VII-3 and XV-1 will reduce potential impacts to a non-significant level. No further mitigation is required and this issue will not be evaluated in the PEIR.

XVI. UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	■	☐	☐	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	■	☐	☐	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	■	☐	☐	☐
f. Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	■	☐	☐	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	■	☐	☐	☐

SUBSTANTIATION:

a-g. The projects proposed by the Water Master Plan could result in physical changes to existing land uses and changes to land use designations which could increase the demand for utilities. Therefore, the topic of potential impacts to utilities and utility systems will be a topic of evaluation in an PEIR prepared for this project.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE –

	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	☐	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

SUBSTANTIATION:

a. Implementation of the proposed Water Master Plan has the potential to adversely affect biological and cultural resources. Therefore these issues will be evaluated in an PEIR prepared for this project.

b. Implementation of the Water Master Plan will result in impacts that are potentially both individually and cumulatively significant. Therefore, these impacts will be evaluated in the PEIR prepared for this project.

c. The projects proposed by the Water Master Plan are water system improvements. The goal of the project is to provide customers of MSWD with a reliable, adequate supply of domestic water that meets current and anticipated future water quality standards. As such, implementation of the projects identified in the Water Master Plan are viewed as a benefit to human beings and will not result in substantial adverse effects on humans either directly or indirectly.

MITIGATION MEASURES

I-1 All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is completed, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.

I-2 Where facilities are proposed to be located adjacent to scenic highways, corridors or other scenic features identified in local agency planning documents, project implementation will conform with design requirements established in the applicable planning documents.

I-3 Where facilities will disrupt views from occupied areas with significant scenic vistas, a visual simulation analysis shall be performed of the facility's impact on the important view. If the analysis identifies a significant impact on a scenic vista, the facility shall be relocated, if feasible, redesigned to reduce the impact to a non-significant level, or a subsequent environmental evaluation shall be prepared.

I-4 When above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility.

I-5 All utilities for project facilities shall be placed underground unless such undergrounding is not technically feasible.

I-6 Future project review and implementation shall implement the following:

- Use of low pressure sodium lights where security needs require such lighting to minimize impacts of glare.
- Height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.
- Directing light and shielding shall be used to minimize off-site illumination.
- No light shall be allowed to intrude into sensitive light receptor areas.

I-7 All permanent lighting associated with the project will be directed towards the ground (shielded from the sky) and comply with the Mt. Palomar Lighting Policy so that light or glare does not fall off the property boundary.

VII-1 If petroleum products are accidentally released to the environment during any phase of construction, MSWD shall require the area of contamination to be defined; shall require the removal of any contaminated soil or material from the contaminated area; and ensure that any area exposed to accidentally released contaminants are remediated to a threshold that meets regulatory requirements established by law or agencies overseeing the remediation.

VII-2 Prior to initiating construction on any future District facility, the District will ensure that the various computer data bases are checked to determine whether any contaminated locations are known to occur within the construction footprint of the facility. If a known location with contamination is identified, the District shall proceed with construction only after conferring with a licensed professional (such as an industrial hygienist) and identifying any specific construction and employee protection measures that will be observed if the contamination is encountered during construction activities. The performance standard shall be the protection of all employees involved in construction from health hazards associated with the type of contamination that may be encountered.

VII-3 During construction activities within existing road rights-of-way or other easements where continuous access is required, a road operation management plan shall be prepared and implemented. Continuous access shall be provided to all sites that may require emergency access and potential safety hazards on roadways shall be controlled to the maximum extent feasible.

XV-1 MSWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Desert Hot Springs/Palm Springs and/or County of Riverside standards.

REFERENCES

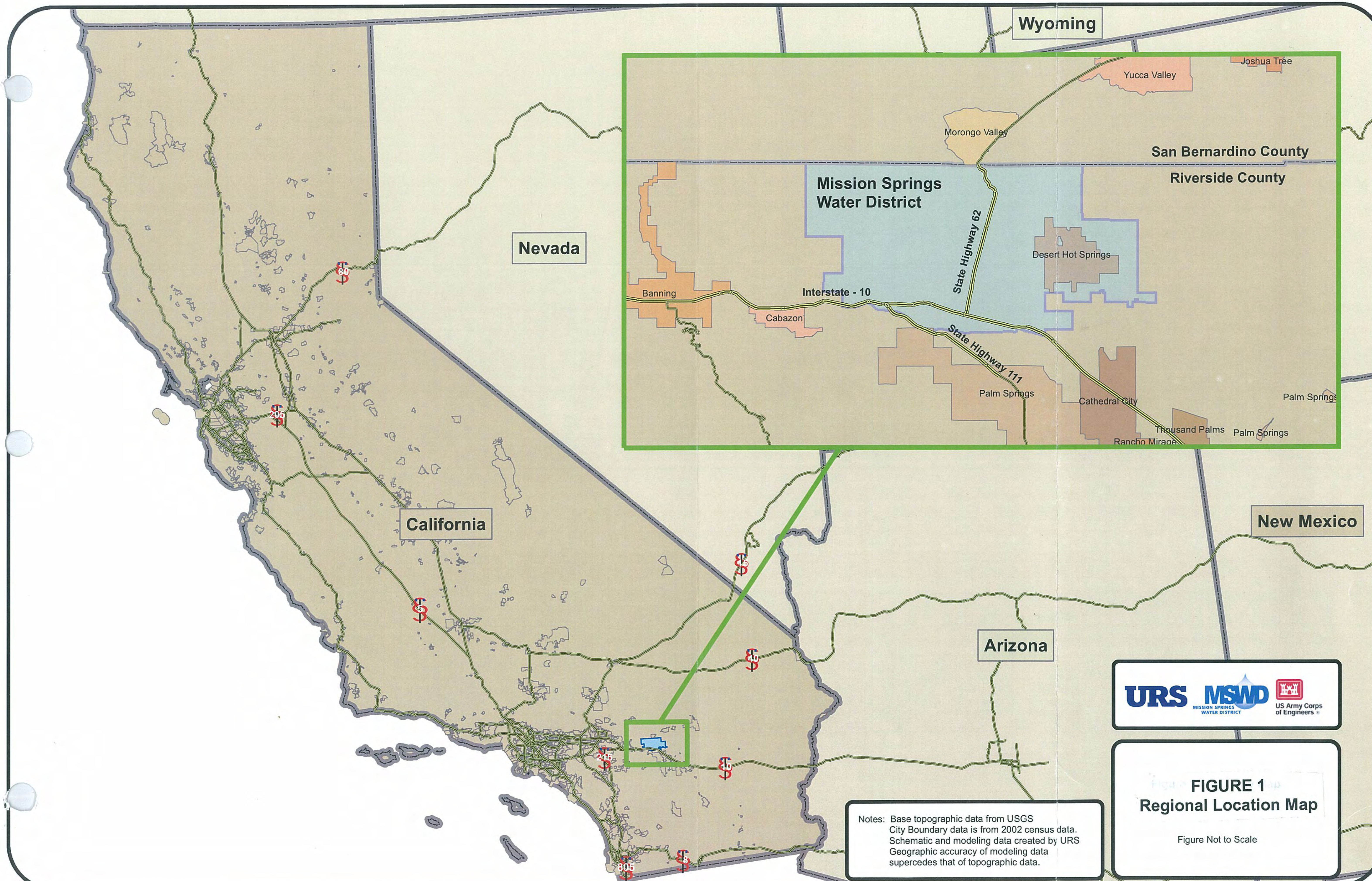
City of Desert Hot Springs, General Plan.

Mission Springs Water District, 2005 Project discussions with staff:
- Arden Wallum, General Manager
- Brent Gray, Director of Operations – Wastewater

City of Palm Springs, General Plan.

County of Riverside, General Plan

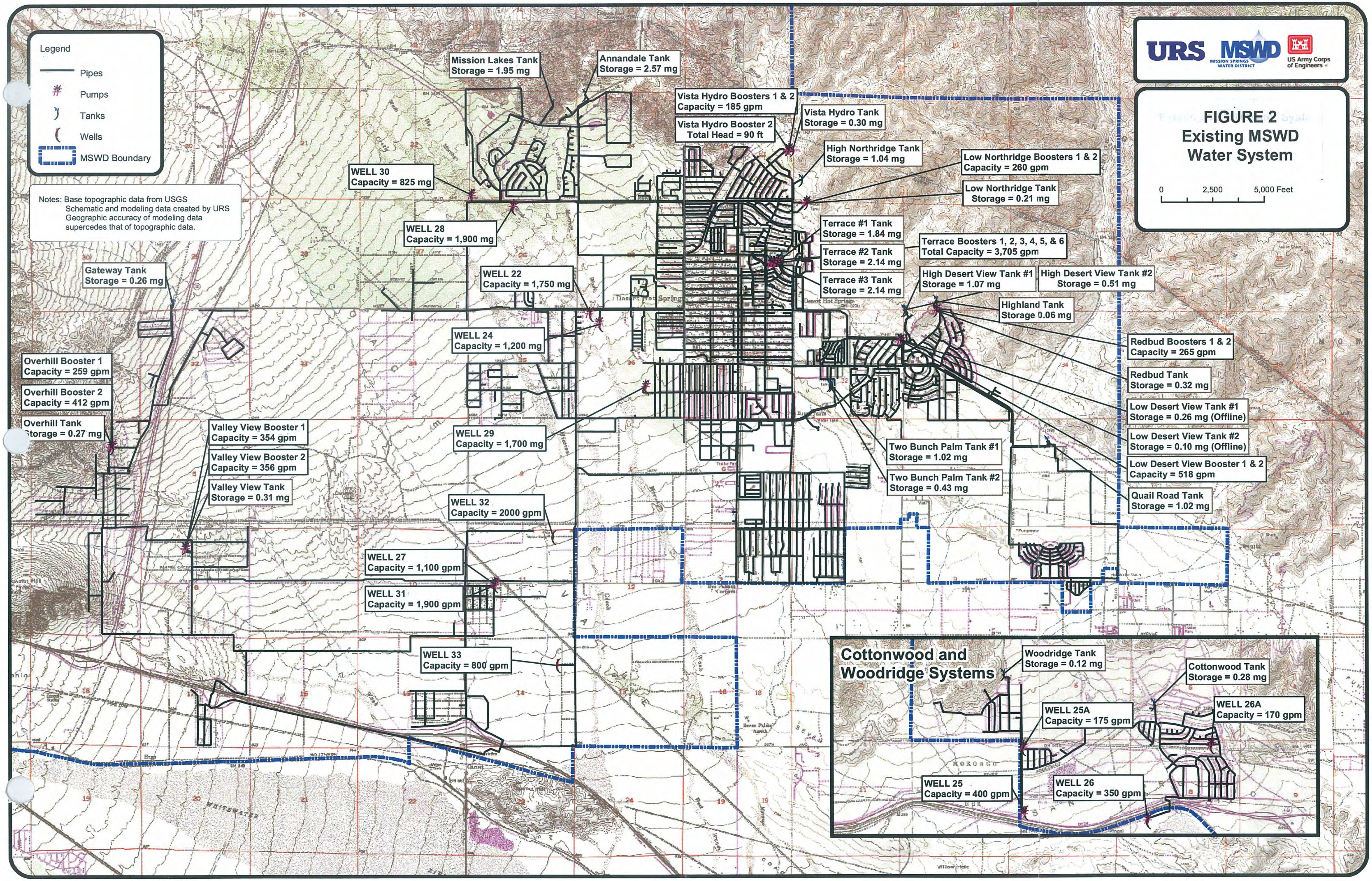
FIGURES

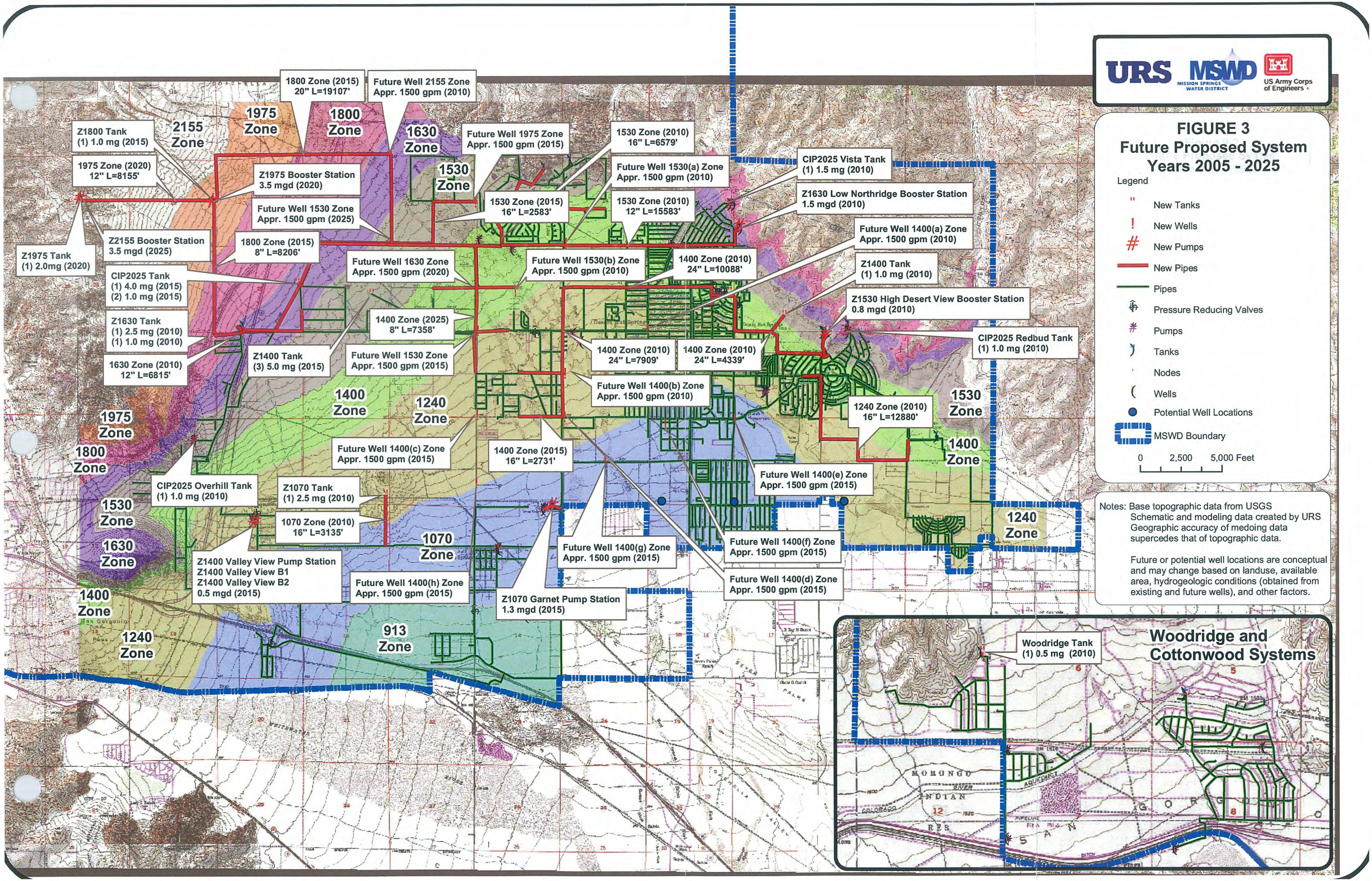


Notes: Base topographic data from USGS
City Boundary data is from 2002 census data.
Schematic and modeling data created by URS
Geographic accuracy of modeling data
supercedes that of topographic data.

FIGURE 1
Regional Location Map

Figure Not to Scale


URS
MSWD MISSION SPRINGS WATER DISTRICT
US Army Corps of Engineers
FIGURE 2
Existing MSWD Water System
0 2,500 5,000 Feet
Legend
Pipes
Pumps
Tanks
Wells
MSWD Boundary
Notes: Base topographic data from USGS
Schematic and modeling data created by URS
Geographic accuracy of modeling data
supercedes that of topographic data.
Mission Lakes Tank
Storage = 1.95 mg
Annandale Tank
Storage = 2.57 mg
Vista Hydro Boosters 1 & 2
Capacity = 185 gpm
Vista Hydro Booster 2
Total Head = 90 ft
Vista Hydro Tank
Storage = 0.30 mg
High Northridge Tank
Storage = 1.04 mg
Low Northridge Boosters 1 & 2
Capacity = 260 gpm
Low Northridge Tank
Storage = 0.21 mg
WELL 30
Capacity = 825 mg
WELL 28
Capacity = 1,900 mg
Terrace #1 Tank
Storage = 1.84 mg
Terrace #2 Tank
Storage = 2.14 mg
Terrace #3 Tank
Storage = 2.14 mg
Terrace Boosters 1, 2, 3, 4, 5, & 6
Total Capacity = 3,705 gpm
High Desert View Tank #1
Storage = 1.07 mg
High Desert View Tank #2
Storage = 0.51 mg
Highland Tank
Storage 0.06 mg
Gateway Tank
Storage = 0.26 mg
WELL 22
Capacity = 1,750 mg
WELL 24
Capacity = 1,200 mg
Redbud Boosters 1 & 2
Capacity = 265 gpm
Redbud Tank
Storage = 0.32 mg
Overhill Booster 1
Capacity = 259 gpm
Overhill Booster 2
Capacity = 412 gpm
Overhill Tank
Storage = 0.27 mg
Valley View Booster 1
Capacity = 354 gpm
Valley View Booster 2
Capacity = 356 gpm
Valley View Tank
Storage = 0.31 mg
WELL 29
Capacity = 1,700 mg
Low Desert View Tank #1
Storage = 0.26 mg (Offline)
Low Desert View Tank #2
Storage = 0.10 mg (Offline)
Low Desert View Booster 1 & 2
Capacity = 518 gpm
Two Bunch Palm Tank #1
Storage = 1.02 mg
Two Bunch Palm Tank #2
Storage = 0.43 mg
Quail Road Tank
Storage = 1.02 mg
WELL 32
Capacity = 2000 gpm
WELL 27
Capacity = 1,100 gpm
WELL 31
Capacity = 1,900 gpm
WELL 33
Capacity = 800 gpm
Cottonwood and
Woodridge Systems
Woodridge Tank
Storage = 0.12 mg
Cottonwood Tank
Storage = 0.28 mg
WELL 25A
Capacity = 175 gpm
WELL 26A
Capacity = 170 gpm
WELL 25
Capacity = 400 gpm
WELL 26
Capacity = 350 gpm


URS
MSWD MISSION SPRINGS WATER DISTRICT
US Army Corps of Engineers
FIGURE 3
Future Proposed System
Years 2005 - 2025
Legend
New Tanks
New Wells
New Pumps
New Pipes
Pipes
Pressure Reducing Valves
Pumps
Tanks
Nodes
Wells
Potential Well Locations
MSWD Boundary
0 2,500 5,000 Feet
Notes: Base topographic data from USGS
Schematic and modeling data created by URS
Geographic accuracy of medoing data supercedes that of topographic data.
Future or potential well locations are conceptual and may change based on landuse, available area, hydrogeologic conditions (obtained from existing and future wells), and other factors.
Z1800 Tank (1) 1.0 mg (2015)
1975 Zone (2020) 12" L=8155'
Z1975 Tank (1) 2.0mg (2020)
Z2155 Booster Station 3.5 mgd (2025)
CIP2025 Tank (1) 4.0 mg (2015) (2) 1.0 mg (2015)
Z1630 Tank (1) 2.5 mg (2010) (1) 1.0 mg (2010)
1630 Zone (2010) 12" L=6815'
1800 Zone (2015) 20" L=19107'
Future Well 2155 Zone Appr. 1500 gpm (2010)
Z1975 Booster Station 3.5 mgd (2020)
Future Well 1530 Zone Appr. 1500 gpm (2025)
1800 Zone (2015) 8" L=8206'
Future Well 1975 Zone Appr. 1500 gpm (2015)
1530 Zone (2010) 16" L=6579'
Future Well 1530(a) Zone Appr. 1500 gpm (2010)
1530 Zone (2015) 16" L=2583'
1530 Zone (2010) 12" L=15583'
CIP2025 Vista Tank (1) 1.5 mg (2010)
Z1630 Low Northridge Booster Station 1.5 mgd (2010)
Future Well 1400(a) Zone Appr. 1500 gpm (2010)
Z1400 Tank (1) 1.0 mg (2010)
Z1530 High Desert View Booster Station 0.8 mgd (2010)
CIP2025 Redbud Tank (1) 1.0 mg (2010)
Future Well 1630 Zone Appr. 1500 gpm (2020)
Future Well 1530(b) Zone Appr. 1500 gpm (2010)
1400 Zone (2010) 24" L=10088'
1400 Zone (2025) 8" L=7358'
Z1400 Tank (3) 5.0 mg (2015)
Future Well 1530 Zone Appr. 1500 gpm (2015)
1400 Zone (2010) 24" L=7909'
1400 Zone (2010) 24" L=4339'
Future Well 1400(b) Zone Appr. 1500 gpm (2010)
1240 Zone (2010) 16" L=12880'
Future Well 1400(c) Zone Appr. 1500 gpm (2015)
1400 Zone (2015) 16" L=2731'
Future Well 1400(e) Zone Appr. 1500 gpm (2015)
CIP2025 Overhill Tank (1) 1.0 mg (2010)
Z1070 Tank (1) 2.5 mg (2010)
1070 Zone (2010) 16" L=3135'
Z1400 Valley View Pump Station
Z1400 Valley View B1
Z1400 Valley View B2
0.5 mgd (2015)
Future Well 1400(h) Zone Appr. 1500 gpm (2015)
Future Well 1400(g) Zone Appr. 1500 gpm (2015)
Z1070 Garnet Pump Station 1.3 mgd (2015)
Future Well 1400(f) Zone Appr. 1500 gpm (2015)
Future Well 1400(d) Zone Appr. 1500 gpm (2015)
2155 Zone
1975 Zone
1800 Zone
1630 Zone
1530 Zone
1400 Zone
1240 Zone
1070 Zone
913 Zone
Woodridge and Cottonwood Systems
Woodridge Tank (1) 0.5 mg (2010)

APPENDIX 8.4

COMMENT LETTERS RECEIVED ON THE INITIAL STUDY AND NOP

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

Notice of Preparation

Project #:	05-001-W
File Location:	ENVIRONMENTAL
Signature/Date:	7/28/06

July 24, 2006

To: Reviewing Agencies

Re: Comprehensive Water System Master Plan Project
SCH# 2006071105

Attached for your review and comment is the Notice of Preparation (NOP) for the Comprehensive Water System Master Plan Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Senior Planner, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2006071105
Project Title Comprehensive Water System Master Plan Project
Lead Agency Mission Springs Water District

Type NOP Notice of Preparation

Description The master plan forecasts future water use under two growth scenarios; growth based on data from MSWD and historial growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected systemwide demand through the year 2025. Wells = 17; Reservoirs = 11; Booster Pumps = 7; and pipeline = 177,000 lineal feet.

Lead Agency Contact

Name Brent Gray
Agency Mission Springs Water District
Phone 760-329-6448 **Fax**
email
Address 66575 Second Street
City Desert Hot Springs **State** CA **Zip** 92240

Project Location

County Riverside
City Desert Hot Springs
Region
Cross Streets Pierson Boulevard and Plam Drive
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways Hwy 62, I-10
Airports
Railways
Waterways Mission Creek
Schools
Land Use Mixed uses encompassing the City of Desert Hot Springs and nearby unincorporated areas of Riverside County.

Project Issues Air Quality; Archaeologic-Historic; Cumulative Effects; Growth Inducing; Geologic/Seismic; Job Generation; Noise; Public Services; Soil Erosion/Compaction/Grading; Water Quality; Water Supply; Wildlife

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Reviewing Agencies Resources Agency; Colorado River Board; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 6; Department of Health Services; Native American Heritage Commission; State Lands Commission; Caltrans, District 8; State Water Resources Control Board, Division of Loans and Grants; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 7

Date Received 07/24/2006 **Start of Review** 07/24/2006 **End of Review** 08/22/2006

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: Riverside

SCH# 2006071105

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  David Johnson
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [x] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Dept. of Conservation**
  Roseanne Taylor
- [ ] **California Energy Commission**
  Paul Richins
- [ ] **Dept. of Forestry & Fire Protection**
  Allen Robertson
- [x] **Office of Historic Preservation**
  Wayne Donaldson
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **Reclamation Board**
  DeeDee Jones
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- [ ] ____________
  Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Game Region 1**
  Donald Koch
- [ ] **Fish & Game Region 2**
  Banky Curtis
- [ ] **Fish & Game Region 3**
  Robert Floerke
- [ ] **Fish & Game Region 4**
  Julie Vance
- [ ] **Fish & Game Region 5**
  Don Chadwick
  Habitat Conservation Program
- [x] **Fish & Game Region 6**
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M**
  Tammy Allen
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Robert Sleppy
  Environmental Services Section
- [x] **Dept. of Health Services**
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Debby Eddy
- [ ] **Office of Emergency Services**
  Dennis Castrillo
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse
- [x] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Ken Lewis
- [x] **State Lands Commission**
  Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Shirley Kelly
  Office of Special Projects
- [ ] **Housing & Community Development**
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Jeff Pulverman
- [ ] **Caltrans, District 4**
  Tim Sable
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Marc Birnbaum
- [ ] **Caltrans, District 7**
  Cheryl J. Powell
- [x] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Mario Orso
- [ ] **Caltrans, District 12**
  Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
  - [ ] Transportation Projects
    Ravi Ramalingam
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **California Integrated Waste Management Board**
  Sue O'Leary
- [x] **State Water Resources Control Board**
  Jim Hockenberry
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] **State Water Resouces Control Board**
  Steven Herrera
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [x] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)
- [ ] Other ____________

Last Updated on 04/28/06

Project #:	05-001-W
File Location:	ENVIRONMENTAL
Signature/Date:	B.G. 7/31/06

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

July 27, 2006

Mr. Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92440

Dear Mr. Gray:

Notice of Preparation of a Draft Environmental Impact Report for
<u>Mission Springs Water District's Water Master Plan Project</u>

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. In addition, please send with the Draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files.

<u>Air Quality Analysis</u>
The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the SCAQMD Website at: <u>www.aqmd.gov/ceqa/models.html.</u>

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

Consistent with the SCAQMD's environmental justice enhancement I-4, in October 2003, the SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts and localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA webpages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. In addition, guidance on siting incompatible land uses can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Perspective, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Charles Blankson, Ph.D., Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

SBC060725-06LI
Control Number

STATE OF CALIFORNIA Arnold Schwarzenegger, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

Project #:	05-001-W
File Location:	ENVIRONMENTAL
Signature/Date:	B.G. 8-15-06

August 8, 2006

Mr. Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Re: SCH# 2006071105; Notice of Prep (NOP); CEQA Environmental Impact Report (EIR);Mission Springs Water District; Riverside County, California

Dear Mr. Gray:

Thank you for the opportunity to comment on the above-referenced document. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR per CEQA guidelines § 15064.5(b)(c). In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the area of project effect (APE), and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS). The record search will determine:

- If a part or the entire APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

- A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity who may have information on cultural resources in or near the APE. Please provide us site identification as follows: USGS 7.5-minute quadrangle citation with name, township, range and section. This will assist us with the SLF.
- Also, we recommend that you contact the Native American contacts on the attached list to get their input on potential project (e.g. APE) impact.

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

- CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the CEQA Guidelines mandate procedures to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

√ Lead agencies should consider avoidance, as defined in § 15370 of the CEQA Guidelines, when significant cultural resources are discovered during the course of project planning.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse
Attachment: List of Native American Contacts

Native American Contact
Riverside County
August 8, 2006

Cabazon Band of Mission Indians
John A. James, Chairperson
84-245 Indio Springs Parkway
Indio , CA 92203-3499
lweaver@cabazonindi
(760) 342-2593

(760) 347-7880 Fax

Cahuilla

Ramona Band of Mission Indians
Joseph Hamilton, Vice Chairman
P.O. Box 39160
Anza , CA 92539
admin@ramonatribe.
(951) 763-4105

(951) 763-4325 Fax

Cahuilla

Twenty-Nine Palms Band of Mission Indians
Dean Mike, Chairperson
46-200 Harrison Place
Coachella , CA 92236
tribal-epa@worldnet.
(760) 775-5566

(760) 775-4639 Fax

Luiseno
Chemehuevi

Joseph R. Benitez (Mike)
P.O. Box 1829
Indio , CA 92201

(760) 347-0488

Chemehuevi

Anthony J. Andreas, Jr.
3022 W. Nicolet Street
Banning , CA 92220

(951) 849-3844

Cahuilla

Morongo Band of Mission Indians
Britt W. Wilson, Cultural Resource Coordinator
245 N. Murray Street, Suite C
Banning , CA 92220
britt_wilson@morongo.org
(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

Cahuilla
Serrano

Torres-Martinez Desert Cahuilla Indians
William J. Contreras, Cultural Resources Coordinator
P.O. Box 1160
Thermal , CA 92274

760) 397-0300

(760) 397-8146 Fax

Cahuilla

Agua Caliente Band of Cahuilla Indians
Richard Begay, THPO Director
650 Tahquitz Canyon Way
Palm Springs , CA 92262
rbegay@aguacaliente
(760) 883-1368

(760) 325-6952 Fax

Cahuilla

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2006071105; Notice of Preparation (NOP); CEQA Environmental Impact Report (EIR) for Mission Springs Water District Plan; Riverside County, C

Native American Contact
Riverside County
August 8, 2006

Augustine Band of Cahuilla Mission Indians
Karen Kupcha, Tribal Administrator
P.O. Box 846
Coachella , CA 92236 Cahuilla

(760) 369-7171

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2006071105; Notice of Preparation (NOP); CEQA Environmental Impact Report (EIR) for Mission Springs Water District Plan; Riverside County, C

State of California - The Resources Agency
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
Eastern Sierra/Inland Deserts Region
78078 Country Club Dr., Ste. 109
Bermuda Dunes, CA 92201
(760) 200-9419

August 10, 2006

Project #: 05-01-W
File Location: Environmental
BRG 8/17/06

Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Re: SCH# 2006071105

Dear Mr. Gray:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the Notice of Preparation (NOP) for The Comprehensive Water System Master Plan Project (SCH# 2006071105). The Project forecasts future water use under two growth scenarios; growth based on data from Mission Springs Water District and historical growth rates within the District, and the City Desert Hot Springs Planning Department which incorporated historic growth patterns; and a high growth projection based on what is forecast to be the highest potential growth rate that could be expected over the Water Master Plan study period. Water demand for these two scenarios was projected over 5-year periods from 2005 to 2035. Using these projections, the Water Master Plan identifies the water system improvements that are forecast to be required to meet projected system wide demand through the year 2025. Wells = 17; Reservoirs = 11; Booster Pumps = 7; and pipeline = 177,000 lineal feet. To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in any environmental document prepared for the proposed project:

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

    a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities.

    b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required.

Conserving California's Wildlife Since 1870

Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).

d. The Department's California Natural Diversity Data Base in Sacramento should be contacted to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

e. If the project has the potential to impact the western burrowing owl (*Athene cunicularia*), a California Species of Special Concern, the Department recommends that focused burrowing owl surveys be conducted on the project site to determine how many occupied owl burrows will be impacted. Any burrows that cannot be avoided should be mitigated at a 2:1 ratio with artificial burrows located in an adjacent protected area that provides a minimum 6.5 acres per pair or solitary owl.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

   a. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

   c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce theses conflicts should be included in the environmental document.

   d. A cumulative effects analysis should be developed as described under CEQA Guideline, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

e. The document should include an analysis of the effect that the project may have on completion and implementation of regional and /or sub-regional conservation programs. Under § 2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program, is coordinating with local jurisdictions, landowners and the Federal Government to preserve local and regional biological diversity. The Department recommends that the lead agency ensure that the development of this and other proposed projects do not preclude long-term conservation planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resource should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

   c. The Department generally does not support the use of relocation, salvage, and /or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or

animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirement s for a CESA Permit.

b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

   The Department has direct authority under Fish and Game code § 1600 et seq. In regard to any proposed activity which would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any river, stream, or lake.

   A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

   The Department is in the process of complying with a writ of mandate issued by the Superior Court of California (Mendocino Environmental Center vs. California Department of Fish and Game, Respondents, Bruce Choder, River Rat Salvage, et. al. Real Parties). The writ of mandate states:

   > A writ of mandate shall issue ordering the California Department of Fish and Game on or before May 1, 1999, to prepare and implement a program or process that will

incorporate a CEQA review into the Fish and Game Section 1603 process. The writ of mandate shall further order the California Department of Fish and Game to cease and desist entering into Section 1603 agreements after May 1, 1999, unless such agreements have been subject to a CEQA review.

The writ of mandate clearly spells out what the Department's responsibilities are under CEQA with respect to all SAA's. In this regard, the Department is emphasizing in comment letters on projects that impacts to lakes or streambeds, alternatives and mitigation measures must be addressed in CEQA-certified documents prior to submittal of an application of a SAA. Any information which is supplied to the Department after the CEQA process is complete will not have been subject to the public review requirements of CEQA. In this instance, the Department has three choices: 1) refuse to issue the SAA; 2) not file the Notification because CEQA has not been complied with and return the package to the lead agency for further CEQA action; or 3) become the lead agency.

In order for the Department to process a SAA agreement, the CEQA-certified documents must include an analysis of the impacts of the proposed project on the lake or streambed, an analysis of the biological resources present on the site, copies of biological studies conducted on the site, biological survey methodology, and a discussion of any alternative measures, avoidance measures, mitigation measures which will reduce the impacts of the proposed development to a level of insignificance.

A thorough assessment of how vegetation in the area of the Water Master Plan is recommended by the Department, as the Project will cause potential changes to the water table in the Project Area.

The Department appreciates the opportunity to comment on this project. Questions regarding this letter should be directed to Mr. Jim Sheridan, Environmental Scientist, at the above phone number.

Sincerely,

Kimberly Nicol

Kimberly Nicol
Senior Environmental Scientist
Eastern Sierra/Inland Deserts Region

WARREN D. WILLIAMS
General Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
951.788.9965 FAX
www.floodcontrol.co.riverside.ca.us

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

August 16, 2006

Project #:	05-001-W
File Location:	Environmental
Signature/Date:	Bd 8/21/06

Mr. Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92440

Dear Mr. Gray:

Re: Notice of Preparation of an Environmental Impact Report for the Water System Master Plan

This letter is written in response to the Notice of Preparation of an Environmental Impact Report for the Water System Master Plan (WSMP). The WSMP provides an evaluation of the existing water system and will address the Mission Springs Water District's needs over the next 25 years. The project area encompasses approximately 135 square miles at the north end of the Coachella Valley and is located north of Interstate 10, east of State Highway 62, west of Indio Hills, and south of San Bernardino/Riverside County line in Riverside County.

The Riverside County Flood Control and Water Conservation District (District) has the following comments/concerns that should be addressed in the Initial Study (IS):

1. The proposed project is located within the District's Desert Hot Springs and Garnet Wash Master Drainage Plan (MDP) boundary. When fully implemented, these MDP facilities will provide flood protection to relieve those areas within the plan of the most serious flooding problems and will provide adequate drainage outlets. The IS should evaluate potential impacts to existing and proposed MDP facilities in the project area. The District's MDP facility maps may be viewed online, under Programs and Services, at http://www.floodcontrol.co.riverside.ca.us/districtsite/default.asp. To obtain further information on the MDP, please contact Art Diaz of the Planning Section at 951.955.1345.

2. Existing District facilities are located within the proposed project area and may be impacted. Any work that involves District rights-of-way, easements or facilities will require an encroachment permit from the District. The construction of facilities within road right-of-way that may impact District storm drains should also be coordinated with us. To obtain further information on encroachment permits, please contact Ed Lotz of the Encroachment Permit Section at 951.955.1266.

Thank you for the opportunity to comment on the IS. Please forward any subsequent environmental documents regarding the project to my attention at this office. Any further questions concerning this letter may be referred to Steve Horn at 951.955.5418 or me at 951.955.1233.

Very truly yours,

Teresa Tung

TERESA TUNG
Senior Civil Engineer

c: TLMA
Attn: David Mares
Art Diaz
Ed Lotz

SH:mcv
P8\108864

CENTER FOR BIOLOGICAL DIVERSITY

VIA U.S. MAIL

Project #: 05 001-w
File Location: environmental
Signature/Date: B. G 8/24/06

August 22, 2006

Mission Springs Water District
Attn: Mr. Brent Gray
66575 Second Street
Desert Hot Springs, CA 92440

Re: NOP for EIR for the Water System Master Plan Project

Dear Mr. Gray,

Thank you for providing the Center for Biological Diversity ("Center") with a copy of the NOP for this project. When the Draft EIR is available, please ensure that the Center is provided with notice and a copy of the Draft EIR sent to my attention at the following address:

Lisa Belenky
Center for Biological Diversity
1095 Market Street,
Suite 511, San Francisco, CA 94103

The Center is particularly concerned that the Draft EIR adequately identify and analyze direct, indirect, and cumulative impacts to rare, sensitive, threatened and endangered species and unique plant communities in the project area. As you are well aware, past and ongoing groundwater extractions have impacted the local ecosystem and many species that depend upon it for their survival. To the extent that the proposal will call for continuing and/or expanding groundwater extractions and other actions that may cause direct, indirect, or cumulative impacts to rare, sensitive, threatened or endangered species or to unique plant communities in the project area, those impacts must be thoroughly identified and analyzed and alternatives must be presented that could avoid those impacts or mitigate and minimize all such impacts.

Thank you for this opportunity to review the NOP. We look forward to reviewing the Draft EIR.

Sincerely,

Lisa Belenky

Tucson • Phoenix • San Francisco • San Diego • Los Angeles • Joshua Tree • Pinos Altos • Portland • Washington, DC

Lisa Belenky, Staff Attorney
1095 Market Street, Suite 511 • San Francisco, CA 94103
Tel.: (415) 436-9682 ext. 307 • Fax: (415) 436-9683
Email: lbelenky@biologicaldiversity.org • www.biologicaldiversity.org

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

COACHELLA VALLEY WATER DISTRICT

POST OFFICE BOX 1058 • COACHELLA, CALIFORNIA 92236 • TELEPHONE (760) 398-2651 • FAX (760) 398-3711

August 30, 2006

File: 0460.45

Project #: 05-001-W
Environmental
9/6/06

Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Ladies and Gentlemen:

Thank you for affording the Coachella Valley Water District the opportunity to review the Notice of Preparation (NOP) of an Environmental Impact Report for the Water Master Plan (WMP) Project at the Mission Springs Water District.

At this time, we have no comments regarding the NOP. We would like to receive a copy of the WMP which can be sent to my attention at the above address.

Yours very truly,

Mark L. Johnson, PE, DEE
Director of Engineering

LS:ch\eng\env\06\aug\MSWD

TRUE CONSERVATION
USE WATER WISELY

COLORADO RIVER BOARD OF CALIFORNIA
770 FAIRMONT AVENUE, SUITE 100
GLENDALE, CA 91203-1068
(818) 500-1625
(818) 543-4685 FAX

Project #: 05-001-W
File Location: ENV Jim Morgan C
Signature/Date: Bef 9/11/06

September 7, 2006

Mr. Scott Morgan
Senior Planner
State Clearinghouse
1400 Tenth Street
P.O. Box 3044
Sacramento, CA 95812-3044

Regarding: SCH # 2006 071 105: Notice of Preparation of the Draft Environmental Impact Report (EIR) for the Comprehensive Water System Master Plan Project, Mission Springs Water District, Desert Hot Springs, Riverside County, California

Dear Mr. Morgan:

The Colorado River Board of California (CRB) has received and reviewed a copy of Notice of Preparation of the Draft Environmental Impact Report (EIR) for the Comprehensive Water System Master Plan Project, Mission Springs Water District, Desert Hot Springs, Riverside County, California.

CRB technical staff have reviewed the documents and have made the determination that the CRB has no comments at this time regarding the proposed project. If you have any questions, please contact me at (818) 500-1625.

Sincerely,

for Gerald R. Zimmerman
Executive Director

cc: Mr. Brent Gray, Mission Springs Water District

NOP Distribution List

County: Riverside

SCH# 2006071105

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  David Johnson
- [ ] **California Coastal Commission**
  ~~Elizabeth A. Fuchs~~
- [x] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Dept. of Conservation**
  Roseanne Taylor
- [ ] **California Energy Commission**
  Paul Richins
- [ ] **Dept. of Forestry & Fire Protection**
  Allen Robertson
- [x] **Office of Historic Preservation**
  Wayne Donaldson
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **Reclamation Board**
  DeeDee Jones
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- [ ] ____________
  Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Game Region 1**
  Donald Koch
- [ ] **Fish & Game Region 2**
  Banky Curtis
- [ ] **Fish & Game Region 3**
  Robert Floerke
- [ ] **Fish & Game Region 4**
  Julie Vance
- [ ] **Fish & Game Region 5**
  Don Chadwick
  Habitat Conservation Program
- [x] **Fish & Game Region 6**
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M**
  Tammy Allen
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Robert Sleppy
  Environmental Services Section
- [x] **Dept. of Health Services**
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Debby Eddy
- [ ] **Office of Emergency Services**
  Dennis Castrillo
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse
- [x] **Native American Heritage Comm.**
  Debbie Treadway

No Comments!

- [ ] **Public Utilities Commission**
  Ken Lewis
- [x] **State Lands Commission**
  Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Shirley Kelly
  Office of Special Projects
- [ ] **Housing & Community Development**
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Jeff Pulverman
- [ ] **Caltrans, District 4**
  Tim Sable
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Marc Birnbaum
- [ ] **Caltrans, District 7**
  Cheryl J. Powell
- [x] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Mario Orso
- [ ] **Caltrans, District 12**
  Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
  - [ ] Transportation Projects
    Ravi Ramalingam
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **California Integrated Waste Management Board**
  Sue O'Leary
- [x] **State Water Resources Control Board**
  Jim Hockenberry
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] **State Water Resouces Control Board**
  Steven Herrera
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [x] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)
- [ ] Other ____________

Last Updated on 04/28/06

DRAFT
PROGRAM ENVIRONMENTAL IMPACT REPORT

FOR THE
MISSION SPRINGS WATER DISTRICT
WATER MASTER PLAN PROJECT
(SCH#2006071105)

Volume 2 – Technical Appendices

Prepared for:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Prepared by:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

FEBRUARY 2008

DRAFT
PROGRAM ENVIRONMENTAL IMPACT REPORT

FOR THE
MISSION SPRINGS WATER DISTRICT
WATER MASTER PLAN PROJECT
(SCH#2006071105)

Volume 2 – Technical Appendices

Prepared for:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Prepared by:

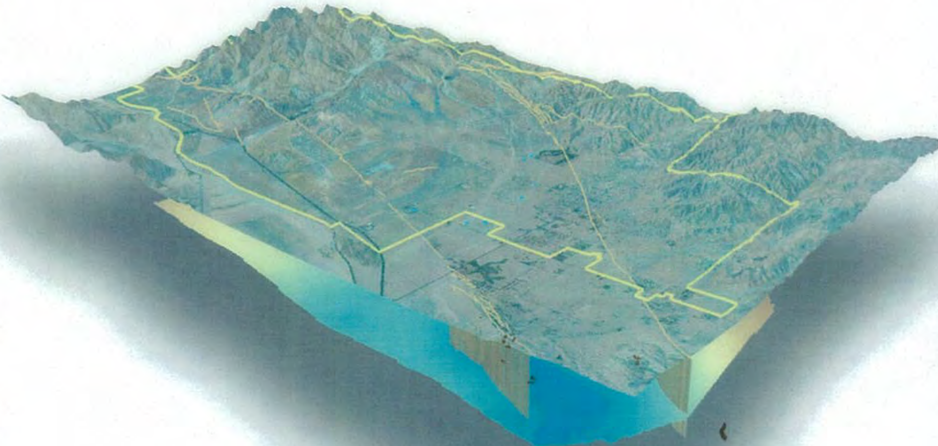
Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

FEBRUARY 2008

Table of Contents

APPENDIX A

PSOMAS 2004b Report



Preliminary Water Balance for the Mission Creek Groundwater Sub-basin

June 2004

Prepared for:

Mission Springs Water District
66575 East Second Street
Desert Hot Springs, CA 92240

Prepared by:

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PRELIMINARY WATER BALANCE FOR THE MISSION CREEK GROUNDWATER SUB-BASIN

June 2004

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1.0 INTRODUCTION

1.1 Overview

Mission Springs Water District (MSWD) was established in 1953 and was formerly called the Desert Hot Springs County Water District. The MSWD service area consists of 135 square miles including the City of Desert Hot Springs, 10 smaller communities in Riverside County, and communities in the City of Palm Springs (see Figure 1). MSWD's water source is 100 percent groundwater, drawn from seven active production wells, providing water service to over 25,000 people as well as sewer service to approximately 8,000 people in Desert Hot Springs, Desert Crest Country Club, and Dillon Mobile Home Park.

This report summarizes the results of an initial water balance analysis of the Mission Creek Sub-basin performed by Psomas for the MSWD. The objectives of the Psomas effort was to synthesize the available information for the Mission Creek Sub-basin (MCSB), evaluate the validity of previously published estimates, refine previous values if applicable, and make recommendations for future field investigations and studies.

The hydrogeologic interpretations provided in this report are based upon previous investigations, data, and reports pertaining to the Upper Coachella Valley. Psomas did not complete specific surface and/or subsurface investigations prior to publishing this preliminary report.

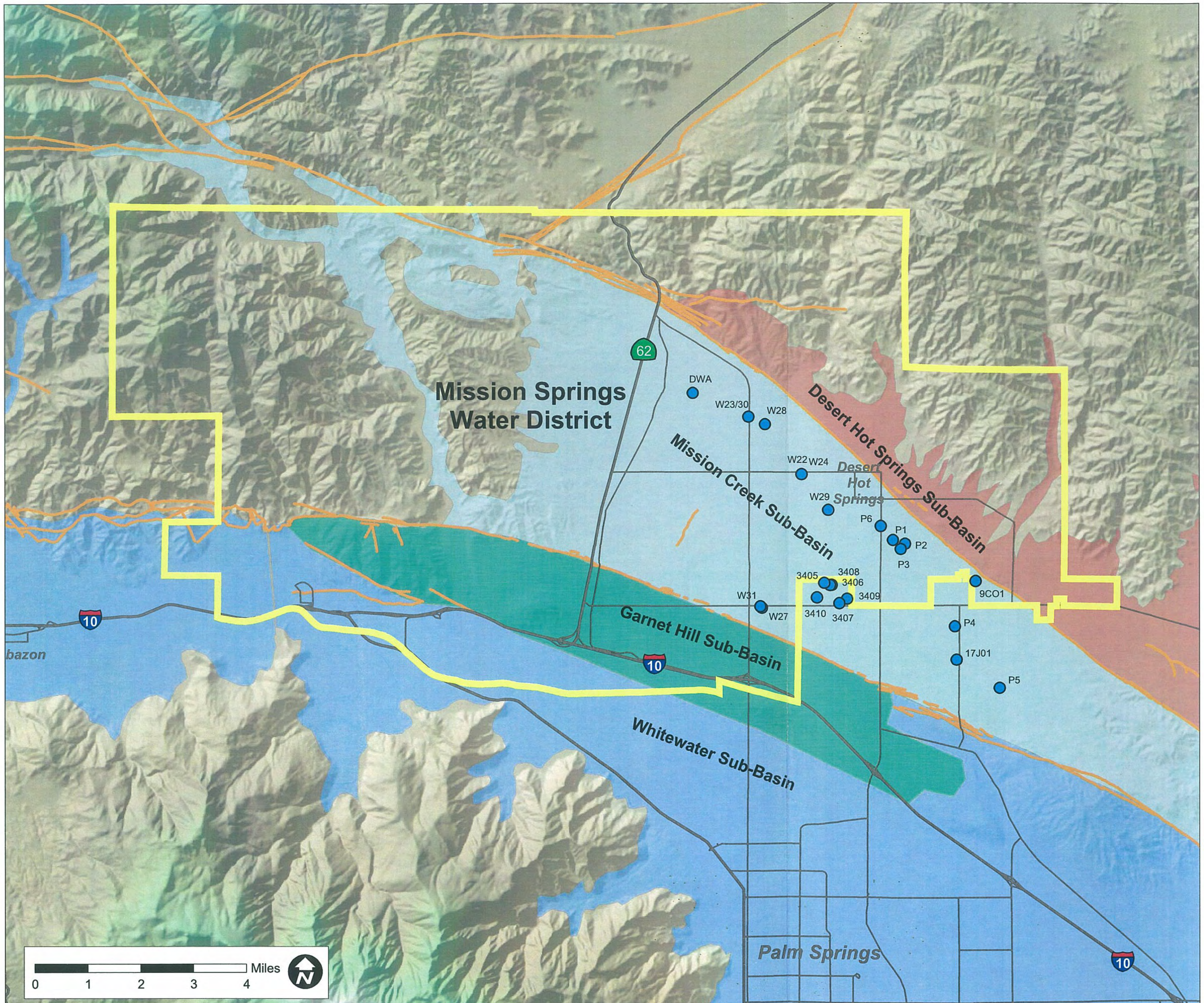
1.2 Purpose and Scope

The intent of this preliminary summary report is to provide an updated hydrologic budget for the Mission Creek Sub-basin that is based on the latest available information. The updated hydrologic budget is intended to serve as the initial basis for the development of a water resource management tool for the Mission Springs Water District to be utilized in optimizing management of the Mission Creek Sub-basin.

The scope of services developed and performed by Psomas included:

- A review of previous hydrogeologic investigations, surface water reports, and modeling studies pertaining to the study area;
- Compilation of static and pumping water level data from selected wells;
- Synthesis of a hydrologic budget for the Mission Creek Sub-basin
- Coordination with Geothermal Surveys, Inc. (GSi/water) on available geophysical data
- Preparation of this preliminary summary report.

Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin



Groundwater Sub-Basins

MSWD PSOMAS

Figure 1

1.3 Approach

In arid regions such as the Mission Creek Sub-basin, the variability of the many hydrologic elements and the inaccessibility of portions of the basins often make it infeasible to study the regional hydrology with the same instrumentation that is used in studies of mesic regions.

Psomas recognizes the inherent limitations in attempting to develop a hydrologic budget for the arid region encompassed by the Mission Creek Sub-basin. In our review of the previously published literature it was clear that much of this literature used regionally based assumptions to estimate the various water budget components for the Sub-basin. Although many detailed studies have been completed in the Lower Coachella Valley, at the time of this report, very limited information was available for many hydrologic components in the Upper Coachella Valley, specifically, the Mission Creek Sub-basin.

In an effort to understand the Mission Creek Sub-basin water balance components, Psomas used three separate methodologies in our preliminary analysis. First, as previously stated, was to review and evaluate previously published literature. Second, was to review and evaluate the validity of assumptions made in the previous reports and refine these estimates, as appropriate, using the most recent available information. Finally, Psomas evaluated the change in groundwater storage since 1991 to calculate an average annual change in groundwater storage from the Sub-basin.

In addition, the existing data was augmented by collecting recent (late 2003 and early 2004) static and pumped water level data from wells in the Mission Creek Sub-basin and recent municipal extractions as published for 2003. These data were utilized in the development of a current water level contour map for the area.

2.0 DESCRIPTION OF THE STUDY AREA

MSWD's water source is 100 percent groundwater, drawn from seven active production wells. Additional production from the Sub-Basin comes from the Coachella Valley District that has six production wells located in a small area in the south central portion of the Sub-Basin, and from approximately 200 private wells for domestic use. The following discussion provides a general overview of the Mission Creek Sub-Basin.

2.1 *Physiography and Climate*

The Mission Creek Sub-basin occupies approximately 77 square miles and is bounded on the south by the Banning Fault, on the north and east by the Mission Creek Fault, and bordered on the west by limited water-bearing rocks of the San Bernardino Mountains. To the southeast, the sub-basin merges with the Indio Hills (California Department of Water Resources [DWR], 1964).

Major surface water features in the area are the Whitewater River, Mission Creek, San Gorgonio River, Little and Big Morongo Washes, and Long Canyon. The MSWD service area and groundwater Sub-basin are presented on Figure 1.

The climate in the valley is one typical of a desert. Seasonal temperatures vary from about 115 degrees Fahrenheit in the summer to below freezing in the winter. The high mountains that border the valley to the west and north are an effective barrier against easterly moving coastal storms. The average annual rainfall on the valley floor is less than 6 inches; whereas, the average annual rainfall at the crest of the mountains to the west and north of the valley ranges from 30 to 40 inches (DWR, 1964).

2.2 *Hydrogeologic Setting*

The main water bearing units of the Mission Creek Sub-Basin are relatively undisturbed and unconsolidated Holocene and late Pleistocene alluvial deposits. These deposits form as detritus, eroding from the surrounding San Bernardino and Little San Bernardino Mountains, first filled topographic depressions and then are deposited on the piedmont alluvial fans. The individual beds are lenticular in shape and not extensive, but coalesce with other beds to form larger water bearing areas. Units included in these water-bearing deposits are: Ocotillo conglomerate, Cabezon fanglomerate and Holocene alluvial and sand dune deposits.

The Pre-Tertiary Crystalline rocks that underlie and constitute the northwestern and southeastern borders of the Sub-Basin are a complex assemblage of gneisses and schists, Precambrian in age, and have been intruded by younger granitic rocks associated with the Southern California batholith of Cretaceous age (DWR, 1964). DWR classified these rocks as "non-water-bearing." However, DWR (1964) also acknowledges that in the surrounding mountains, the crystalline rocks may be the only source of water and that groundwater wells extract water from along faults and fractures within the system. With the amount of faulting in the area due to the San Andreas Fault Complex, it is possible that this igneous-metamorphic complex is highly fractured and may transmit groundwater more readily than previously assumed.

Faults and Barriers

The Mission Creek Fault and the Banning Fault create the northern and southern boundaries of the Mission Creek Sub-Basin, respectively. Differential movement along these faults has created more or less effective barriers to groundwater flow by deforming the alluvial sediments along the fault plane to create a poorly permeable zone.

The Mission Creek Sub-Basin is bounded on the west and east by barriers of uplifted poorly permeable consolidated bedrock of the San Bernardino Mountains and the Indio Hills, respectively.

Groundwater Levels and Storage

Regional water levels have been declining since the early 1950's due to scarce annual precipitation and groundwater extractions (DWR 1964). Groundwater level data indicate that since 1952, water levels have declined at a rate of 0.5 to 1.5 feet per year (CVWD 2000). Current water levels vary in domestic wells from 140 to 721 feet below ground surface with an average depth to water being 372 feet (MSWD 2000).

Total groundwater storage capacity for the Mission Creek Sub-Basin is estimated to be 2.6 million acre-feet (DWR 1964). This is the amount of groundwater the Sub-Basin can theoretically contain using a maximum depth below surface of 1,000 feet. Actual groundwater in storage in the Mission Creek Sub-Basin is estimated at 1.4 million acre-feet (MSWD 2000).

3.0 WATERSHED ANALYSIS

A study using Geographic Information System (GIS) technology was conducted to assess general values of precipitation and potential runoff data originating in local ungaged or poorly gaged watersheds that are hydraulically connected to basins in the Mission Springs Water District's service area. Figure 2 shows the study area map.

3.1 Analysis Methodology

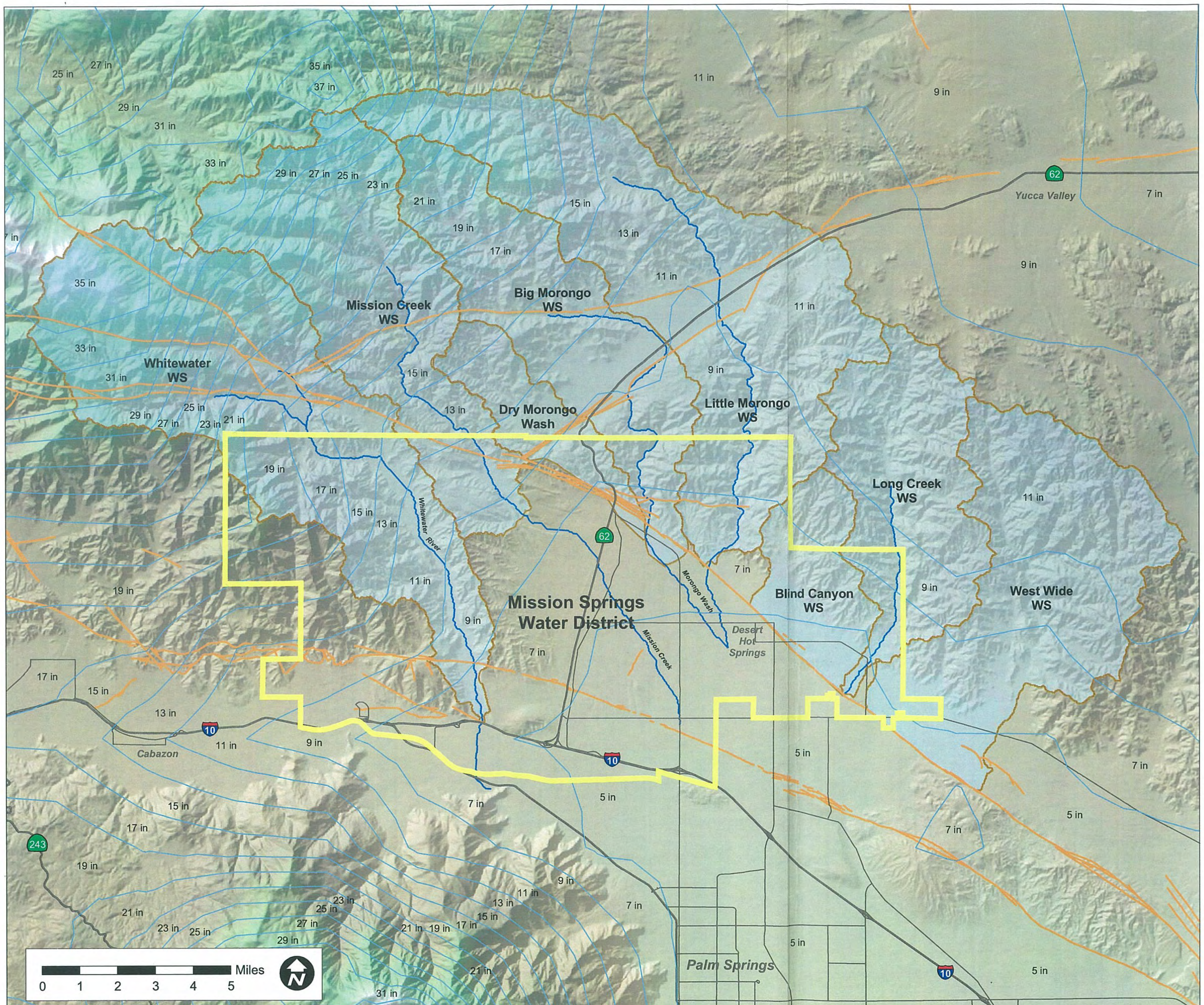
ArcInfo Desktop was the GIS platform used for the study along with the Arc Hydro extension. The Arc Hydro extension was used to delineate local watersheds using a United States Geological Survey (USGS) 30-meter resolution Digital Elevation Model (DEM) of the study area. Arc Hydro is a basic watershed analysis tool and can create watersheds and perform basic hydrologic calculations quickly and efficiently.

3.1.1 Precipitation Zone Values

Once local watersheds were delineated and their parameters, such as area and perimeter were calculated, a precipitation isohyetal contour map layer was overlaid onto the watersheds to determine precipitation zones within each watershed.

The California statewide precipitation data layer used in the study represents lines of equal rainfall (isohyets) based on long-term mean annual precipitation data compiled from the USGS, DWR, and California Geological Survey (CGS) map and information sources. Source maps are based primarily on U.S. Weather Service data for approximately 800 precipitation stations. The data were collected over a sixty-year period (1900-1960). The minimum mapping unit is 1000+ acres. The isohyetal contour intervals are variable due to the degree of variation of annual precipitation with horizontal distance.

The next step was to digitize polygon shape files with boundaries defined by intersections of the isohyetals and borders of each watershed. These polygons were defined as precipitation zones and would then have attributes unique to each watershed and a specific precipitation amount. By calculating polygon area and multiplying by precipitation, an areal amount of mean annual precipitation was calculated for each precipitation zone for each watershed in the study area. Once calculated, these values were entered as attributes into the polygon shape file's database for future reference, analysis, and map generation.



Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin

Legend

- MSWD Service Area Boundary
- Study Area Contributing Watersheds
- Avg. Annual Precipitation Contours (in inches)
- Known Fault Lines
- Major Drainages

Surface Precipitation & Watershed Areas

MSWD PSOMAS

Figure 2

3.1.2 Potential Runoff

The next step was to estimate potential runoff. For this study potential runoff is defined as the amount of precipitation that becomes a surface water flow and is conveyed through the watersheds via drainages and creeks. This surface flow has a loss component where surface water is infiltrating into the local sediment vadose zone or bedrock fracture system and potentially recharging the groundwater aquifer. Due to the arid nature of study area potential runoff is closely correlated to the amount of water that is available for aquifer recharge via deep percolation.

To understand what percentage of overall precipitation is available as runoff, research was conducted to locate previous works or studies that dealt with the precipitation/runoff and percolation question for arid regions. Several definitive studies exist that deal with runoff and recharge in this region and were used as reference material. They are:

1. DWR. 1964. Coachella Valley Investigation. Bulletin 108. In it DWR references two other previous works;
   a. DWR. 1930. Rainfall Penetration and Consumptive Use of Water – in Santa Ana River Valley and Coastal Plain.
   b. H.F. Blaney and W.D. Criddle. 1950. Determining Water Requirements in Irrigated Areas from Climatological and Irrigation Data. U. S. Dept. of Agriculture, Soil Conservation Service.

2. Coachella Valley County Water District. 1964. Engineering Report on Preliminary Design and Cost Estimate for Flood Control Works for the Edom Area. Prepared by Bechtel Corporation.

3. S.E. Rantz and T.E. Eakin. 1971. A Summary of Methods for the Collection and Analysis of Basic Hydrologic Data for Arid Regions. USGS. Prepared in Cooperation with DWR. (This report alone incorporated over 100 selected references).

Rantz (1971) describes the difficulty in obtaining reliable long-range hydrologic data such as stream flow runoff in many arid regions. Stream gage sites are difficult to construct and maintain in arid regions, as desert streams are usually ephemeral, braided and migrate or shift frequently during periodic storm events. These storms cause streambeds to scour and change geometric shape, which increase error rates in the stage discharge relationship that lies at the heart of stream gage data analysis.

In the MSWD area the runoff is also quickly permeating into alluvial fans or the valley floor. The precipitation that permeates the soil is almost entirely retained in the upper layers of the ground and is lost later by evaporation or evapotranspiration; only a minor amount penetrates to the ground-water body below. Rantz cites Davis and De Wiest (1966) illustrating this fact concerning precipitation on the desert floor with the following example:

> "For example, a soil that has a specific retention of 15 percent and is depleted of moisture to a depth of 2 feet during the summer heat will require 3.6 inches of rain merely to make up for the soil-moisture deficiency. If the rain occurs at several different times during the year, intervening periods of dry weather will cause the loss of water from the soils so that amounts much in excess of 3.6 inches will be needed to start (groundwater) recharge."

Soil moisture deficiency coupled with infrequent and sporadic storm events makes estimating runoff in ungaged desert areas difficult. Various methods have evolved over time and Rantz introduces and describes many of them. One method that Rantz addresses for estimating runoff in ungaged areas was devised for a study in the Colorado Desert region by Hely and Peck (1964).

3.1.3 Hely and Peck Method

The Hely and Peck method uses an isohyetal map of mean annual precipitation levels and daily precipitation records for seven widely spaced desert stations. The data are tabulated and average values can be distributed throughout the study area. For example the tables show that 10 percent of the mean annual precipitation occurs in storms that have depths averaging 0.08 inch, and 24 percent occurs in storms that have depths averaging 0.25 inch.

The next step is to convert this precipitation distribution to equivalent average annual yield. This was done by using a modification of a method described in publication by the U.S. Soil Conservation Service (1957) and U.S. Bureau of Reclamation (1960). A principal element of the method is a family of curves. The curves are numbered from 0 to 100, in order of increasing runoff. Curve 0 would apply to a sand or gravel so permeable that no direct runoff would occur for any rainfall. Curve 100 represents the unattainable condition of 100-percent runoff. The curve numbers between 0 and 100 are determined by a formula and are not percentages.

Hely and Peck related the runoff producing characteristics of subareas in the region to runoff-curve numbers. Runoff curve numbers are directly correlated to soil complexes. The method Hely and Peck devised to accomplish the relationship involved the determination of an infiltration index for various subareas. Infiltrometer tests were run at nearly 100 test sites in the region by use of a portable infiltrometer of the rainfall simulator type and supplemented by several hundred observations of the behavior of water poured into shallow depressions.

To apply the technique to determine average annual runoff from an ungaged area the curves are first used for selecting the appropriate runoff-curve number from a specific subarea. This runoff-curve number is then applied to another graph to obtain the mean annual runoff, expressed in percentage of mean annual precipitation. This percentage, when multiplied by the mean annual precipitation, as determined from a regional isohyetral map, gives the mean annual yield, expressed in inches. The procedure is repeated for all subareas in the basin to obtain mean annual yield for the entire basin.

3.2 Results

The calculated mean annual yield value is the amount of water that could potentially recharge aquifers. Using the Hely and Peck method values are obtained ranging from about 2 to 20 percent of total mean annual precipitation for subareas within the MSWD service area and surrounding watersheds. In an effort to further refine the runoff value calculated using the Hely & Peck methodology, Psomas reviewed 35 years of USGS gage station flow data for Mission Creek. The data indicated an annual average flow of approximately 2,100 acre-ft/year for the 35-year record. This would equate to approximately 4% of the estimated average annual precipitation that would fall on the basin as shown in Table 1 (areal precipitation estimate of 51,542 acre-ft/year for the Mission Creek drainage). Given that the USGS gage probably underestimated (due to poor records in gaging a stream in an arid environment) the total flow from Mission Creek, Psomas has estimated that the annual average flow is approximately 5% of the precipitation value. Applying this percentage to the total value of precipitation for the watershed (136,680 acre-feet/year [AF/yr]) gives an estimated surface runoff value of approximately 6,830 AF/yr of inflow into the groundwater basin and is presented in Table 1.

Table 1 Values for Watershed Precipitation Zones				
Precipitation (inches)	**Watershed**	**Acres**	**Areal Precipitation (Acre-ft/year)**	**Estimated Runoff (Acre-ft/year)**
18	Mission Creek	5,149	7,724	386
27	Mission Creek	2,638	5,936	297
23	Mission Creek	10,927	20,943	1,047
14	Mission Creek	2,610	3,045	152
11	Mission Creek	3,568	3,271	164
9	Mission Creek	4,263	3,197	160
8	Mission Creek	11,139	7,426	371
	Sub-totals	**40,295**	**51,542**	**2,577**
14	Big Morongo	6,123	7,143	357
18	Big Morongo	7,200	10,800	540
11	Big Morongo	6,460	5,922	296
8	Big Morongo	3,090	2,060	103
9	Big Morongo	3,748	2,811	141
	Sub-totals	**26,621**	**28,736**	**1,437**
23	Little Morongo	1,542	2,956	148
23	Little Morongo	5,258	10,079	504
14	Little Morongo	4,588	5,352	268
11	Little Morongo	4,861	4,456	223
9	Little Morongo	13,499	10,124	506
8	Little Morongo	8,919	5,946	297
	Sub-totals	**38,668**	**38,914**	**1,946**
8	Long Creek	19,685	13,123	656
9	Long Creek	1,335	1,001	50
	Sub-totals	**21,020**	**14,125**	**706**
8	Blind Canyon	5,045	3,363	168
	Total	**131,649**	**136,680**	**6,834**

4.0 WATER BALANCE

The hydrologic budget, or water balance, for the Mission Creek Sub-basin is best described as: the total water flowing into the sub-basin from all sources minus the water flowing (or extracted) out of the sub-basin and which may result in a change in groundwater storage as depicted by changes in groundwater levels. In other words, all water entering the Mission Creek Sub-basin during a period of time must either go into storage within its boundaries, be consumed therein (or exported), or discharged from the sub-basin as surface or groundwater flow.

4.1 Sources of Inflow to the Mission Creek Sub-basin

Potential sources of supply or inflow into the Mission Creek Sub-basin include direct precipitation, surface water inflow, subsurface inflow, and returns from local groundwater sources and imported water serving wastewater, commercial, and irrigation purposes. A brief explanation of the methodology utilized in deriving each element of supply or inflow for the annual hydrologic budget of Mission Creek Sub-basin is presented in the following subsections.

4.1.1 Direct Precipitation

DWR in their 1964 "Coachella Valley Investigation" conducted a hydrologic study of the entire valley. At Desert Hot Springs, DWR reported direct precipitation averaged less than 6 inches per year on the valley floor over a 20-year period of record. Annual precipitation of less than 12 inches per year results in negligible deep percolation to the water table (DWR, 1930) due to evapotranspiration. Therefore, the contribution of direct precipitation upon the valley floor of the Mission Springs Sub-Basin is considered to be negligible.

4.1.2 Surface Water Inflow

A value for surface water inflow into the basin is difficult to provide due to lack of precise long term monitoring data, climatic variation, high potential evapotranspiration rates and rapid infiltration rates for surface runoff.

Data from a USGS stream gage in Mission Creek indicates that streamflow is prevalent during and following periods of high rainfall. The long-term (35 years) annual average discharge is approximately 2,100 AF/yr (USGS web site) for Mission Creek. Stream flows range from zero to as high as 540 cubic feet per second and flows are rapidly dispersed downstream into the alluvium (Richard C. Slade & Associates LLC [Slade], 2000).

It is believed that no other streams that drain directly into the Mission Creek Sub-Basin are currently gaged, although the USGS did gage Long Creek for a short period of record (7 years). Proctor (1968) noted that water flowing from the washes and creeks originating in the surrounding mountains tends to disappear into the valley alluvium at the foot of the slopes. This indicates that the amount of rainfall recharge to the groundwater basin from mountain runoff may be significant (Slade, 2000). Therefore, using the Hely and Peck Method described above, Psomas estimated the surface inflow from the following surface water drainages: Mission Creek and the Morongo Canyon Wash system (which consists of Big Morongo, Little Morongo and Morongo Canyon washes, Blind Canyon, West Wide Canyon, and Long Creek).

Table 1 presents estimated runoff values from precipitation throughout the watershed of the Mission Creek Sub-Basin. The total for the watershed is estimated at approximately 6,834 AF/yr delivered into the Mission Creek Sub-Basin from surface water flow via the sources listed above.

4.1.3 Subsurface Inflow

Several subsurface inflow recharge systems have been identified for the Mission Creek Sub-Basin. These sources originate from precipitation in the surrounding mountains and include; subsurface inflow from Mission Creek, and the general flux of groundwater from Desert Hot Springs Sub-Basin across the Mission Creek Fault. Because the Mission Creek Fault would disrupt subsurface flow from the Morongo Canyon Wash system, any subsurface flow attributed to the Morongo Wash system would be included as part the groundwater flux across the fault.

For Mission Creek, darcian flow in porous media can be calculated by the equation:

$$Q=KIA$$

Where,

Q=flow in gallons (gal)/day
K=hydraulic conductivity in gal/day/feet^2 (ft^2)
I= groundwater gradient (unitless)
A= cross-sectional area of saturated thickness in ft^2

An estimate of the subsurface inflow from the Mission Creek alluvium west of Indian Avenue was made by taking an average hydraulic conductivity (K) value of 40 gal/day/ft^2 [MTU (1998) suggested an average value of K ranging from 2.0 to 300 gal/day/ft^2] for the alluvium, a hydraulic gradient of 0.0067, and an area of 13,200,000 ft^2. The resulting value is 10.9 AF/day or 3,979 AF/yr.

In addition to subsurface inflow associated with the various drainages, estimates have been made by Mayer and May (1998) addressing the inflow of groundwater to the

Mission Creek Sub-Basin from the Desert Hot Springs Sub-Basin across the Mission Creek Fault at approximately 3,080 AF/yr.

4.1.4 Imported Water

Although several studies investigating the possibility for a long-term recharge program in the Mission Creek Sub-Basin have been completed, at the time of this report, a recharge program has not yet been fully implemented. In 1997, Desert Water Agency (DWA) constructed a series of recharge ponds in the upper portion of the Mission Creek Groundwater Sub-Basin but has been able to complete only one cycle of imported water recharge. In 2002, approximately 4,000 AF of water was imported into the basin.

The possibility of future recharge depends largely on the availability of water from the Metropolitan Water District's Colorado River Aqueduct and on agreement with DWA. Thus, in our overall analysis we have not assumed that a long-term periodic recharge program will provide inflow to the Mission Creek Groundwater Sub-Basin.

4.1.5 Wastewater Deliveries and Return Flows

MSWD currently operates two wastewater treatment plants (see Section 5.1.1) serving a total of approximately 3,012 developed parcels. The plants are the Horton Treatment Plant and the Desert Crest Treatment Plant with capacities of 2,500,000 gal/day (2,800 AF/yr) and 180,000 gal/day (202 AF/yr), respectively. Following secondary treatment, the undisinfected secondary wastewater effluent enters percolation ponds where it infiltrates into the basin. The amount of water the treatment ponds recycle via percolation ponds has steadily increased over the last several years. For the purpose of this evaluation, we have assumed a constant annual percolation of approximately 1,013 AF/yr (MSWD 2000).

Additional recharge to the basin attributed to the approximately 5,500 un-sewered private disposal systems is estimated based on the following assumptions: 1) each system is part of a private domestic water system with a per annual consumption of water of 0.27 AF/yr; and 2) approximately 23% of the water is returned to groundwater through infiltration in the septic system (MTU, 1998). Thus,

> 0.27 AF/yr x 5,500 users x 0.23 return water = 341 AF/yr return flow from domestic un-sewered disposal systems

In addition, return flows associated with the application of water to golf courses, resort landscape watering, and agricultural irrigation practices are expected to contribute to overall inflow to the Sub-Basin. MTU (1998) has suggested that 20% of the water consumed by golf courses would be returned to groundwater. Assuming a total production of 1,510 AF/yr, total return flow from golf courses, resort landscape watering and agricultural irrigation practices is estimated at 302 AF/yr.

4.2 Sources of Outflow from the Mission Creek Sub-basin

Potential sources of outflow from the Mission Creek Sub-Basin include surface water outflow, subsurface (groundwater) outflow, evapotranspiration losses, and pumping. A brief explanation of the methodology utilized in deriving each element of outflow for the Mission Creek Sub-Basin is presented in the following subsections.

4.2.1 Surface Water Outflow

Due to high infiltration and evapotranspiration rates for surface water there is little or no surface outflow from the basin. Perennial streams do not exist and stream flow is usually intermittent and caused by localized high intensity precipitation storms that create sudden discharges of rainwater runoff. Surface water is quickly absorbed by the sediments where plants in the vadose zone take up a limited amount of water and the remaining continues to percolate into the groundwater table. For this hydrologic budget a value of 1% (~ 70 AF/yr) of the surface water inflow is estimated to flow out of the Sub-Basin boundaries during periods of high volume precipitation.

Geotechnical Consultants [GTC] (1979) details the rapid infiltration of surface runoff into the coarse grained alluvium of the Mission Creek Sub-Basin. During a major storm event in 1977-1978, GTC estimated the southeasterly surface flows within Mission Creek Groundwater Sub-Basin from Indian Avenue to Dillon Road where flow decreased from 1,980 gallons per minute (gpm) to 0 gpm. During this event GTC states that most of the surface runoff was from Mission Creek and that Little and Big Morongo Creek washes had little to no runoff.

4.2.2 Subsurface Outflow

Subsurface outflow from the basin occurs along the southeasterly trending portion of the Banning fault that marks the boundary of the Mission Creek Sub-Basin with the Garnet Hill Sub-Basin. At this boundary, groundwater meets a less permeable zone of sediments produced by faulting activity that folded sedimentary deposits, displaced water-bearing deposits, and caused once permeable sediments to become less permeable. This is evidenced by water level measurements taken from two wells on opposites sides of the fault. Each time these measurements have been taken, the water levels are higher in the Mission Creek Sub-Basin than the adjacent Garnet Hill Sub-Basin.

As groundwater flows towards the Banning fault zone, it meets resistance due to the lower permeability of the fault zone. This is evidenced by historically higher water levels near the fault zone relative to water levels throughout the Mission Creek Sub-Basin. As the pressure of the groundwater builds up against the fault zone some groundwater escapes the basin across the lower permeable zone into the Garnet Hill Sub-Basin.

At this time, the quantity of flow across the fault has been estimated using various methods. These methods take into account the permeability of the sediments, saturated cross sectional area of sediments in contact with the fault, hydraulic gradient, and the permeability across the fault zone.

Tyley (1974) estimated a subsurface flow across the fault at 2,000 AF/yr whereas Mayer and May (1998) estimated a flow value of 5,470 AF/yr. As a compromise, Psomas selected a midrange value of 3,200 AF/yr for subsurface outflow across the Banning fault zone.

4.2.3 Evapotranspiration

Evapotranspiration is the amount of surface or groundwater that evaporates into the atmosphere or is utilized by plants. DWR (1964) reports evaporation averaging 75 inches per year from free water surfaces. This evaporation rate is within the same range as other published values for the region.

Phreatophytes (plants) along faults in the basin have been estimated to consume 1,400 to 1,500 AF of water each year. Mayer and May (1998) estimated the total area populated by phreatophytes to be 1,123 acres. Mesquite is the dominant phreatophyte found along the Mission Creek and Banning faults. The amount of water extracted from the aquifer by the phreatophytes was estimated using the approach of Lines and Bilhorn (1996) who have estimated transpiration losses from phreatophytes in the Mojave Desert. They estimated that the annual water consumption by mesquite was 1.3 AF/acre. This method used in the Mojave Desert seems to correlate well to the Mission Creek basin area. Using these values an approximation of 1,460 AF/yr is estimated as loss from the Sub-Basin due to evapotranspiration.

4.2.4 Groundwater Extraction

Groundwater extraction in the Sub-Basin can be reported in two categories: 1) Public pumping (MSWD and CVWD); and 2) private pumping from golf courses and resorts and domestic wells. Public well pumping extracts the highest amount of groundwater annually, followed by golf course and resort pumping. In 2003, MSWD reported groundwater extraction in the basin was 8,567 AF for MSWD and 4,425 AF for CVWD. The major private users including Hidden Springs, Mission Lake Country Club, and Sand Resort extracted approximately 1,510 AF of groundwater in 2003. Pumping from private domestic wells in the MSWD service area is estimated at approximately 225 AF/yr. This figure is based upon an assumption of approximately 200 private domestic wells producing groundwater at a rate of approximately 1,000 gallons per day each. Therefore, total groundwater extraction by pumping from the Mission Creek Sub-Basin is estimated at approximately 14,727 AF/yr. Figures on domestic pumping rates are difficult to estimate due to the lack of a comprehensive groundwater well monitoring program to provide data on well locations, current use, and pumping rates.

4.3 Summary of Inflow/Outflow to Mission Creek Sub-Basin

Total outflow from the basin has been approximated at 19,400 AF/yr with inflows to the basin estimated at 15,500 AF/yr suggesting that the basin may be in overdraft up to 3,900 AF/yr (Table 2-3). Basin overdraft has been historically documented by declining water levels recorded in parts of the Sub-Basin. The annual hydrologic budget for the Mission Creek Sub-Basin is summarized in Table 2 and presented diagrammatically in Figure 3.

4.2.4 Groundwater Extraction

Groundwater extraction in the Sub-Basin can be reported in two categories: 1) Public pumping (MSWD and CVWD); and 2) private pumping from golf courses and resorts and domestic wells. Public well pumping extracts the highest amount of groundwater annually, followed by golf course and resort pumping. In 2003, MSWD reported groundwater extraction in the basin was 8,567 AF for MSWD and 4,425 AF for CVWD. The major private users including Hidden Springs, Mission Lake Country Club, and Sand Resort extracted approximately 1,510 AF of groundwater in 2003. Pumping from private domestic wells in the MSWD service area is estimated at approximately 225 AF/yr. This figure is based upon an assumption of approximately 200 private domestic wells producing groundwater at a rate of approximately 1,000 gallons per day each. Therefore, total groundwater extraction by pumping from the Mission Creek Sub-Basin is estimated at approximately 14,727 AF/yr. Figures on domestic pumping rates are difficult to estimate due to the lack of a comprehensive groundwater well monitoring program to provide data on well locations, current use, and pumping rates.

4.3 Summary of Inflow/Outflow to Mission Creek Sub-Basin

Total outflow from the basin has been approximated at 19,400 AF/yr with inflows to the basin estimated at 15,500 AF/yr suggesting that the basin may be in overdraft up to 3,900 AF/yr (Table 2-3). Basin overdraft has been historically documented by declining water levels recorded in parts of the Sub-Basin. The annual hydrologic budget for the Mission Creek Sub-Basin is summarized in Table 2 and presented diagrammatically in Figure 3.

TABLE 2

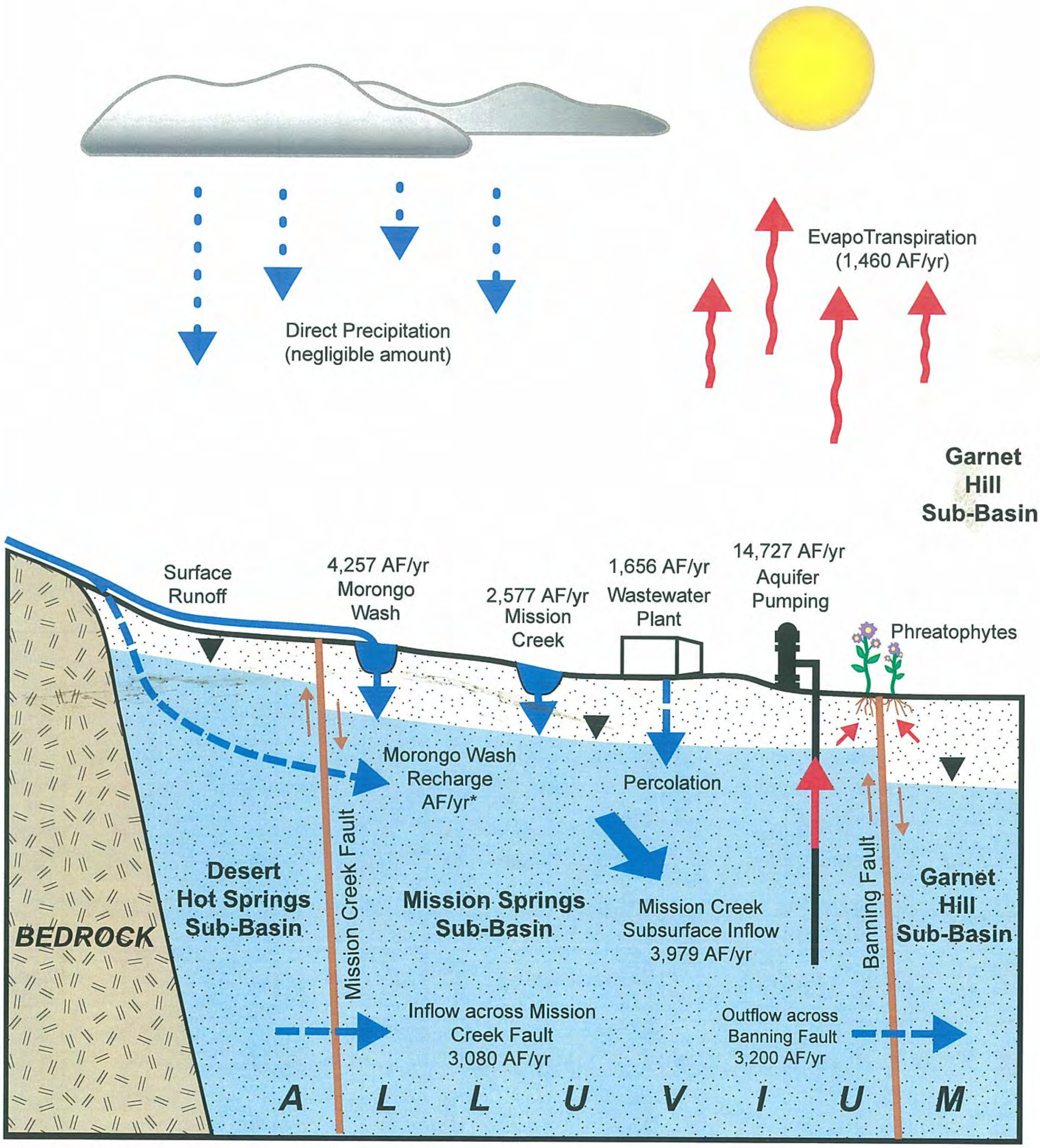
SUMMARY OF INFLOW/OUTFLOW COMPONENTS
MISSION CREEK SUB-BASIN

INFLOW COMPONENT	RATE (AF/yr)	% OF TOTAL INFLOW
1.) Precipitation	0	0.0%
2.) Surface Water Inflow	6,834	44.0%
3.) Subsurface Inflow	7,059	45.4%
4.) Imported Water Storage	0	0%
5.) Wastewater Deliveries and Return Flows	1,656	10.7%
TOTAL INFLOW	15,549	---
OUTFLOW COMPONENT	RATE (AF/yr)	% OF TOTAL OUTFLOW
1.) Surface Water Outflow	70	0.4%
2.) Subsurface Outflow	3,200	16.4%
3.) Evapotranspiration	1,460	7.5%
4.) Groundwater Extraction	14,727	75.7%
TOTAL OUTFLOW	19,457	---
INFLOW-OUTFLOW	-3,908	

The basic hydrogeologic data utilized in computing the hydrologic budget presented herein was compiled from a variety of sources and represents the best available hydrogeologic information presently available. Limitations associated with the available information may include:

- Quality and detail of the study (ies) that calculated the data value(s);
- Previous studies have tended to be regional in nature (and do not focus on the Mission Creek Sub-basin specifically);
- The level of technology that was available at the time some previous studies were completed;
- Incomplete understanding/conceptual model of the groundwater basin basement as related to the geologic structure;
- Incomplete model of groundwater movement into and out of the basin due to geologic structure and climatic factors

Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin



*Included as part of inflow across Mission Creek Fault

Mission Creek Sub-Basin and Water Budget Summary

- The potential introduction of human error when analyzing well completion reports and well driller logs, and;
- The lack of a current comprehensive potentiometric surface map of the entire sub-basin which would allow better storage values to be calculated

4.4 Changes in Groundwater Storage

MSWD along with various entities have monitored groundwater levels in the Mission Creek Sub-Basin for selected wells for many years. As an alternative means of determining the annual amount of change in groundwater in storage, available static and pumped water level data were compiled for selected wells in the Mission Creek Sub-basin. These data were plotted to provide long-term hydrographs of well response within the sub-basin.

From the historical water level measurements (see Table 3), groundwater elevation contours were developed for 1991 and for 2004 (see Figures 4 and 5, respectively). The change in groundwater elevation levels between 1991 and 2004 was diagramed as contours in Figure 6.

The contoured portion of the sub-basin, shown in Figures 4 and 5, represents the area in which most of the groundwater extractions are occurring and encompasses approximately 30 square miles. The volume between the 1991 groundwater contours and the 2004 groundwater contours was calculated for this area and multiplied by the average storage coefficient. Historically, storage coefficients ranging from 0.15 to 0.18 have been assigned to the sub-basin (Tyley, 1974, GTC, 1979). Recent data collected and evaluated for the Mission Creek Sub-basin has indicated that the average storage values for the sub-basin may be higher. Psomas (2004) and Michigan Technology University (1998) were able to achieve good model calibration using 0.225 as the storage value. GSi/Water Inc. completed a geophysical and field hydrogeologic study of the sub-basin for the MSWD and evaluated the depth to bedrock and groundwater temperature data for the Sub-basin. When compiled, these data will help refine the conceptual model of the basin structure and thereby improve quantification of the amount of groundwater in storage and the current amount of overdraft.

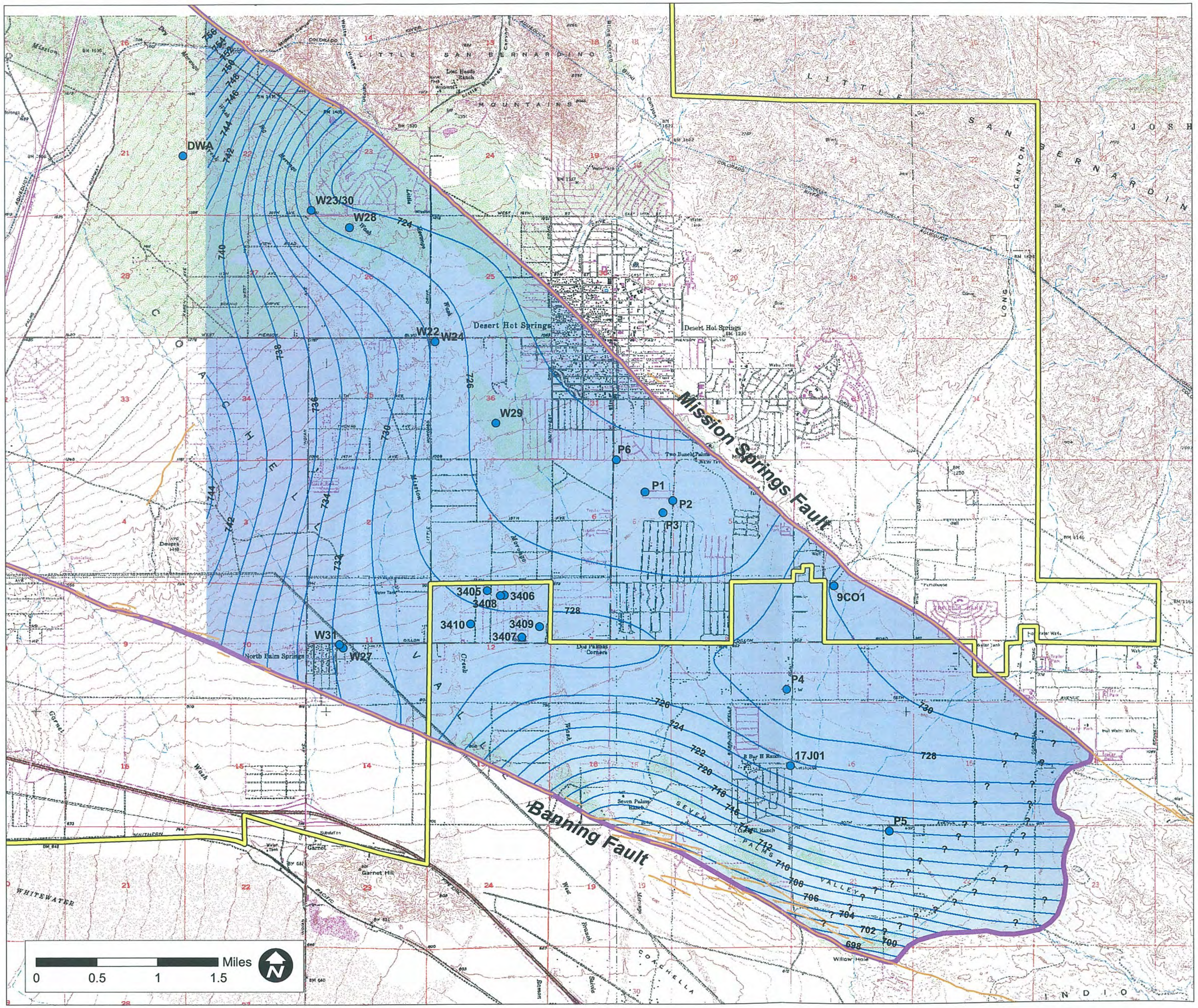
This approach yielded an estimated decrease in storage of approximately 57,500 acre-feet for the 13-year period (or an average decrease in storage of approximately 4,423 AF/yr.).

Results of the hydrologic budget approach described in Section 4 compare favorably with results derived from analyzing long–term hydrographs and historical changes in groundwater storage within the sub-basin. The two methods suggest that the sub-basin is currently being overdraft by approximately 3,900 to 4,400 AF/yr.

TABLE 3

WELL LOCATIONS AND GROUNDWATER ELEVATIONS FOR 1991 AND 2004 CONTOUR MAPS

Well Identification No.	State Well Number	Surface Elevation (feet msl)	1991 Ground-water Elevation (feet msl)	2004 Ground-water Elevation (feet msl)	Perforation Interval (feet bgs)	Comments
CVWD 3405	03S04E12C01	888	726.5	703.5	200-480	CVWD WELL
CVWD 3407	03S04E12H01	844	726.9	705.1	122-147 172-192	CVWD WELL
MSWD W22	02S04E36D01	1106	728.0	705.7	390-780	MSWD WELL 22
W24	02S04E36D02	1096	727.0	703.8	406-790	MSWD WELL 24
W27	03S04E11L02	879	732.0	706.4	180-380	MSWD WELL 27
W28	02S04E26D01	1241	725.1	701.1	590-890	MSWD WELL 28
W29	02S04E36K01	1014	726.0	698.8	410-930 970-1050	MSWD WELL 29
W31	03S04E11L04	877	740.5	712.9	270-470 650-670 920-940 980-1000	MSWD WELL 31
W30	02S04E23N01	1282	723.2	706.7	640-1080	MSWD 23/NEXT MSWD 30
#1	UNKNOWN ATT	900	725.0	702.5	Unk	Feb 2004 measurements from MSWD with no well names and digital location data. Used GIS and a written location description to determine x,y and z coordinates.
#2	UNKNOWN ATT	890	725.0	706.6	Unk	Feb 2004 measurements from MSWD with no well names and digital location data. Used GIS and a written location description to determine x,y and z coordinates.
#3	UNKNOWN ATT	881	725.0	705.2	Unk	Feb 2004 measurements from MSWD with no well names and digital location data. Used GIS and a written location description to determine x,y and z coordinates.
#4	UNKNOWN ATT	863	727.5	713.2	Unk	Feb 2004 measurements from MSWD with no well names and digital location data. Used GIS and a written location description to determine x,y and z coordinates.
#5	UNKNOWN ATT	800	720.0	712.0	Unk	Feb 2004 measurements from MSWD with no well names and digital location data. Used GIS and a written location description to determine x,y and z coordinates.
9CO1	03S05E09C01	1004	731.1	718.0	262-334	Extrapolated from various reports including Mayer & May and Fox.
17J01	03S05E17J01	796	725.6	707.0	340-375	Extrapolated from Mayer & May report which used well as control point.
DWA Monitor Well	02S04E21J01	1450	906.5	906.5	500-630 670-790 850-1000	Extrapolated from two points then decided to use just the one known measured value.



Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Selected Wells
- Groundwater Elevation Contours 1991 (2-Foot Contour Interval)

Groundwater elevation surface based on contours depicted on the map, "Water Level Contours Spring 1991", contained in the report, Mission Springs Water District Groundwater Resources Investigation - Update" by Robert C. Fox (September 1992).

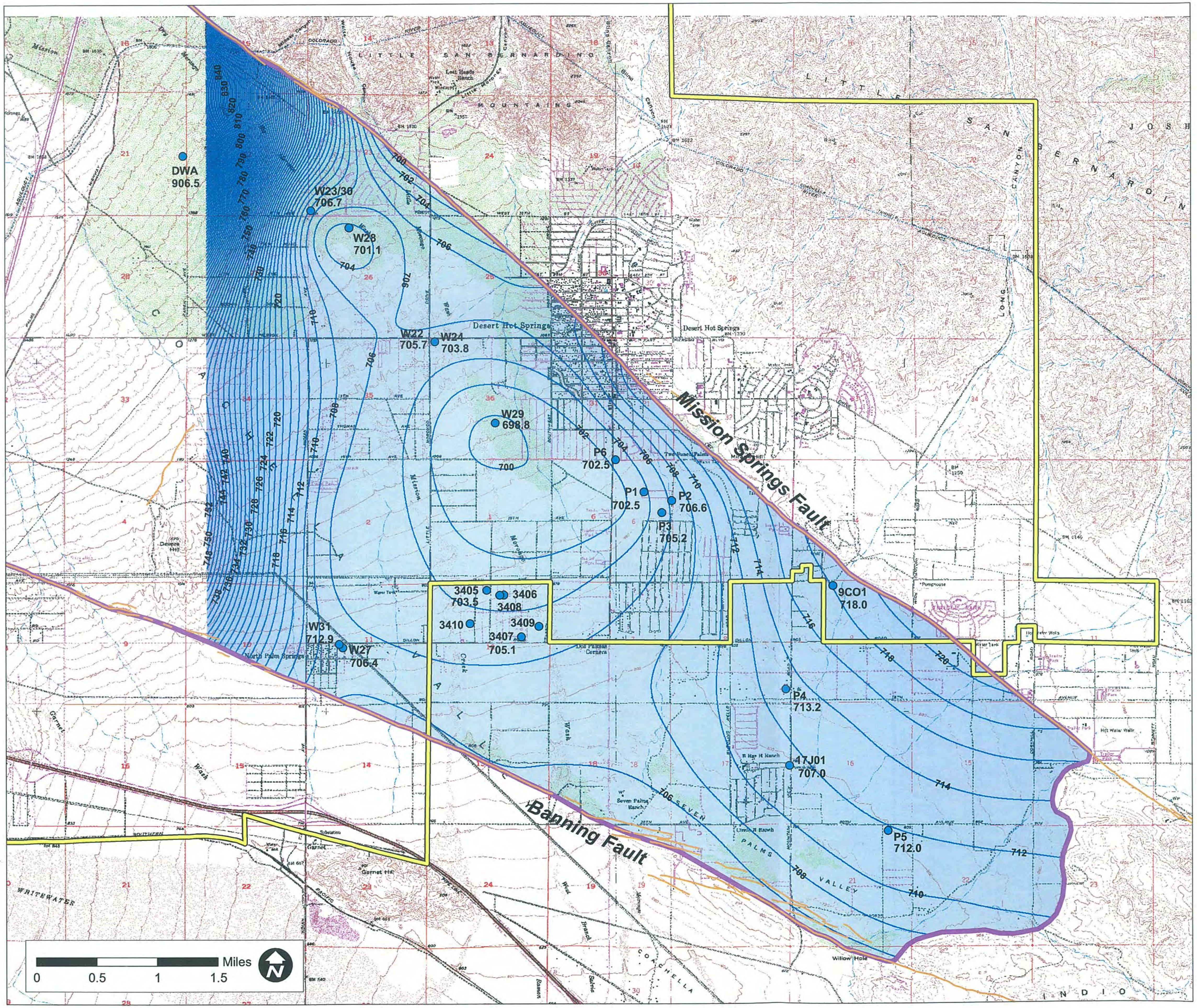
Question mark areas indicated on original map or denote areas interpolated to edge of Mission Creek sub-basin boundary.

Groundwater Elevation - 1991

MSWD PSOMAS

Figure 4

Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin



Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Selected Wells
- Groundwater Elevation Contours 2004 (2-Foot Contour Interval)

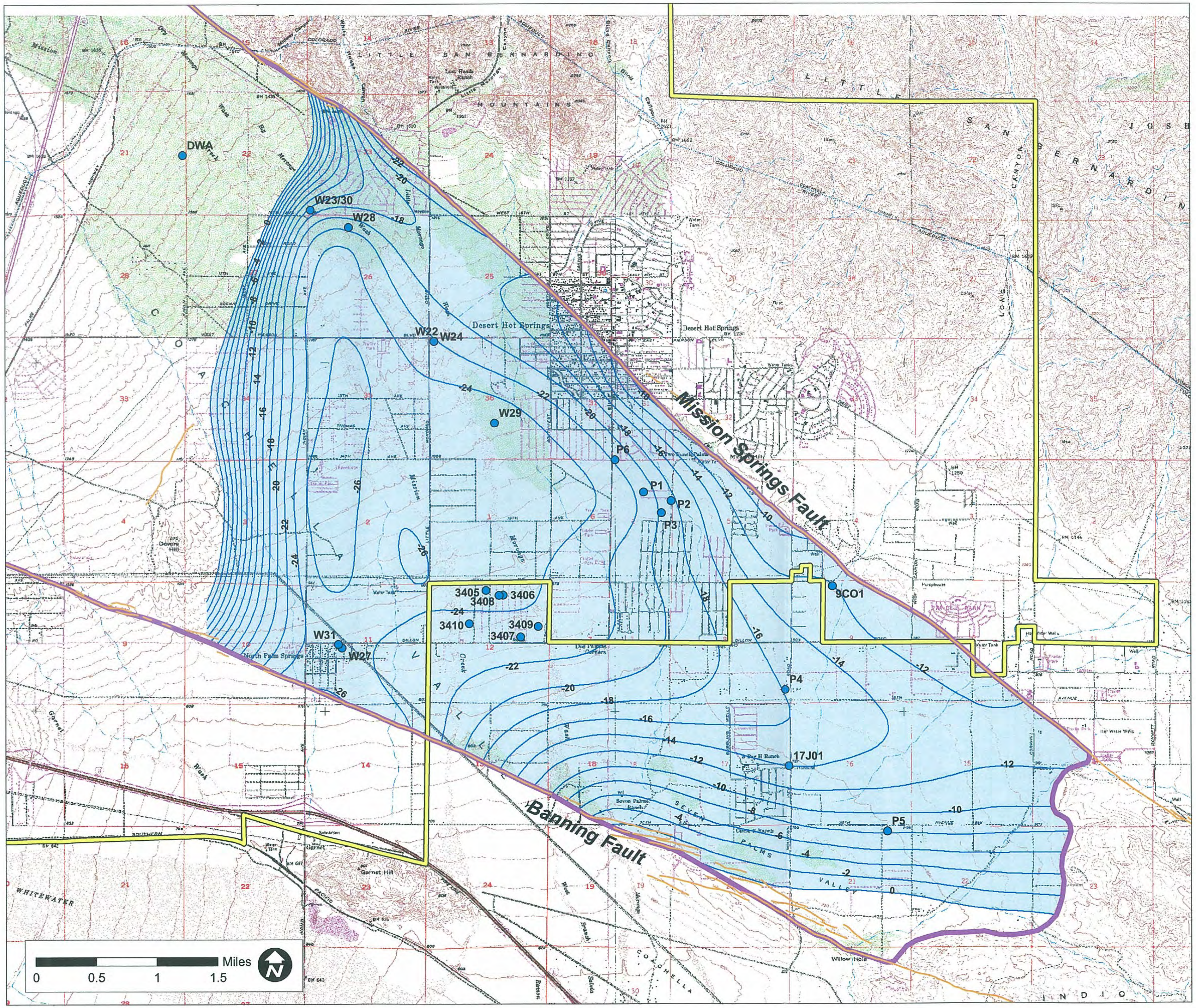
Groundwater elevation contours based on 2004 data from selected wells and professional judgment.

Groundwater Elevation - 2004

MSWD PSOMAS

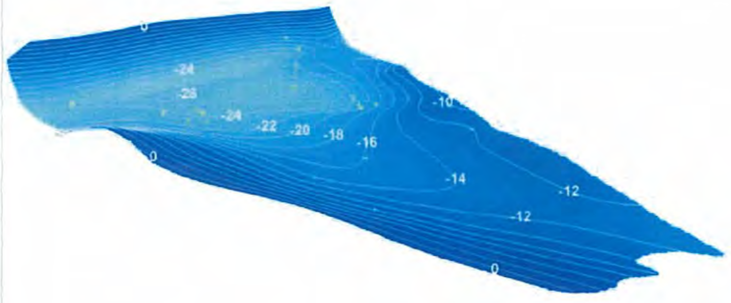
Figure 5

Preliminary Water Balance for the Mission Creek Groundwater Sub-Basin



Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Selected Wells
- Change in Groundwater Elev. (1991-2004) (2-Foot Contour Interval)



3D View Looking Northwest

Vertical Exaggeration: 100X

Changes in Groundwater Elevation 1991-2004

MSWD PSOMAS

Figure 6

5.0 CONCLUSIONS

The estimation of a current basin overdraft of approximately 3,900 to 4,400 AF/yr is based upon the best information available and several assumptions based upon that data.

Preparation of this hydrologic budget has revealed that several elements would benefit from further refinement. Subsurface inflows and outflows are difficult to estimate at the current level of hydrogeologic understanding of the fault-bounded aquifer system. Additional information regarding the sub-basins' formations will provide a clearer model of geologic structure with regards to groundwater barriers or hydraulic connections and other features that may impact groundwater movement, quality, and quantity. These observations show the need for more understanding of the hydrogeology and hydraulic connections supplying recharge to the sub-basin. It is anticipated that the incorporation of recent data from GSi/water will provide more data on the sub-basins' geometry, hydrogeology and additional sources of recharge.

Another issue that requires further investigation is the lack of comprehensive groundwater extraction data for private residences not connected to the MSWD water delivery system. To address this issue, PSOMAS analyzed well completion reports obtained from DWR and well completion report databases. After initial analysis, it is apparent that a clear and reliable value for private extraction cannot be calculated using the DWR data. This is because DWR has to rely on the "honor system" for well driller's to file a well completion report. DWR reported to Psomas via personal communication that the DWR receives only approximately 45 to 55 percent of well completion reports for wells installed for private users.

6.0 RECOMMENDATIONS

Based on the results of the hydrologic budget presented herein, Mission Springs Water District may wish to consider the implementation of the following proposed action items to obtain a more thorough understanding of the inflow/outflow to the Mission Creek sub-basin and the resulting effect on the change in groundwater storage in the sub-basin. Table 4 summarizes each of the components for calculating the water balance along with specific issues/concerns associated with each component. Finally, Table 4 presents the necessary actions for each of the components to refine the estimate where a concern/issue may be present. In summary, these actions include the following:

- Establish a monitoring well network beyond MSWD's existing municipal supply wells and collect periodic information on depth to groundwater and selected water quality information over time. This would assist in monitoring changes in storage in the basins and assist in development of a groundwater model as mentioned in the next task;
- Develop a groundwater model of the sub-basin that more accurately predicts effects from changes/variations in inflows and outflows from the sub-basin;
- Use MSWD information to generate information on private domestic users; conduct limited field canvas well survey and meter selected wells to obtain a more accurate representation of production from private users;
- Review recent aerial photographs to refine estimate of water loss do due evapotranspiration from phreatophytes.

Though important but less critical, MSWD may want to consider the following actions to refine estimates for surface and subsurface inflow into the basin associated with Mission Creek and Morongo Canyon Wash system:

- Survey cross sections in the major drainages;
- Conduct geophysical surveys of the major drainages to determine depth to bedrock elevations;
- Monitor streamflow/peak flow events on major drainages at Mission Creek and Banning fault transects of the basin.

TABLE 4
PRELIMINARY ISSUES/CONCERNS AND RECOMMENDATIONS FOR WATER BALANCE REFINEMENT
MISSION CREEK GROUNDWATER SUB-BASIN

BASIN CHARACTERISTIC	WATER BALANCE PARAMETER	CURRENT ESTIMATED VALUE	ISSUE /CONCERN	RECOMMENDATIONS	ACTION NECESSARY TO REFINE ESTIMATE
INFLOW	1.) Precipitation	Considered to be negligible	None	N/A	N/A
	2.) Surface Water Inflow				
	a.) Mission Creek	Estimated at 2,577 AF/yr	Information lacking to definitively estimate contribution of surface water to water basin.	Collect information on contribution of major drainages to basin.	Conduct surveys of cross-sections of major drainages; conduct geophysical surveys to determine depth of bedrock; conduct stream survey during precipitation events and do opportunistic stream gaging/crest gaging
	b.) Morongo Canyon Wash System	Estimated at 4,257 AF/yr	Estimation of surface water inflow to Mission Creek sub-basin is poor at best. Information lacking to definitively estimate contribution of surface water to sub-basin.	Collect information on contribution of major drainages to basin.	Conduct surveys of cross-sections of major drainages; conduct geophysical surveys to determine depth of bedrock; conduct stream survey during precipitation events and do opportunistic stream gaging/crest gaging
	3.) Subsurface Inflow				
	a.) Mission Creek	Estimated at 3,979 AF/yr	Estimation of sub-surface water inflow to Mission Creek sub-basin is poor at best. Information lacking to definitively estimate contribution of sub-surface water to sub-basin.	Collect information on sub-surface inflow into basin.	Conduct surveys of cross-sections of major drainages; conduct geophysical surveys to determine depth of bedrock; Establish monitoring well network to better understand sub-surface flow into basin. Analyze existing groundwater quality information to assist in determining sub-surface inflow.
	b.) Morongo Canyon Wash System	Estimated as 0 AF/yr; considered part of flux across Mission Creek fault.	None	N/A	N/A
	c.) Mission Creek Fault	Estimated at 3,080 AF/yr	Changes in water levels on either side of fault may have dramatic effect on flux across fault. Groundwater flux across fault needs to be more accurately estimated in order to assess effects of pumpage on north and south sides of fault	Enhance estimate of groundwater flux across fault that is based on measured water levels on either side of fault.	Establish a monitoring well network and collect information on either side of the fault system. Analyze existing groundwater quality information to assist in determining sub-surface inflow. Develop a groundwater model that more accurately estimates flux across fault based on current and future water levels.
	4.) Imported Water	None	Approximately 4,000 AF were imported into the sub-basin in 2002. However for estimating purposes, no importation was assumed for the water balance.	N/A	N/A
	5.) Wastewater deliveries and return flows				
	a.) wastewater percolation ponds	Estimated at 1,013 AF/yr	None	N/A	N/A
	b.) private sewage disposal systems	Estimated at 341 AF/yr	The contribution of private sewage disposal systems may have a larger influence on contributions to the basin than previously thought. In addition, these systems may be concentrated in specific areas and have an influence on groundwater quality locally.	Enhance estimate of quantity of contribution of disposal systems and location of these systems.	Review records for locations of private sewage disposal systems
	c.) return flow from golf courses, ag. Irrigation and resort landscape watering	Estimated at 302 AF/yr	None	N/A	N/A
OUTFLOW	1.) Surface Water Outflow	Estimated at 70 AF/yr	None	N/A	N/A
	2.) Subsurface Outflow				
	a.) Banning Fault	Estimated at 3,200 AF/yr	Changes in water levels on either side of fault may have dramatic effect on flux across fault. Groundwater flux across fault needs to be more accurately estimated in order to assess effects of pumpage on north and south sides of fault	Enhance estimate of groundwater flux across fault that is based on measured water levels on either side of fault.	Establish a monitoring well network and collect information on either side of the fault system. Develop a groundwater model that more accurately estimates flux across fault based on current and future water levels.
	3.) Evapotranspiration	Estimated at 1,460 AF/yr	Current values are based on dated information. Consider refinement using recent aerial photography coverage.	Update value based upon current information.	Review recent aerial photography information and refine estimate based upon current data.
	4.) Groundwater Extraction				
	a.) Public (MSWD & CVWD)	Estimated at 12,992 AF/yr	None	N/A	N/A
	b.) Industrial/Commercial (Private golf courses, resorts, etc.)	Estimated at 1,510 AF/yr	None	N/A	N/A
	c.) Private domestic users	Estimated at 225 AF/yr	Current information available is inadequate to develop accurate quantification of groundwater extracted by private domestic users.	Develop a methodology and collection effort to better quantify the amount of groundwater extracted by private domestic users.	Use MSWD information to generate information on private users. Conduct a limited survey and meter selected wells to obtain more accurate representation of production from private users.
CHANGE IN STORAGE	1.) Sub-basin water levels	Change in storage is estimated at 4,423 AF/yr for the period 1991-2004	Absence of wells in some areas may skew actual groundwater contours and resulting loss from the basin. In addition, water levels may represent inaccurate groundwater conditions based on well completion, well position, well density (in certain areas), accuracy of measurements…	Implement a semi-annual water level collection program for a specified well network that will give a more accurate representation of groundwater basin storage and to allow monitoring of these changes	Design a monitoring well network for the basin including use of existing wells and new wells, as required. Collect information and monitor change in storage in the sub-basin.

7.0 STUDY LIMITATIONS

This report has been prepared in accordance with that degree of care and skill ordinarily exercised by professionals currently practicing under similar circumstances and in this or similar localities. The conclusions and recommendations provided in this report relied on selected previously published reports, data, and modeling from previous investigators including: DWR (1964), Tyley (1974), GTC (1979), the MSWD (2000) Urban Water Management Plan 2000; the Mayer and May (1998) Groundwater Model, and the GTC (1979) Hydrogeologic Assessment Report. Mayer and May also relied on the Tyley (1971) Analog Model Study to input their model parameters, and more recently Psomas (2004).

No other warranty, either expressed or implied, is made to the professional advice presented herein.

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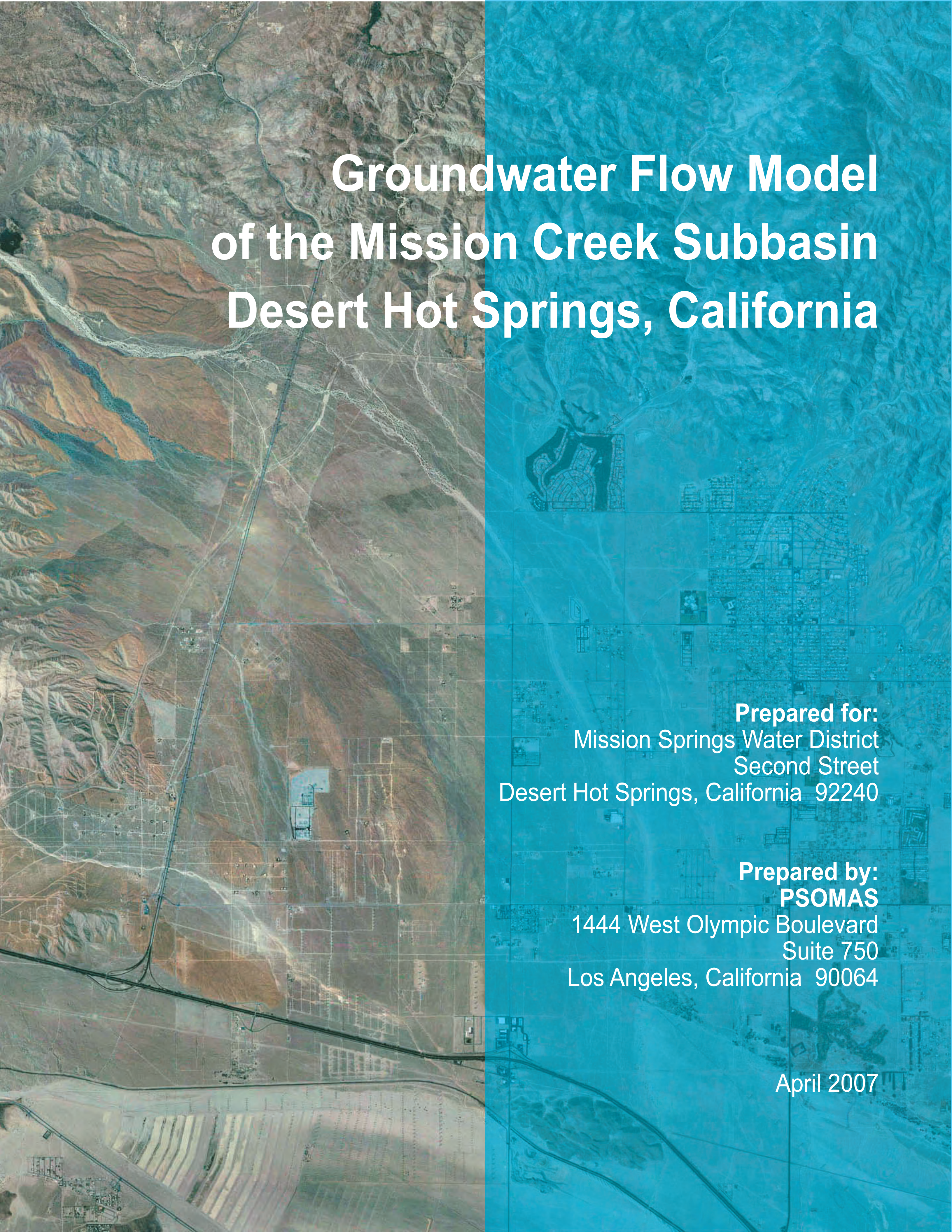
APPENDIX B

PSOMAS 2007 Report



Groundwater Flow Model of the Mission Creek Subbasin Desert Hot Springs, California

Prepared for:
Mission Springs Water District
Second Street
Desert Hot Springs, California 92240

Prepared by:
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1444 West Olympic Boulevard
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Los Angeles, California 90064

April 2007

GROUNDWATER FLOW MODEL
OF THE
MISSION CREEK SUBBASIN
DESERT HOT SPRINGS, CALIFORNIA

April 2007

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ACRONYMS and ABBREVIATIONS

AF	Acre-Feet
AFY	Acre-Feet per Year
CRA	Colorado River Aqueduct
CVWD	Coachella Valley Water District
DWA	Desert Water Agency
DWR	Department of Water Resources
GHB	General Head Boundary
MCGS	Mission Creek Groundwater Subbasin
MODFLOW	Modular three-dimensional finite-difference ground-water model
MSL	Mean Sea Level
MSWD	Mission Springs Water District
MWD	Metropolitan Water District of Southern California
RWQCB	Regional Water Quality Control Board
PEST	Parameter Estimation Software
SWP	State Water Project
TDS	Total Dissolved Solids
UWMP	Urban Water Management Plan
WMP	Water Master Plan

1.0 Introduction

Mission Springs Water District (MSWD) was established in 1953 and was formerly called the Desert Hot Springs County Water District. The MSWD's service area covers 135 square miles and serves over 25,000 people in the City of Desert Hot Springs and ten (10) smaller communities in Riverside County, California.

The MSWD is located in the Coachella Valley, northwest of the Salton Sea, within the Colorado Desert region. The Coachella Valley can be characterized as desert; as it experiences low precipitation on the valley floor (averaging between five and six inches per year) and high precipitation in the local mountains (averaging between 30 and 40 inches per year). Seasonal temperature extremes can range from over 115^{o} F in the summer to below 32^{o} F in the winter. Major surface water features in the area are the Whitewater River, Mission Creek, San Gorgonio River, Little and Big Morongo Washes, Dry Morongo, and Long Canyon.

MSWD's water source is 100 percent groundwater drawn from multiple active production wells. Psomas was contracted by MSWD to develop a regional numerical groundwater flow model of the Mission Creek Groundwater Subbasin (MCGS or Subbasin) and compile a report that documents model development and results of requested simulations.

1.1 Purpose

Psomas understands that MSWD anticipates a need to increase groundwater pumping in order to meet projected water needs within its service area over the next 25 years. In order to offset drawdown of groundwater levels brought about by increased groundwater pumping, MSWD proposes to recharge groundwater through select placement of spreading water in percolation ponds within the Subbasin. This model was developed for the purpose of estimating what changes to groundwater elevations, if any, can be expected to occur within the Subbasin from increased groundwater pumping coupled with the proposed groundwater recharge efforts. Model-estimated groundwater elevations were developed for six separate simulations in five year increments beginning with 2006.

2.0 Conceptual Model Development

Three-dimensional views of the MCGS and approximate location of the crystalline bedrock are presented below in Figure 2-1, *Three Dimensional - Mission Creek Groundwater Subbasin*. The MSWD service area is shown overlain on the aerial image in yellow while Mission Creek and Banning Faults are shown at the surface as light-brown lineaments. Approximate location of crystalline bedrock is depicted by the blue/beige plane below and parallel to the surface map.

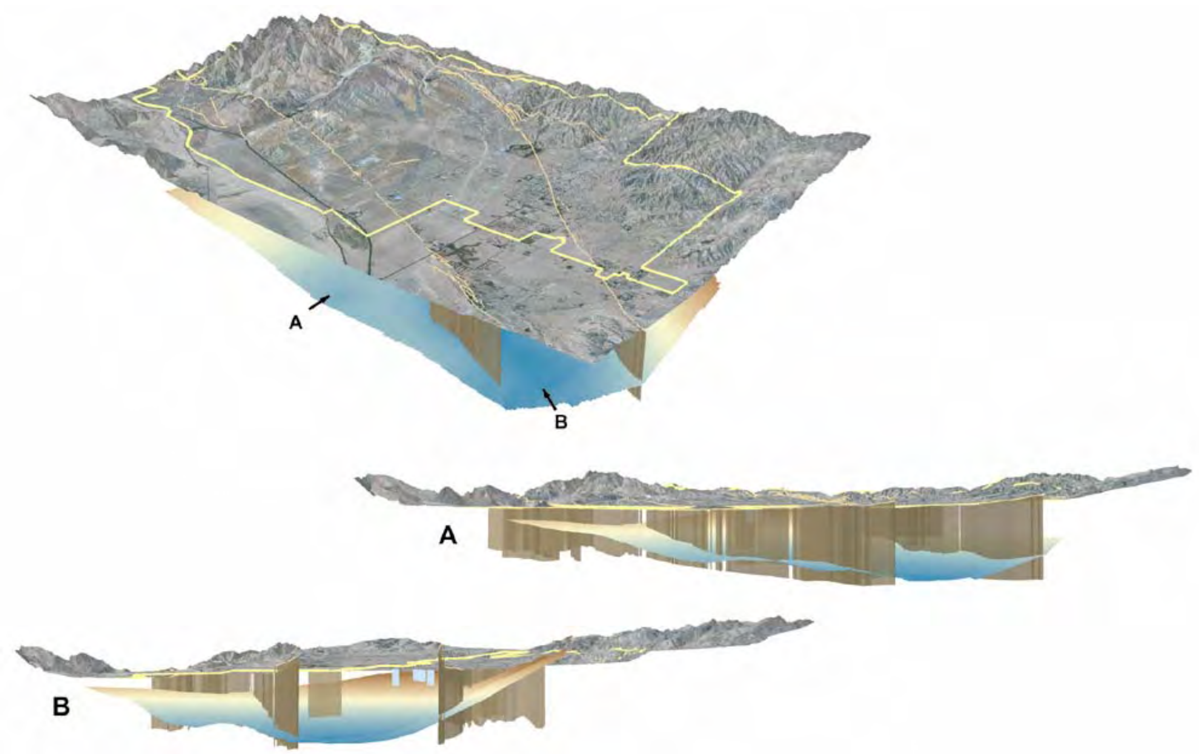


Figure 2-1
Three Dimensional - Mission Creek Groundwater Subbasin

These faults are also seen extending below the ground surface to the Subbasin crystalline bedrock in gravity survey data collected and interpreted by GSi/water. Crystalline bedrock elevations were also estimated by GSi/water personnel from the same gravity survey data. The middle and lower images in Figure 2-1 show three-dimensional profile (or sectional) views of the Subbasin as seen looking along directions of the arrows positioned at locations A and B, respectively. These views provide a visual description of the fault lines and the elevation of the bedrock within the Subbasin. View “A” looks north toward the Banning Fault, which serves as the Subbasin’s southern boundary. View “B” looks northwest between the Banning and Mission Creek Faults into what comprises the Mission Creek aquifer.

2.1 Data and Interpretations from Previous Investigations

Psomas reviewed previously published literature and developed a three-dimensional conceptual understanding of the Subbasin prior to developing the numerical model.

Regional groundwater models have been developed for the Coachella Valley since the late 1970’s. However, it was not until 1998 that Mayer and May (Michigan Technological University) developed a numerical flow model to evaluate alternative groundwater recharge strategies and approximate the area that would be influenced by proposed groundwater recharge efforts.

In 2004, Psomas (Psomas, 2004a) prepared a local groundwater model that covered a small portion of the Mission Creek Subbasin to estimate the potential groundwater changes from a proposed new municipal well.

In a separate study, Psomas also prepared a groundwater budget for the Mission Creek Subbasin as a management tool that included estimates of basin inflow, outflow, and storage change (Psomas, 2004b). Reports and field efforts for gravity survey, thermal, and estimates of groundwater input by GSi/water were essential in Psomas’ development of the water budget.

The results of these previous analyses were useful in developing the conceptual model of groundwater flow in the Subbasin, providing various estimates of inflow and outflow components, and the completion of this study.

2.1.1 Summary of Subbasin Hydrogeology

The MCGS underlies the northwest portion of the Coachella Valley and is bounded by the crystalline rocks of the San Bernardino Mountains on the west and the Banning fault on the south. The Mission Creek fault bounds the northern, northeastern, and eastern edges and the Indio Hills bound the Subbasin on the southeast. Both the Mission Creek and Banning faults are right-lateral strike-slip faults of the San Andreas system and are considered subsurface barriers that limit groundwater flow in and out of the MCGS.

The primary water-bearing deposits in the Subbasin are relatively unconsolidated late Pleistocene, Holocene alluvial fan, and terrace deposits. Pleistocene deposits consist of formations such as: 1) the Ocotillo Conglomerate, which is a thick sequence of poorly bedded coarse sand and gravel; and 2) the Cabezon Fanglomerate, which is a boulder conglomerate with abundant sand, silt, along with some clay as described by Proctor (1968). More recent geophysical surveys have suggested that water bearing formations may extend a few thousand feet to crystalline in some parts of the basin. The volume of available water from such depths is still largely unknown.

2.1.2 Understanding Aquifer Parameters

A brief summary of primary aquifer parameters is presented below and is intended to provide the reader a brief summary of the variables affecting groundwater flow and the data used in this analysis.

Groundwater exists in the small openings between the particles of clay, silt, sand, and gravel that make up the alluvial deposits of the aquifer. The percent of total volume of the aquifer occupied by these openings, or pores, is called porosity.

The parameter relating movement of groundwater through the aquifer is known as hydraulic conductivity (K) and depends on the size and arrangement of the water transmitting pores (or rock fractures) within a geologic formation, and on dynamic characteristics of the fluid such as kinematic viscosity and specific weight. The hydraulic conductivity of different geologic materials varies and is greatest with materials with high effective porosity (e.g., sand and gravels) and lowest for materials with low porosity such as silts and clays.

Hydraulic conductivity can be expressed as:

$$K = \frac{k\gamma}{\upsilon}$$

where

K	= hydraulic conductivity
k	= intrinsic permeability
γ	= specific weight
ν	= kinematic viscosity

The ability of an aquifer to transmit water through pore spaces is referred to as transmissivity (T) and is defined as the rate of flow (e.g., gallons per day) moving through the entire saturated thickness of an aquifer and is equal to the hydraulic conductivity multiplied by the saturated thickness (b), or

$$T = Kb$$

Transmissivity of the Subbasin has been previously estimated by others (Tyley 1971, GTC 1979, Mayer & May 1996, Slade 2000). However, Slade (2000) developed a comprehensive regional evaluation of the special distribution of transmissivity within the Subbasin from specific capacity data of MSWD wells.

2.1.3 Mission Creek Groundwater Subbasin Contours

Contours of estimated groundwater elevations for 1991 are based on data published by Robert Fox (1992). These 1991 contours are shown below in Figure 2-2, *1991 Groundwater Elevation Contours - ft MSL,* and appear to indicate that groundwater flow is northeast toward the Mission Creek fault in the northwest portion of the Subbasin. However, due to gouge created by the strike slip nature of the Mission Creek fault, it is not believed that water flows north through the fault into the Desert Hot Springs Subbasin. The apparent flow direction may be a function of localized pumping cone depressions.

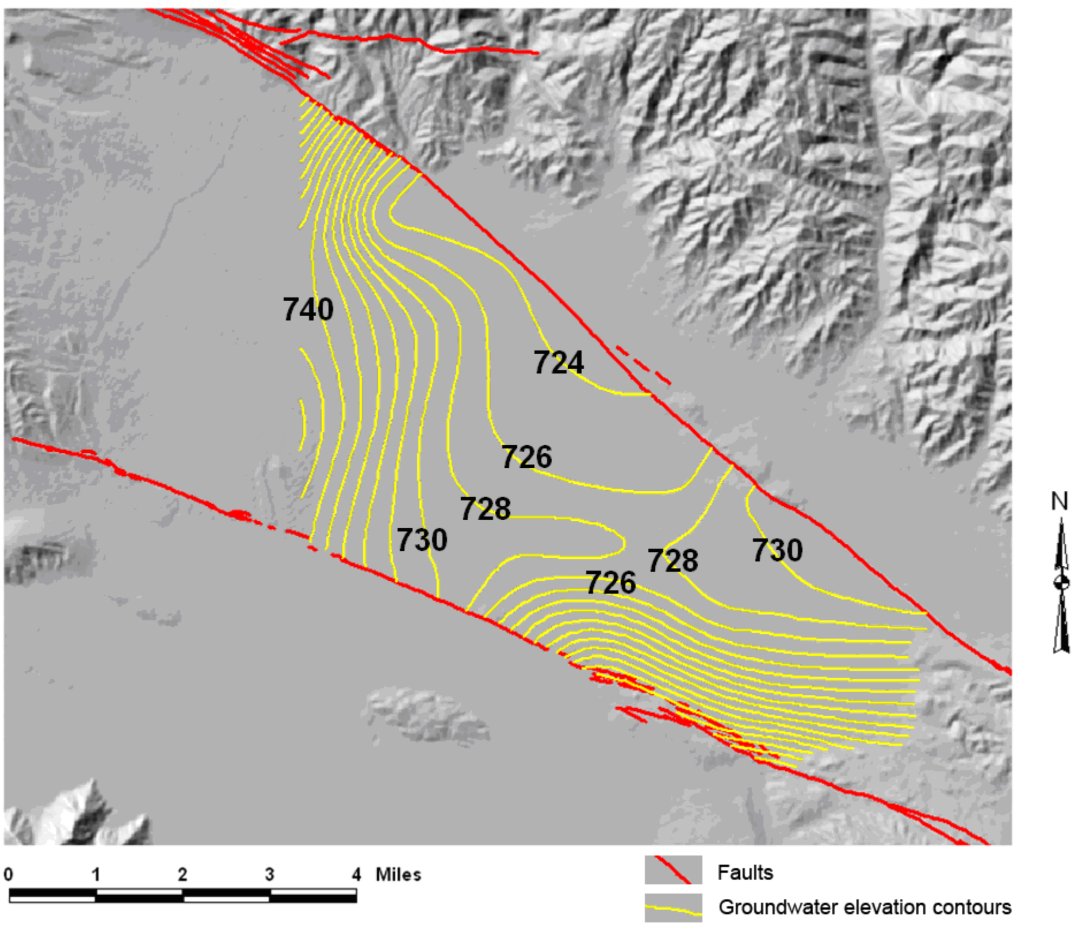


Figure 2-2
1991 Groundwater Elevation Contours - ft MSL (Fox 1992)

In the eastern portion of the Subbasin, groundwater flow generally trends toward the southwest. The perpendicular contours along the fault in multiple locations suggest the primary groundwater flow is parallel to the fault in these areas and the faults are acting as effective groundwater barriers. In addition, the contouring depicted in Figure 2-2 suggests that flux across the Banning fault is more pronounced in the area adjacent to the Indio Hills.

The 2004 approximated groundwater contours developed by Psomas are presented below in Figure 2-3, *2004 Groundwater Elevation Contours - ft MSL*. Although the groundwater levels are lower than those observed in 1991 the general areas of groundwater flow across the Mission Creek fault are similar to those observed in 1991. In addition, groundwater outflow across the Banning fault appears to occur over a wider area in 2004 than in 1991 based on the construction of the contours.

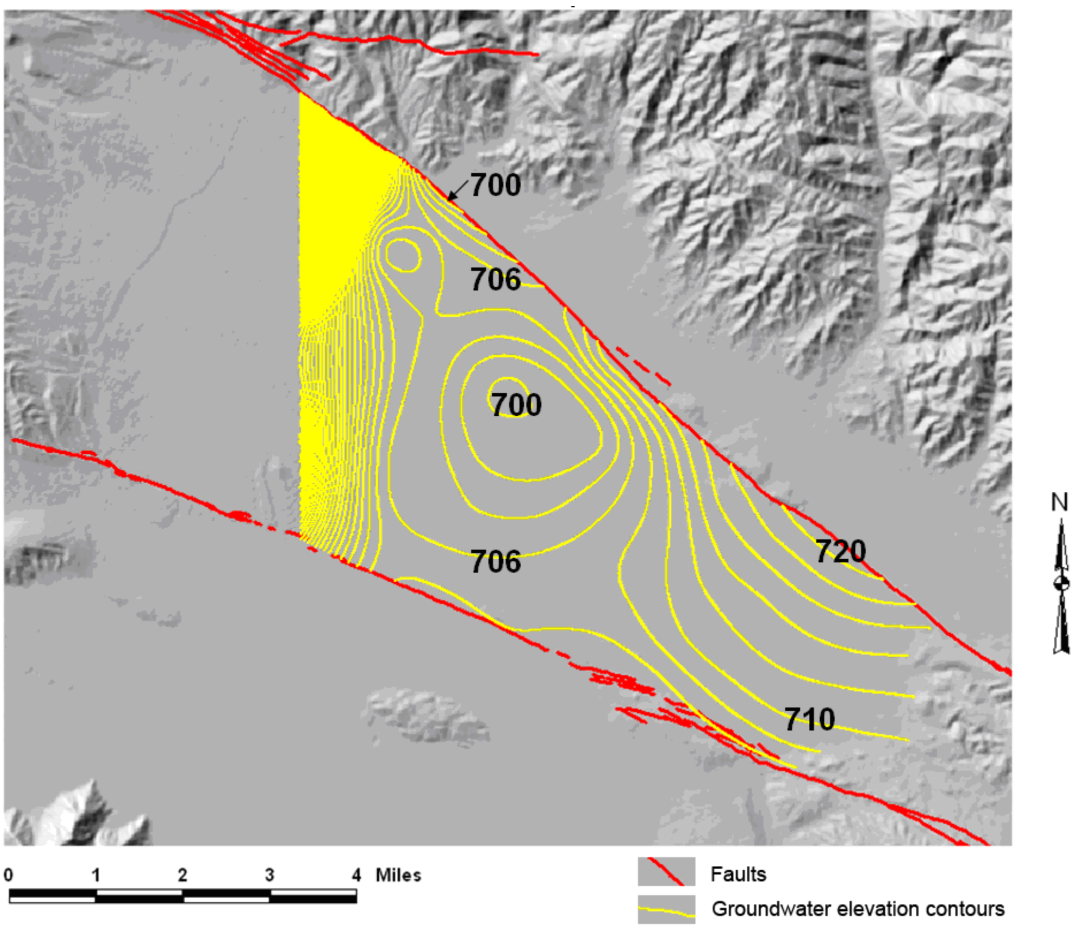


Figure 2-3
2004 Groundwater Elevation Contours - ft MSL (Psomas 2004b)

2.2 Model Domain and Boundary Conditions

The current model domain is bounded by the Mission Creek and Banning faults, the Indio Hills, and generally follows the Colorado River Aqueduct on the western boundary. The 500 ft by 500 ft model cells and locations of boundary flow are depicted in Figure 2-4, *Location of General Head Boundaries and Drain Boundaries*. The blue-colored cells represent General Head Boundaries and the yellow-colored cells represent Drain Boundaries. General Head Boundaries can be used to simulate flow into or out of the model domain but drain boundaries are used only to simulate outflow from the system.

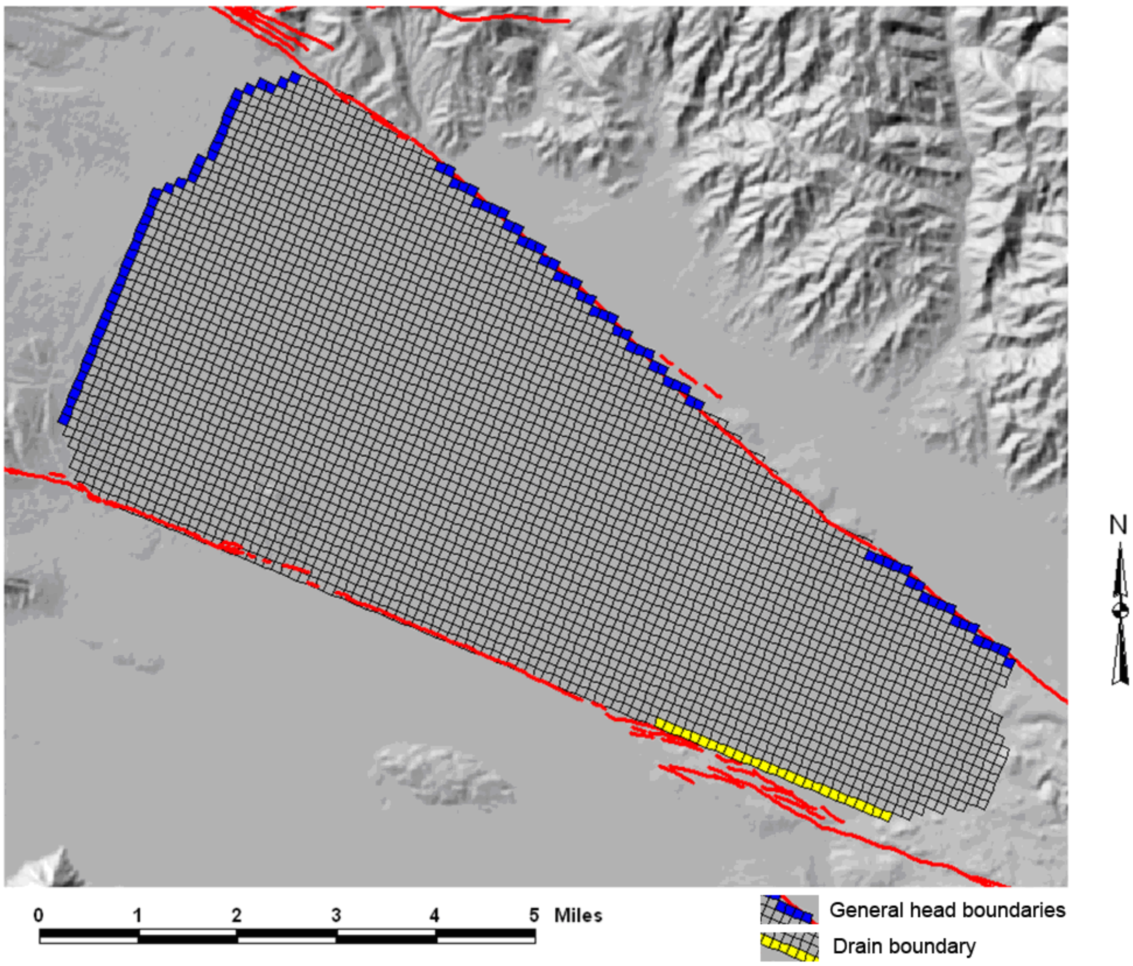


Figure 2-4
Location of General Head Boundaries and Drain Boundaries

The direction of conceptual flow across each of the boundaries is shown in Figure 2-5, *Inflow and Outflow Conceptualization Across Model Boundaries*.

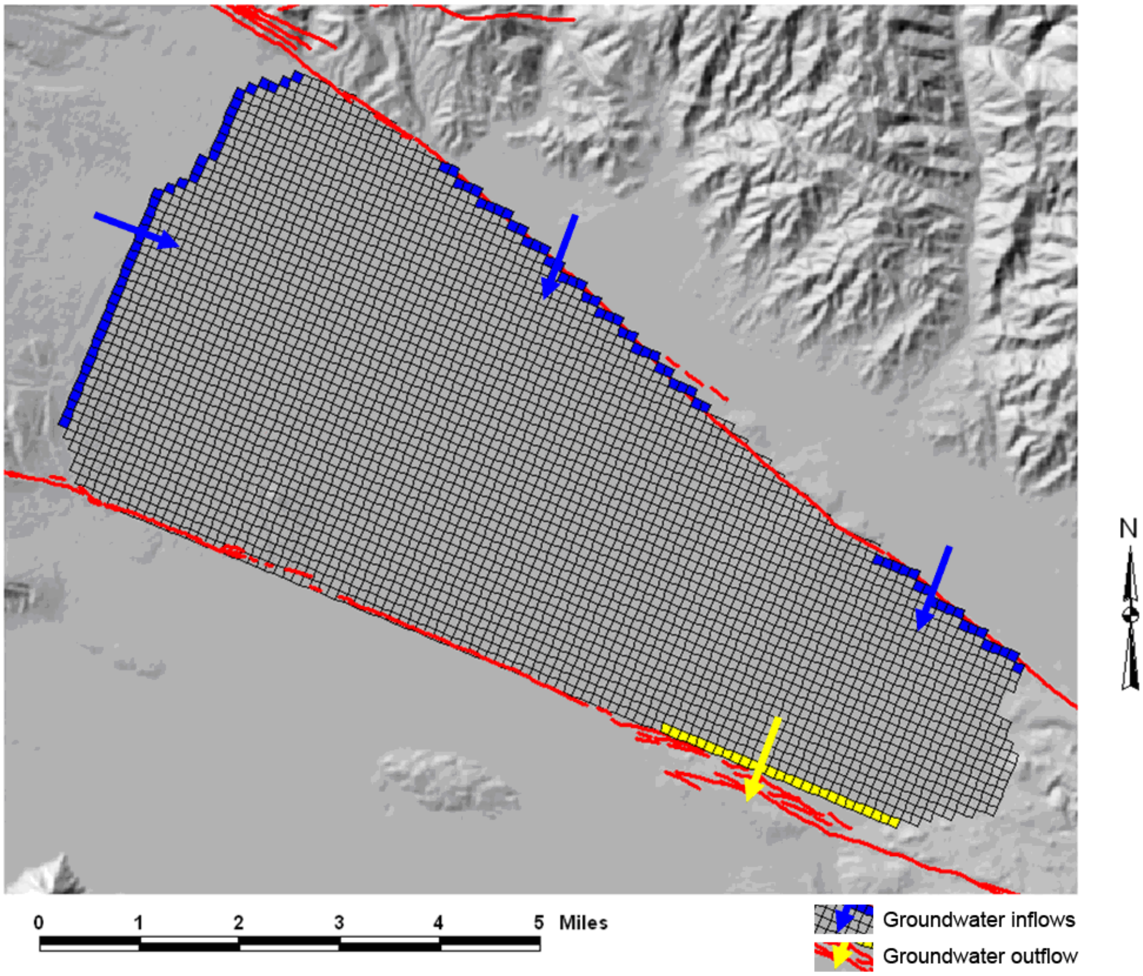


Figure 2-5
Inflow and Outflow Conceptualization Across Model Boundaries

Groundwater pumping from 16 municipal wells was incorporated in the model during development. The locations of the wells are presented in Figure 2-6, *Groundwater Pumping Wells*. Because of their proximity to one another, Mission Springs Water District wells 23 and 30 were placed within the same model cell during model development. Similarly, wells 22 and 24 were also placed in a single model cell.

The pumping history of the wells is presented in Table 2-1, *Approximate Groundwater Pumping Volume per Year / Well.*

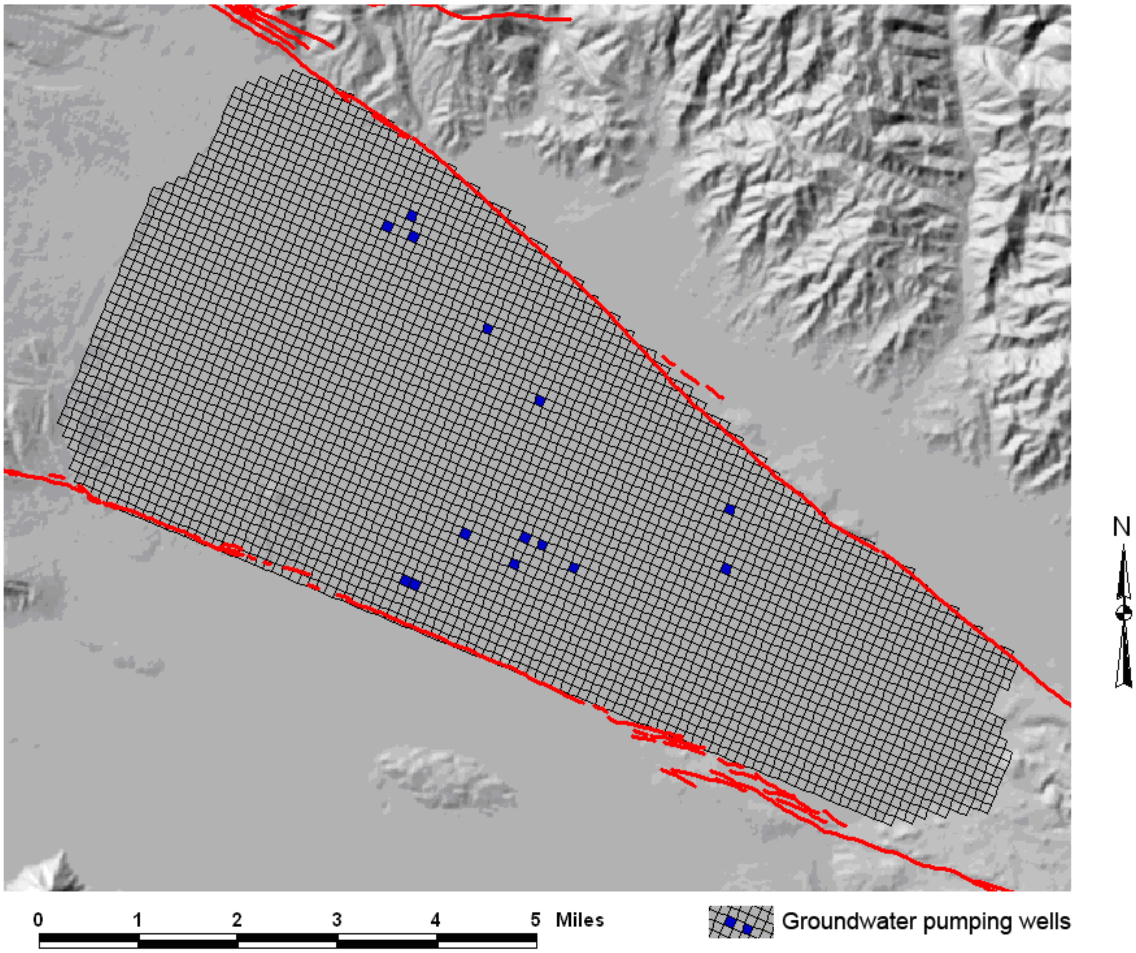


Figure 2-6
Groundwater Pumping Wells

Table 2-1
Approximate Groundwater Pumping Volume per Year / Well
(all values in AF/yr)

Year	MSWD Wells											
	22	23	24	27	28	29	30	31	32	New Well (Sec1)	New Well (Sec 1)	New Well (Sec 2)
2007	2,477	0	1,097	443	1,923	2,301	901	1,102	1,773	0	0	0
2008	2,400	0	1,100	419	1,800	2,000	800	1,000	1,600	0	0	0
2009	2,100	0	1,000	421	1,800	1,900	800	900	1,300	0	0	0
2010	2,200	0	1,150	453	1,850	2,100	850	1,000	1,300	0	0	0
2011	2,000	0	1,150	437	1,750	2,100	850	900	1,200	800	0	800
2012	2,000	0	1,250	431	1,850	2,100	900	1,000	1,200	950	0	950
2013	2,000	0	1,150	435	1,750	2,000	900	1,000	1,140	950	800	950
2014	2,050	0	1,200	429	1,800	2,100	900	1,100	1,140	1,000	1,000	1,000
2015	2,100	0	1,200	423	1,800	2,100	900	1,100	1,340	1,100	1,100	1,100
2016	2,200	0	1,200	457	1,800	2,100	900	1,100	1,450	1,200	1,200	1,200
2017	2,250	0	1,200	451	1,800	2,100	900	1,100	1,650	1,300	1,300	1,300
2018	2,250	0	1,200	450	1,800	2,150	900	1,295	1,650	1,400	1,400	1,400
2019	2,250	0	1,200	450	1,800	2,150	900	1,500	1,689	1,500	1,500	1,500
2020	1,300	0	1,200	400	1,300	1,300	900	1,100	1,200	1,080	1,000	1,000
2021	1,358	0	1,200	400	1,300	1,300	900	1,100	1,200	1,100	1,200	1,100
2022	1,356	0	1,200	400	1,300	1,300	900	1,100	1,200	1,200	1,300	1,200
2023	1,344	0	1,200	400	1,300	1,300	900	1,100	1,200	1,300	1,400	1,300
2024	1,332	0	1,200	400	1,300	1,300	900	1,100	1,200	1,400	1,450	1,400
2025	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2026	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2027	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2028	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2029	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2030	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
Row	21	15	21	49	15	26	15	49	42	35	31	38
Column	39	25	39	42	28	47	25	41	45	54	47	44

In 1997 the Desert Water Agency (DWA) began construction on series of spreading ponds in the northwest portion of the Subbasin near the Colorado River Aqueduct. The location of the spreading area is shown in blue in Figure 2-7, *Location of Desert Water Agency Spreading Basin Facility*. Reported spreading volumes are presented in Table 2-2, *Reported Spreading Volume*.

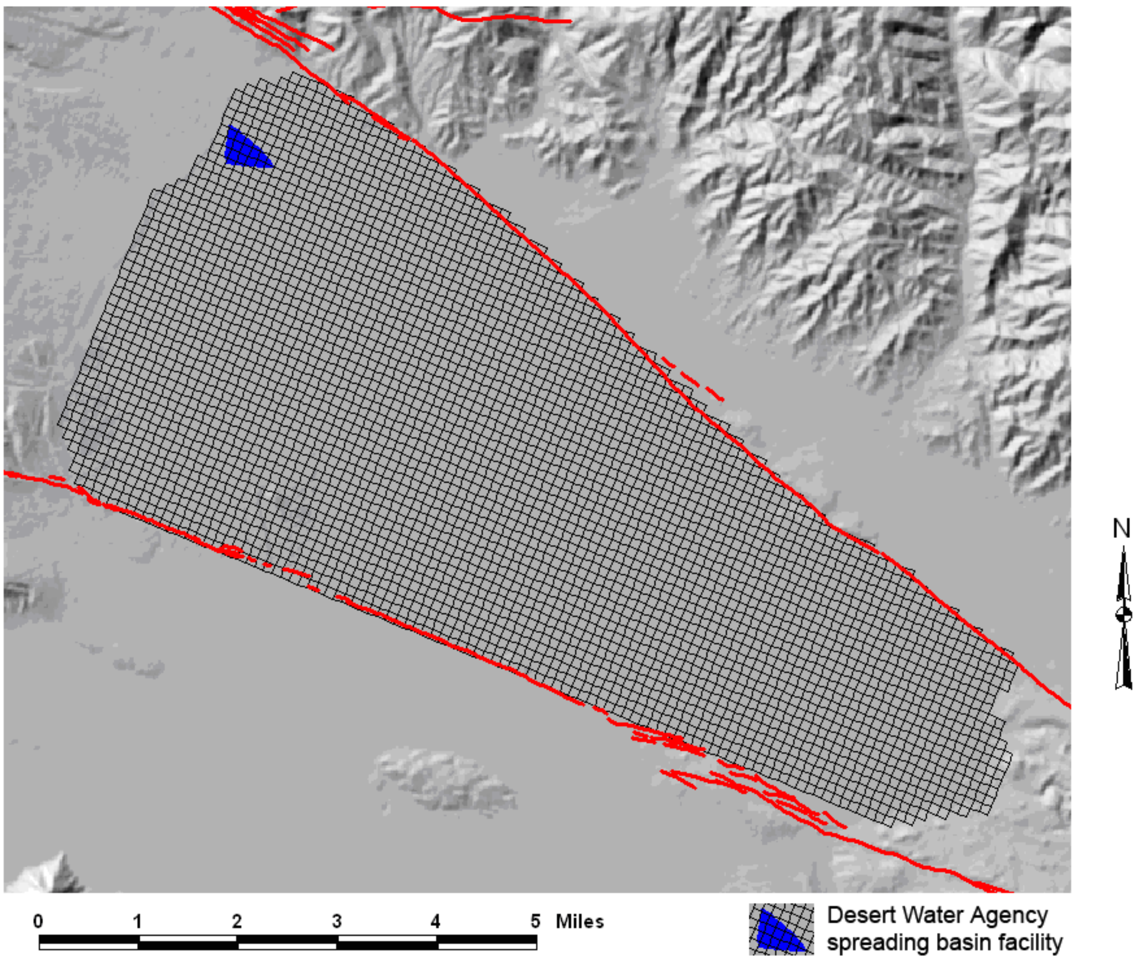


Figure 2-7
Location of Desert Water Agency Spreading Basin Facility

Table 2-2
Reported Spreading Volume

Year	Spreading Volume* (AF/yr)
2003	4,733
2004	0
2005	5.564
2006	24,700

*values do not account for evaporation or other losses.

2.3 Groundwater Elevation Data

A total of 96 groundwater elevation measurements from 27 wells were used in calibrating this model. The locations of these wells are shown in Figure 2-8, *Groundwater Elevation Data used in Model Calibration*. Groundwater elevations collected from two wells in the northwestern portion of the model domain (MSWD No. 34 and the DWA monitoring well) were approximately 300 ft above other measured water levels in the model domain. These unexpected groundwater elevations resulted in additional calibration efforts that are introduced in Section 2.4 and explained further in Section 3.0.

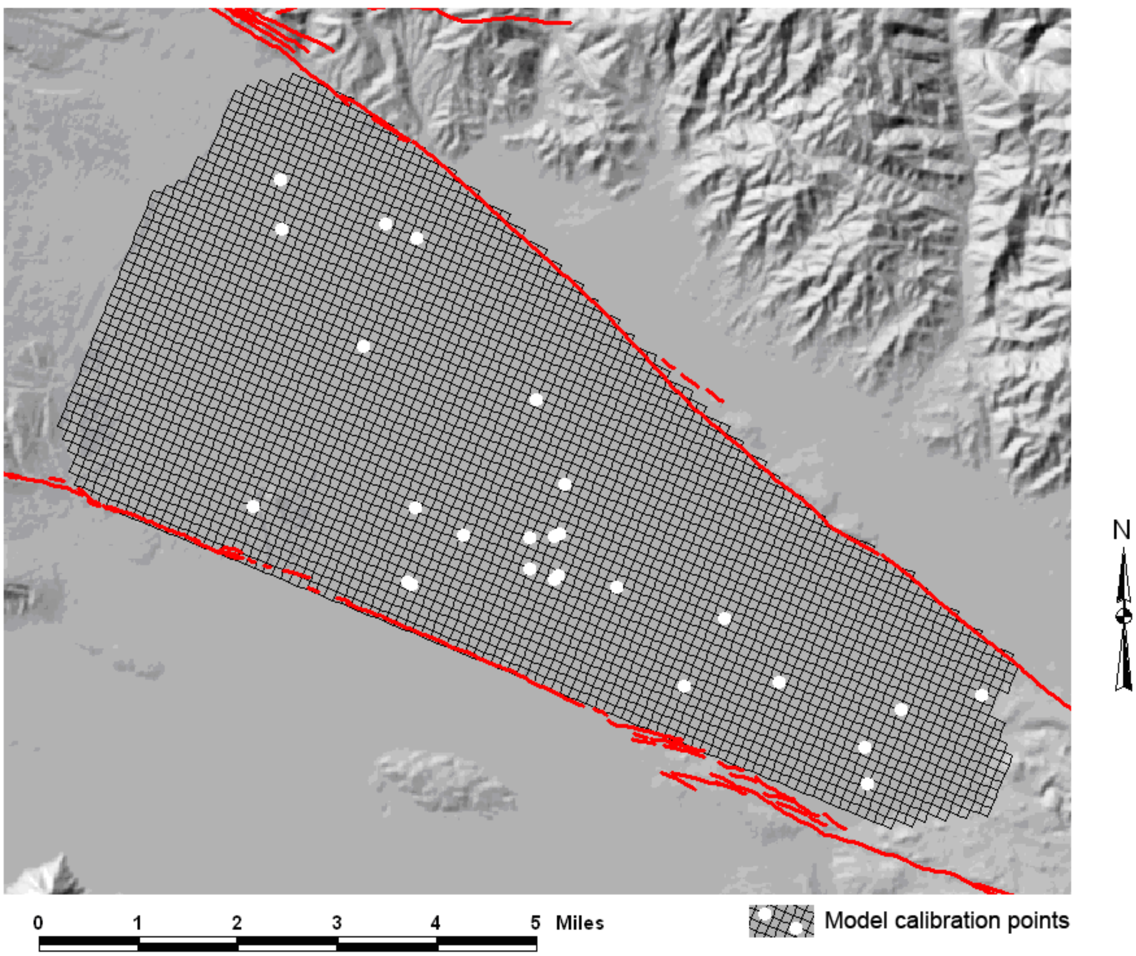


Figure 2-8
Groundwater Elevation Data used in Model Calibration

2.4 Summary of Conceptual Model(s)

Uncertainty in estimating aquifer parameters makes it important to consider alternative candidate conceptual models that characterize a groundwater system. Psomas evaluated four candidate conceptual models during calibration in order to approximate the spatial distribution of transmissivity and storativity within the MCGS.

The four alternative conceptual models evaluated were:

1. One Transmissivity and Storativity Zone, Isotropic
2. Two Transmissivity and Storativity Zones, Isotropic
3. One Transmissivity and Storativity Zone, Anisotropic
4. Two Transmissivity and Storativity Zones, Anisotropic

An aquifer is considered to be isotropic when the parameters that govern groundwater flow are essentially the same in all directions (e.g., homogeneous). An anisotropic aquifer is one where parameter values are a function of direction.

For the purpose of this report, a one zone conceptual model assumes that the transmissivity and storativity are the same for the entire Subbasin (i.e., the same in both areas shown below). A two zone conceptual model assumes that transmissivity and/or storativity in one zone will be different in one or more directions than the corresponding value in the other zone. Two distinct zones within the Subbasin were developed by Psomas and are presented below in Figure 2-9, *Location of Transmissivity and Storativity Zones, Groundwater Elevation, Wells and Spreading Basin*.

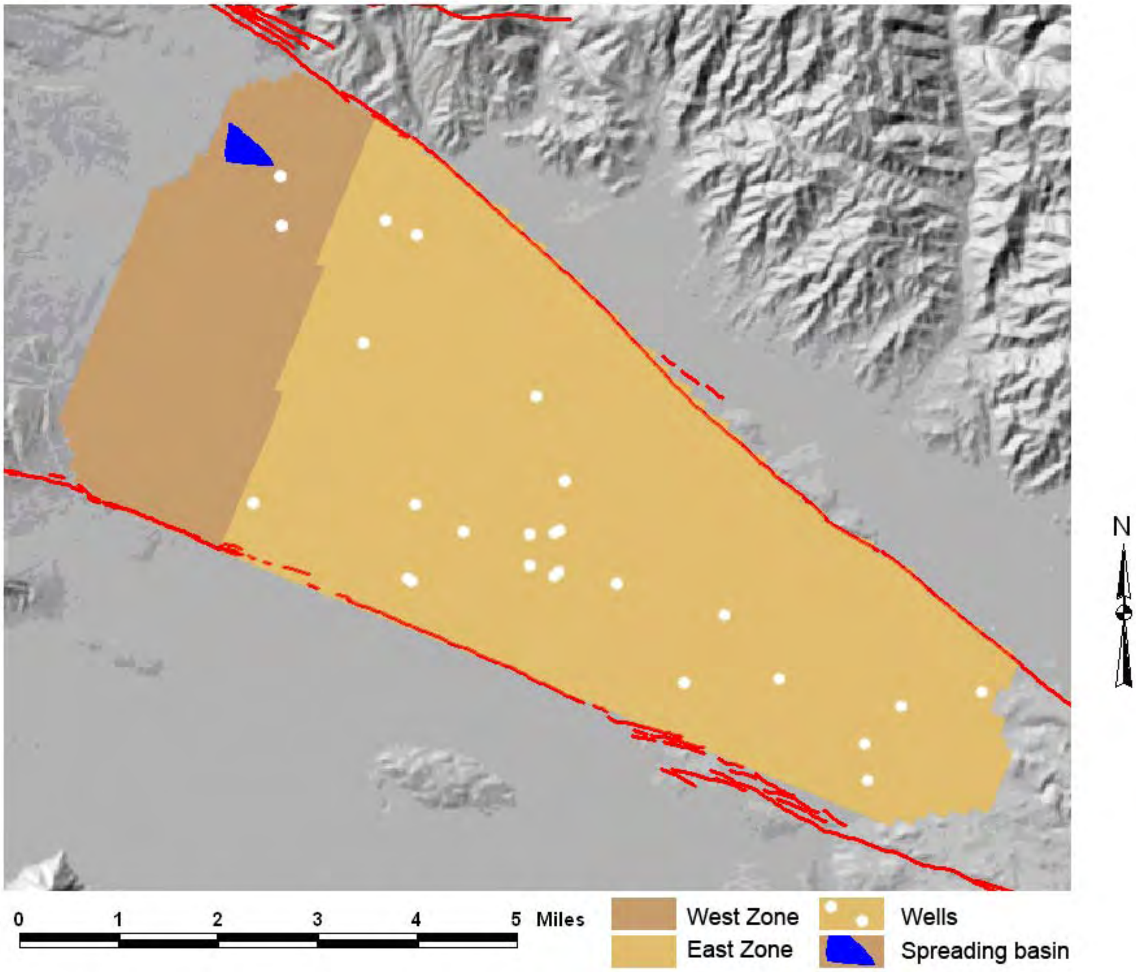


Figure 2-9
Location of Transmissivity and Storativity Zones

3.0 Conceptual Model Validation

The conceptual model validation phase focused on the spatial distribution of transmissivity and storativity within the MCGS. Variation in the distribution of these two aquifer parameters were originally suspected when field data revealed large differences in groundwater elevations collected in the northwest portion of the MCGS.

In a perfect model the measured and modeled groundwater elevation data will follow a single straight line when plotted on an x-y graph. The sum of the squares errors each data point is away from this ideal straight line is used to measure the accuracy of modeled results. In model development, the objective is to minimize uncertainty (i.e., have data points close to the line) so that more confidence can be placed in the results of simulations run after final development.

Four alternate conceptual models were previously summarized in the Section 2-4. The calibration graphs for each alternative (measured vs. model-estimated groundwater elevations) are presented in Figures 3-1, *Measured vs. Model Estimated Groundwater Elevation – One Transmissivity and Storativity Zone, Isotropic Conditions*, Figure 3-2, *Measured vs. Model Estimated Groundwater Elevation – One Transmissivity and Storativity Zone*, *Anisotropic Conditions*, Figure 3-3, *Measured vs. Model Estimated Groundwater Elevation – Two Transmissivity and Storativity Zones, Isotropic Conditions*, and Figure 3-4, *Measured vs. Model Estimated Groundwater Elevation – Two Transmissivity and Storativity Zones, Anisotropic Conditions*. In the first three graphs one data point toward the far right (DWA well) is obviously not close to the straight line. In the last graph (Figure 3-4) this data point has moved significantly toward the line indicating better parameter estimates in this conceptual model alternative.

A summary of parameters, including the sum of the squared errors between model-estimated and actual groundwater elevations, are presented in Table 3-1, *Summary of Parameter Estimates and Sum of Squared Errors*.

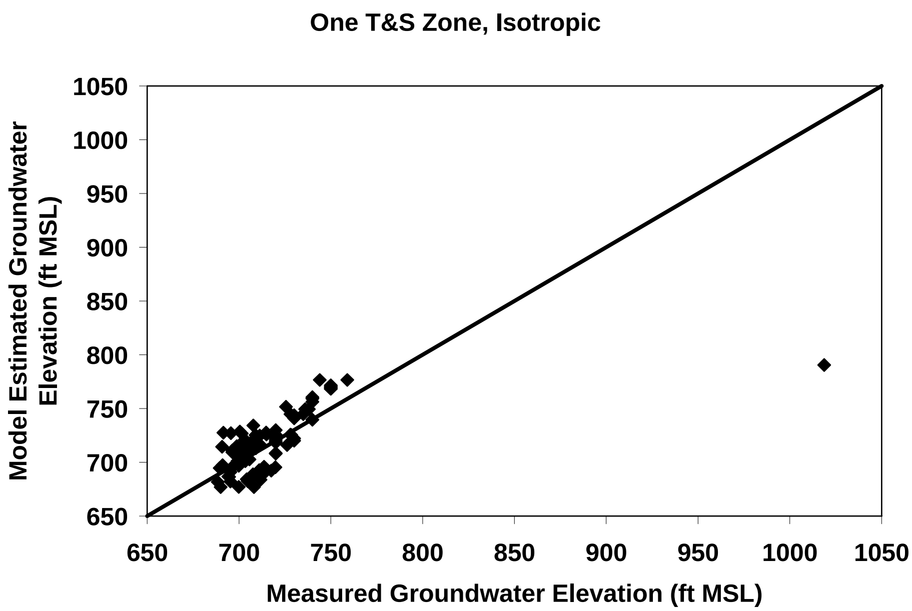


Figure 3-1
Measured vs. Model Estimated Groundwater Elevation – One Transmissivity and Storativity Zone, Isotropic Conditions

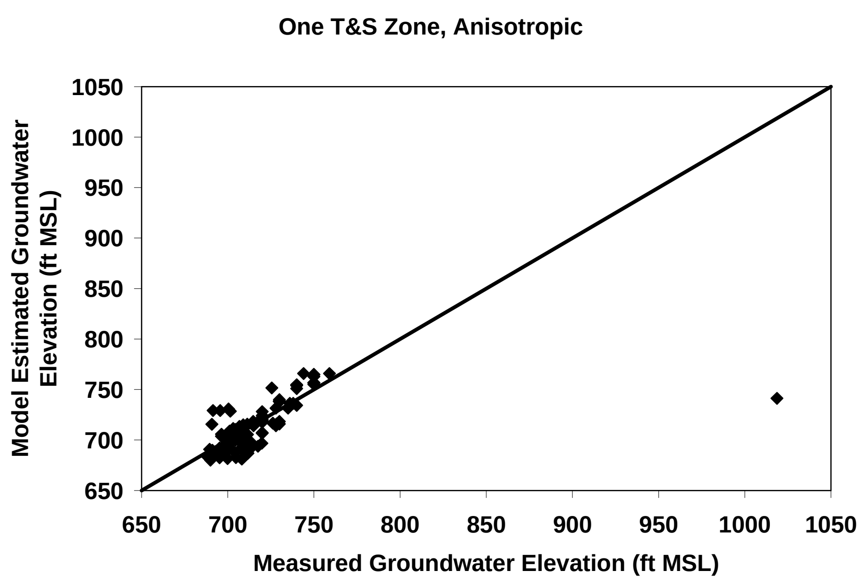


Figure 3-2
Measured vs. Model Estimated Groundwater Elevation – One Transmissivity and Storativity Zone, Anisotropic Conditions

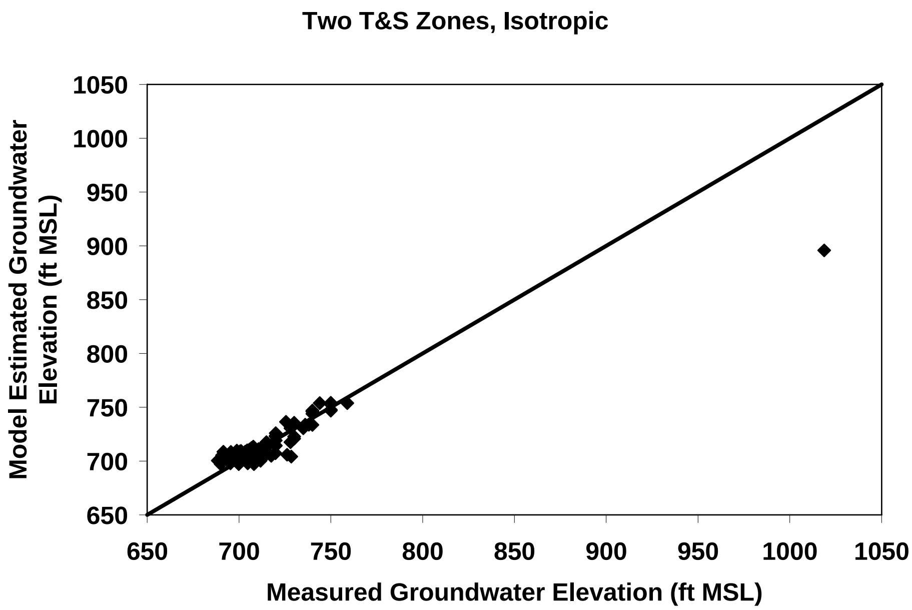


Figure 3-3
Measured vs. Model Estimated Groundwater Elevation – Two Transmissivity and Storativity Zones, Isotropic Conditions

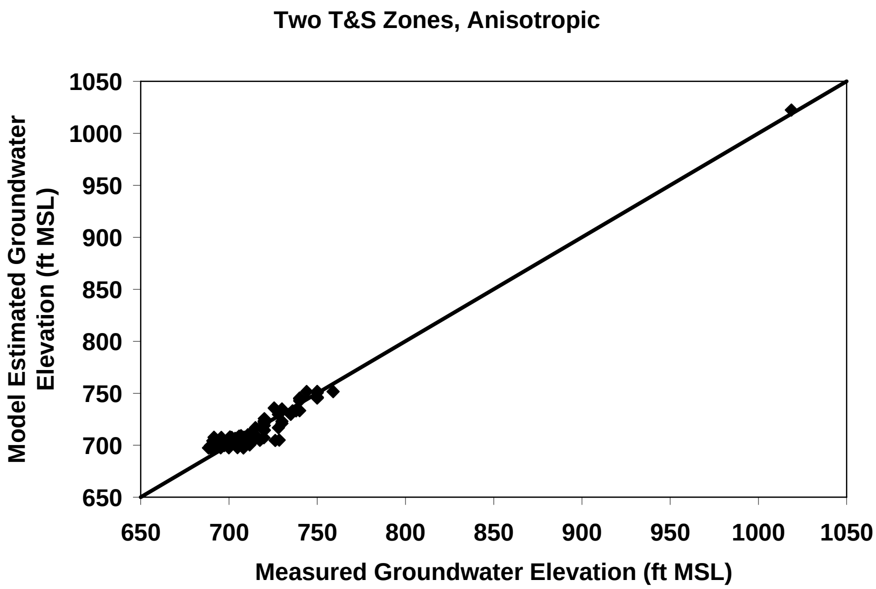


Figure 3-4
Measured vs. Model Estimated Groundwater Elevation – Two Transmissivity and Storativity Zones, Anisotropic Conditions

Table 3-1
Summary of Parameter Estimates and Sum of Squared Errors

Conceptual Model Description	Transmissivity (ft^2/day)				Storativity		Sum of Squared Errors (ft^2)
	West		East				
	x	y	x	Y	West	East	
One Zone – Isotropic	7,010	7,010	7,010	7,010	0.15	0.15	74,470
One Zone – Anisotropic	6,260	41,800	6,260	41,800	0.13	0.13	92,294
Two Zones – Isotropic	516	516	37,500	37,500	0.028	0.17	20,041
Two Zones – Anisotropic	212	4,047	44,100	48,400	0.0029	0.22	4,153

From Table 3-1 above, the Two-Zone Anisotropic alternative has the lowest sum of squared errors and therefore best characterizes the MCGS.

4.0 Numerical Flow Model Calibration

The model calibration process consists of adjusting values of initial model input parameters and model geometry in an attempt to reasonably match field conditions. Initial values for both transmissivity and storativity were developed during conceptual model validation efforts previously discussed in Section 3.

The numerical model calibration process involved calibrating to both steady-state and transient conditions. In steady-state simulations, there are no observed changes in hydraulic head with time while transient simulations involve a change in hydraulic head with time (e.g. an aquifer stressed by a well-field).

The steady state calibration was used to assess model geometry, confirm the conceptual model of ground-water flow, and test the appropriateness of simulated boundary conditions. The transient calibration was then used to fine-tune the model hydraulic properties through a period of prolonged aquifer stress.

Model calibration included comparisons between model-simulated values and field values for the following data:

- Hydraulic head data,
- Groundwater-flow direction,
- Hydraulic-head gradient,
- Water mass balance

4.1 Calibration – Parameter Estimates

Calibration of the model was completed with PEST (Parameter ESTimation), an industry standard software package that solves inverse problems and is considered a general-purpose, model-independent, parameter estimation and model predictive error analysis package.

The Subbasin's western boundary and the two boundaries of the Mission Springs Fault were simulated with MODFLOW's General Head Boundary package (GHB), and the flow across the Banning Fault was simulated with MODFLOW's Drain package (DRN).

The model accuracy was calculated using the root mean square (RMS) error between actual measurements of hydraulic head and model-generated hydraulic head simulations at the end of each model run. Model accuracy is increased by minimizing the RMS error. The RMS error measures the absolute value of the variation between measured and simulated hydraulic heads.

Table 4-1, *Summary of Calibrated Model Parameters*, summarizes the calibrated parameters for the model including the sum of squared errors. The location of the boundary parameters are shown in Figure 4-1, *Location of Boundaries Listed in Table 4-1*.

Table 4-1
Summary of Calibrated Model Parameters

Parameter	Model Value
Transmissivity (ft^2/day)	
West Zone (X-direction)	1,329
West Zone (Y-direction)	2,703
East Zone (X-direction)	46,123
East Zone (Y-direction)	61,000
Storativity (dimensionless)	
West Zone	0.024
East Zone	0.250
Boundary Conditions	
Western Boundary	
Initial Boundary Head (ft)	1,300
Annual Drop (ft)	0.69
Conductance (ft^2/day)	64.56
Mission Springs Fault – West	
Initial Boundary Head - MSF – West	747
Annual Drop (ft) - MSF – West	0.94
Conductance (ft^2/day) - MSF – West	47.07
Mission Springs Fault – East	
Initial Boundary Head - MSF – East	760
Annual Drop (ft) - MSF – East	0.90
Conductance (ft^2/day) - MSF – East	49.96
Banning Fault	
Initial Drain Head (ft)	695
Annual Drop - Drain (ft)	0.06
Conductance (ft^2/day) – Drain	645.37
North-South Fault Conductance (ft^2/day)	**2.63E-03**
Effective Annual Spreading (AF/yr)	
Spreading in 2003	91
Spreading in 2005	5,564
Spreading in 2006	18,778
Sum of Squared Errors (ft^2)	**3,629**

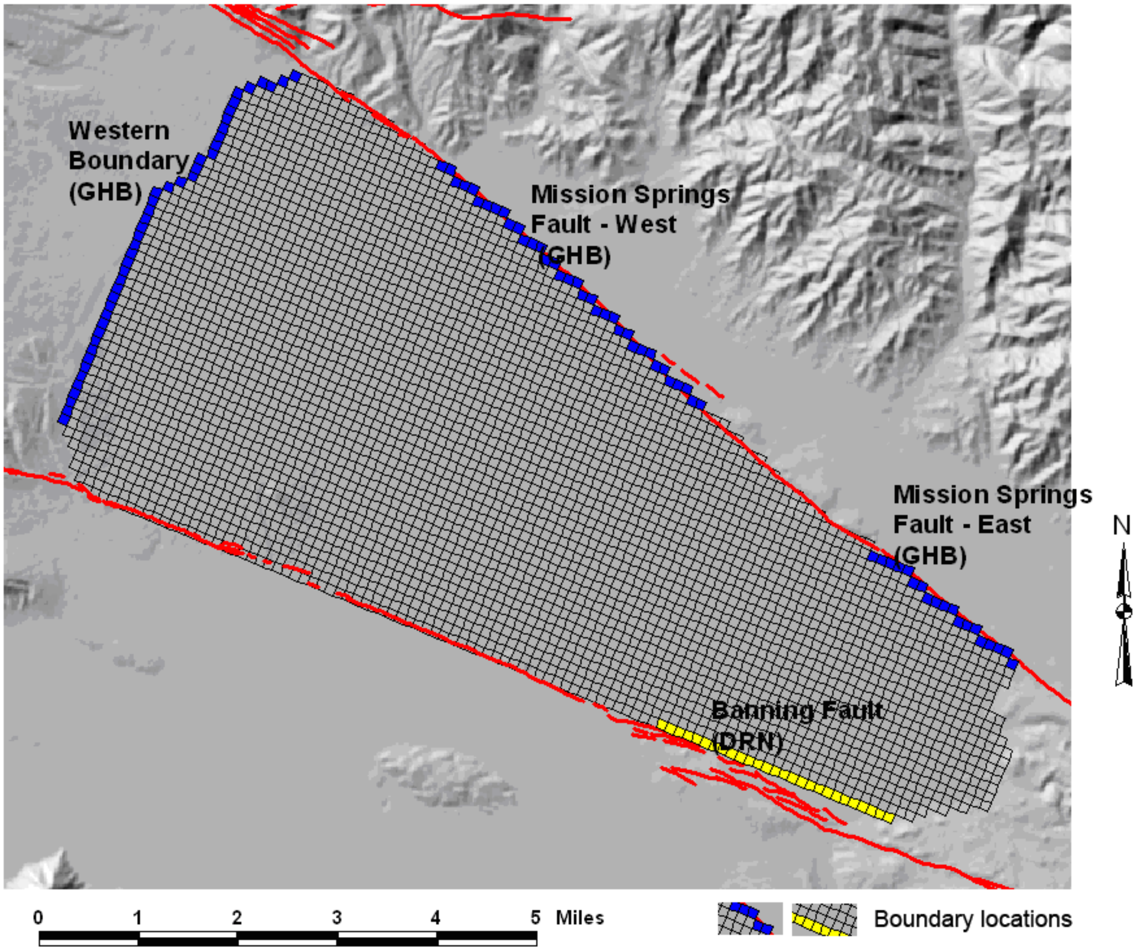


Figure 4-1
Location of Boundaries Listed in Table 4-1

The parameter estimates for the numerical model have transmissivity values that are consistent with previous models and published literature. The parameters exhibit an exceptional "fit" to actual groundwater elevations as evidenced by the low sum of squared errors. Furthermore, anisotropy in the western zone is more pronounced than in the eastern zone and estimates for boundary heads and conductance are consistent with published literature.

4.2 Calibration – Groundwater Elevation

Figure 4-2, *Measured vs. Model Estimated Groundwater Elevation*, presents the comparison of actual groundwater elevations with model-estimated groundwater elevations for two zone anisotropic conceptualization.

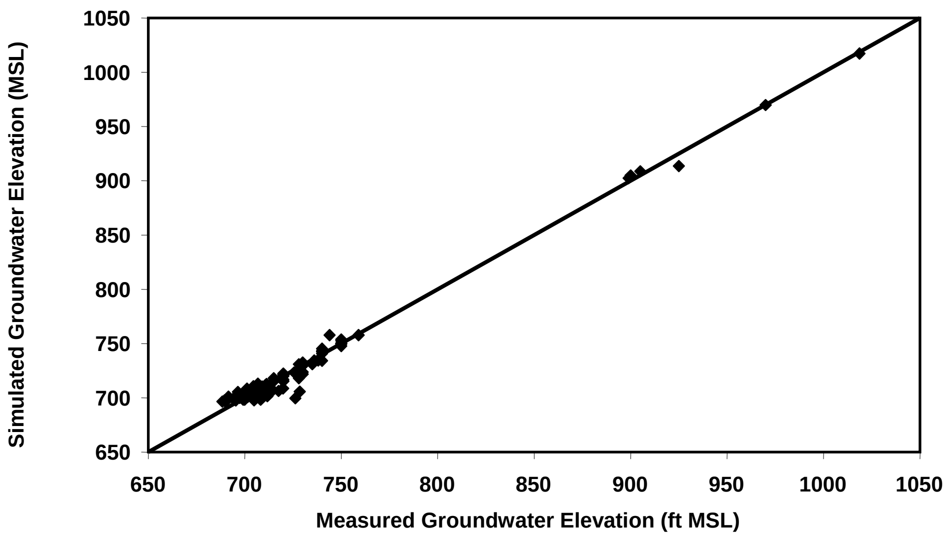


Figure 4-2
Measured vs. Model Estimated Groundwater Elevation

A summary of the calibration statistics for measured vs. model-estimated groundwater elevation is presented in Table 4-2, *Summary of Model Calibration Statistics*. An industry standard is that the standard deviation of model errors divided by the range of measured groundwater elevations should be less than 0.1 (or 10 percent).

Table 4-2
Summary of Model Calibration Statistics

Calibration Statistic	Model Values
Sum of Squared Errors (ft2)	3,627
Standard Deviation of Errors (ft)	6.21
Range (ft)	320.05
Standard Deviation Divided by Range	0.019 (1.9%)

4.3 Calibration - Hydrographs

Model efficacy is confirmed by duplicating a historical period of operation. This analysis uses the traditional "historical-matching method" in which a period of historical data is compared to model-predicted water levels.

Model calibration hydrographs are presented for several representative wells in Appendix A. The hydrographs show both the actual data used in the calibration simulations and the model-predicted groundwater elevations. In some cases, the water table elevation predicted by the model is slightly lower than the actual groundwater elevation measured in the wells (i.e., greater depth to groundwater values). However, all graphs are generally representative of the overall regional water table.

The comparison between modeled and actual groundwater elevations demonstrates that the model simulated past conditions well and may be used with confidence to estimate future conditions under various stress conditions.

4.4 Initial Groundwater Budget Summary

Groundwater budgets for each stress period are presented in Table 4-3, *Groundwater Budget Summary [in AF]*. Groundwater pumping is shown to have increased over the years, reaching a current level of about 16,000 AF/yr. This pumping has resulted in changes to the boundary flows and resulted in groundwater storage declines that were about 8,000 AF/yr during the late 1990s and early 2000s. The spreading of Colorado River water initially resulted in a reduction of the storage decline, and, in 2006, resulted in a recovery of groundwater storage, even under the estimated reduced amounts. In response to the release of spreading basin water into the MCGS in 2006, it acknowledged that the boundary inflow was reduced from previous years and reversed a trend of increases. This is likely a result of the spreading groundwater mound's hydrostatic pressure against the downgradient side of the Mission Creek Fault immediately adjacent to the recharge ponds.

Figure 4-3, *Boundary Inflow*, summarizes the boundary inflow for the simulation period. Figure 4-4, *Boundary Outflow*, summarizes the boundary outflow and Figure 4-5, *Groundwater Pumping*, summarizes groundwater pumping. Figure 4-6, *Groundwater Storage Change*, summarizes the groundwater storage change.

Table 4-3
Groundwater Budget Summary [in AF]

Year	Inflow			Outflow			Storage Change
	Boundary Inflow	Spreading Basins	Total	Boundary Outflow	Pumping	Total Outflow	
Steady State	6313	0	6313	6313	0	6313	0
1961	6294	0	6294	6333	0	6333	-39
1962	6276	0	6276	6352	0	6352	-76
1963	6260	0	6260	6370	0	6370	-110
1964	6244	0	6244	6387	0	6387	-143
1965	6229	0	6229	6403	0	6403	-174
1966	6214	0	6214	6419	0	6419	-205
1967	6199	0	6199	6433	0	6433	-234
1968	6185	0	6185	6446	0	6446	-261
1969	6171	0	6171	6459	0	6459	-288
1970	6158	0	6158	6449	985	7434	-1276
1971	6147	0	6147	6434	1060	7494	-1347
1972	6137	0	6137	6411	1633	8044	-1907
1973	6130	0	6130	6372	2692	9064	-2934
1974	6126	0	6126	6325	2768	9093	-2967
1975	6124	0	6124	6260	3890	10150	-4026
1976	6126	0	6126	6188	3965	10153	-4027
1977	6129	0	6129	6108	4042	10150	-4021
1978	6132	0	6132	6023	4119	10142	-4010
1979	6135	0	6135	5933	4194	10127	-3992
1980	6139	0	6139	5836	4672	10508	-4369
1981	6143	0	6143	5732	5040	10772	-4629
1982	6147	0	6147	5623	5264	10887	-4740
1983	6153	0	6153	5511	5306	10817	-4664
1984	6158	0	6158	5393	5796	11189	-5031
1985	6165	0	6165	5268	6257	11525	-5360
1986	6173	0	6173	5134	6765	11899	-5726
1987	6183	0	6183	4994	7214	12208	-6025
1988	6194	0	6194	4846	7608	12454	-6260
1989	6207	0	6207	4690	7980	12670	-6463
1990	6221	0	6221	4522	8972	13494	-7273
1991	6236	0	6236	4354	8514	12868	-6632
1992	6251	0	6251	4179	9017	13196	-6945
1993	6268	0	6268	3895	10284	14179	-7911
1994	6286	0	6286	3786	10599	14385	-8099

Year	Inflow			Outflow			Storage Change
	Boundary Inflow	Spreading Basins	Total	Boundary Outflow	Pumping	Total Outflow	
1995	6305	0	6305	3576	10762	14338	-8033
1996	6326	0	6326	3352	11694	15046	-8720
1997	6346	0	6346	3141	10673	13814	-7468
1998	6366	0	6366	2937	10944	13881	-7515
1999	6387	0	6387	2723	12084	14807	-8420
2000	6409	0	6409	2498	12427	14925	-8516
2001	6430	0	6430	2282	11756	14038	-7608
2002	6451	0	6451	2059	12938	14997	-8546
2003	6459	91	6550	1831	13316	15147	-8597
2004	6508	0	6508	1604	14624	16228	-9720
2005	5442	5564	11006	1378	15686	17064	-6058
2006	3125	18778	21903	1965	16547	18512	3391

DWA/CVWD began construction of the MCGS Spreading Ponds in 1997 and water was first released in 2003.

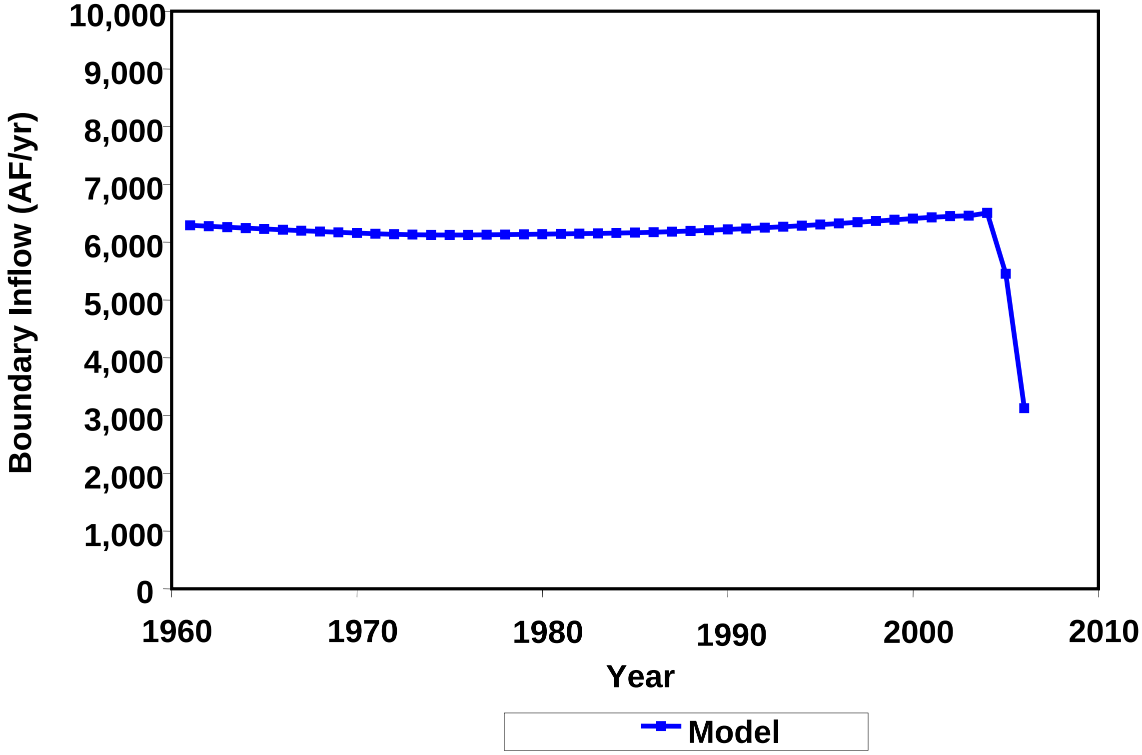


Figure 4-3
Boundary Inflow

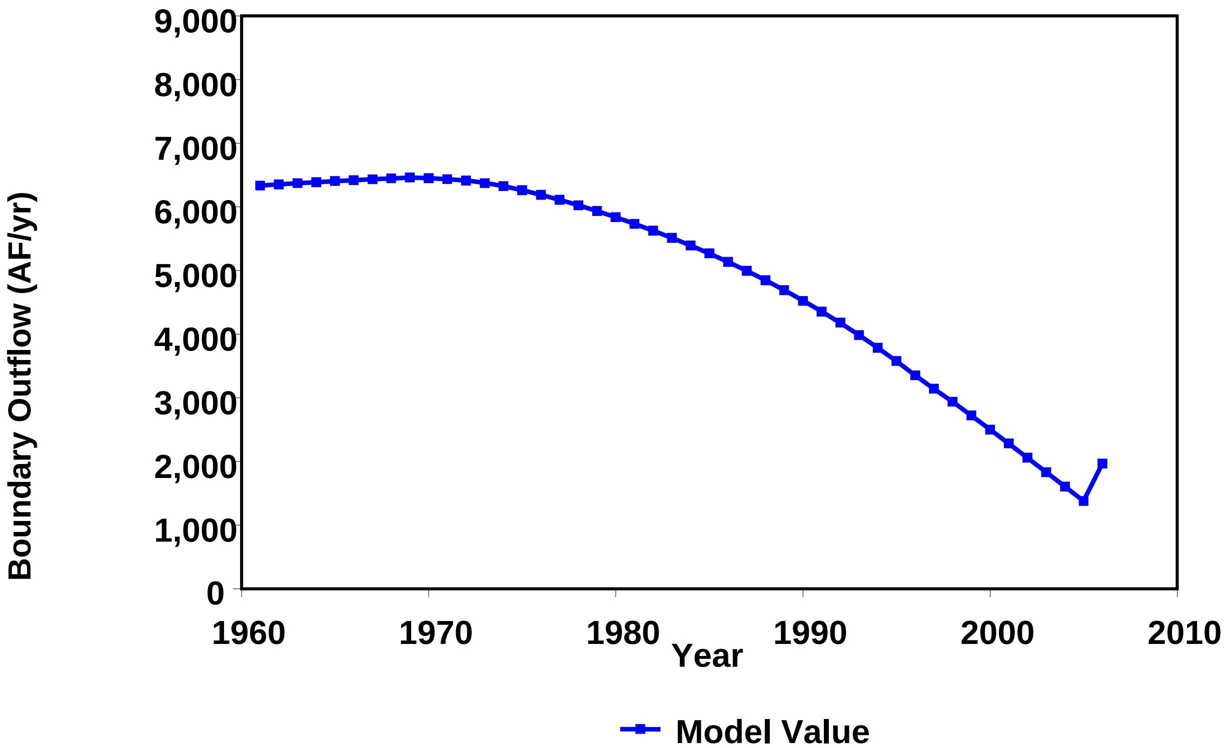


Figure 4-4
Boundary Outflow

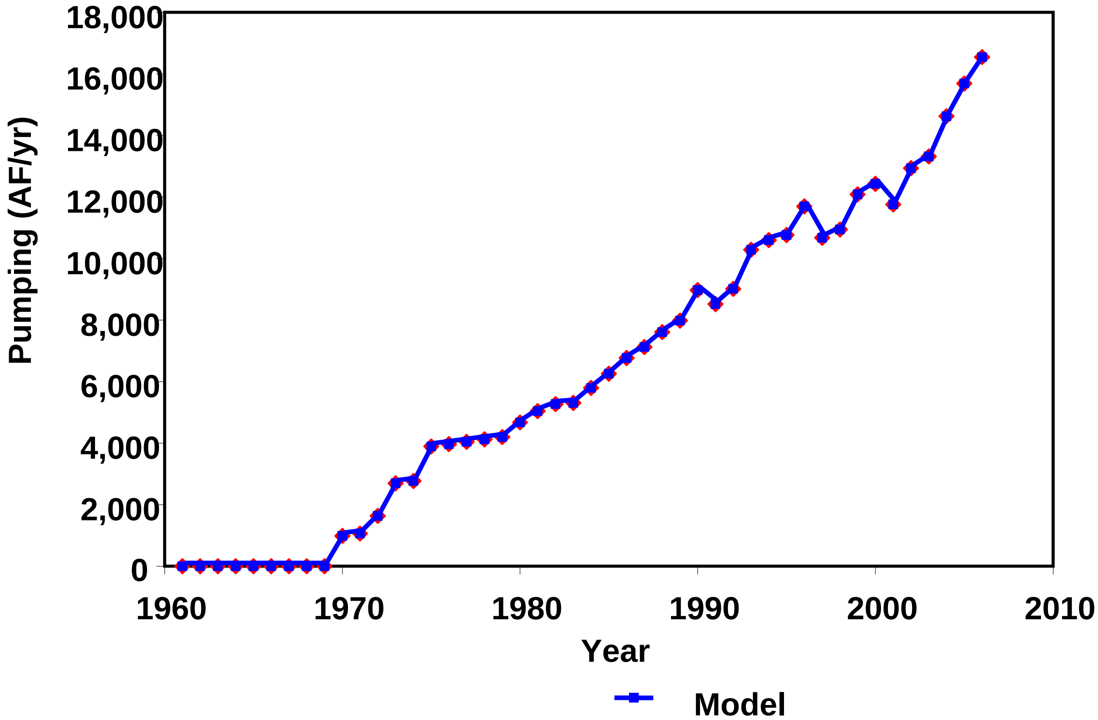


Figure 4-5
Groundwater Pumping

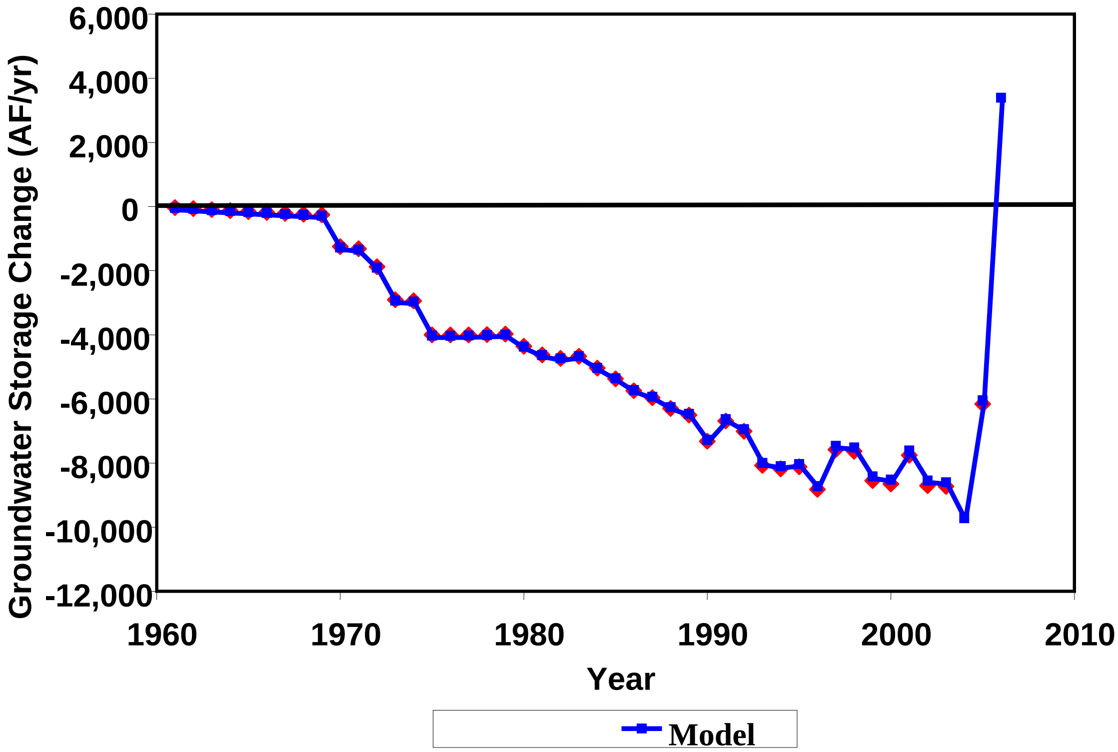


Figure 4-6
Groundwater Storage Change

5.0 Final Numerical Flow Model Development

The numerical groundwater flow model was developed using MODFLOW – 2000 (Harbaugh et al. 2000), an industry-standard finite-difference code developed by the United States Geological Survey. Aquifer properties and calibrated model parameters incorporated in the model were previously presented in Table 4-1. The model was divided into 47 stress periods and the first stress period was simulated as steady state. Each subsequent stress period (2 thru 47) were 365 days long and simulated the period between July 1961 and June 2006. The next step in model development was to incorporate the water budget components and prepare for future simulation runs.

Components of the water budget used in the model are described in the following sections.

5.1 Groundwater Extraction

Estimates of future pumping projections are summarized in Table 5-1, *Summary of Anticipated Future Groundwater Pumping*, and were derived from data provided by MSWD, CVWD, and DWA. Detailed annualized pumping for each well is presented in Table 5-2, *Assumed Future Groundwater Pumping*.

The general location of proposed future wells is presented in Figure 5-1, *Proposed MSWD Wells (Selected by GSi/water)*. It was assumed that new wells proposed in Section 26 and Section 35 would be online in 2008. Additional new wells in Section 26 and 35 would be online in 2009. Furthermore, a new well in Section 1 and a new well in Section 2 are assumed to come online in 2011. Finally, additional new wells in Section 1 and 2 are assumed to come online in 2013.

Table 5-1
Summary of Anticipated Groundwater Pumping (MCGS)

Year	MCGS Existing Wells	MCGS Future Wells	Recycled Water Production*	Total MCGS Well Production	CVWD Pumping	Private Pumping	Total Pumping
2007	12,017	0	0	12,017	3,400	1,566	16,983
2008	11,119	1,740	0	12,859	3,600	1,566	18,025
2009	10,221	3,480	0	13,701	3,800	1,566	19,067
2010	10,903	3,640	0	14,543	4,000	1,566	20,109
2011	10,387	5,200	0	15,587	4,200	1,566	21,353
2012	10,931	5,700	0	16,631	4,600	1,566	22,797
2013	10,375	7,300	0	17,675	4,900	1,566	24,141
2014	10,719	8,000	0	18,719	5,200	1,566	25,485
2015	10,963	8,800	2,000	19,763	5,500	1,566	26,829
2016	11,207	9,600	2,000	20,807	5,900	1,566	28,273
2017	11,451	10,400	2,000	21,851	6,300	1,566	29,717
2018	11,695	11,200	2,000	22,895	6,600	1,566	31,061
2019	11,939	12,000	2,000	23,939	6,900	1,566	32,405
2020	8,700	8,080	5,350	16,780	7,100	1,566	25,446
2021	8,758	8,800	5,350	17,558	7,600	1,566	26,724
2022	8,756	9,600	5,350	18,356	8,000	1,566	27,922
2023	8,744	10,400	5,350	19,144	8,200	1,566	28,910
2024	8,732	11,200	5,350	19,932	8,600	1,566	30,098
2025	9,120	11,600	6,070	20,720	8,900	1,566	31,186
2026	9,120	11,600	6,070	20,720	9,000	1,566	31,286
2027	9,120	11,600	6,070	20,720	9,400	1,566	31,686
2028	9,120	11,600	6,070	20,720	9,800	1,566	32,086
2029	9,120	11,600	6,070	20,720	10,200	1,566	32,486
2030	9,120	11,600	6,720	20,720	10,700	1,566	32,986

Table 5-2
Assumed Future Groundwater Pumping

Year	MSWD Wells											
	22	23	24	27	28	29	30	31	32	New Well (Sec1)	New Well (Sec 1)	New Well (Sec 2)
2007	2,477	0	1,097	443	1,923	2,301	901	1,102	1,773	0	0	0
2008	2,400	0	1,100	419	1,800	2,000	800	1,000	1,600	0	0	0
2009	2,100	0	1,000	421	1,800	1,900	800	900	1,300	0	0	0
2010	2,200	0	1,150	453	1,850	2,100	850	1,000	1,300	0	0	0
2011	2,000	0	1,150	437	1,750	2,100	850	900	1,200	800	0	800
2012	2,000	0	1,250	431	1,850	2,100	900	1,000	1,200	950	0	950
2013	2,000	0	1,150	435	1,750	2,000	900	1,000	1,140	950	800	950
2014	2,050	0	1,200	429	1,800	2,100	900	1,100	1,140	1,000	1,000	1,000
2015	2,100	0	1,200	423	1,800	2,100	900	1,100	1,340	1,100	1,100	1,100
2016	2,200	0	1,200	457	1,800	2,100	900	1,100	1,450	1,200	1,200	1,200
2017	2,250	0	1,200	451	1,800	2,100	900	1,100	1,650	1,300	1,300	1,300
2018	2,250	0	1,200	450	1,800	2,150	900	1,295	1,650	1,400	1,400	1,400
2019	2,250	0	1,200	450	1,800	2,150	900	1,500	1,689	1,500	1,500	1,500
2020	1,300	0	1,200	400	1,300	1,300	900	1,100	1,200	1,080	1,000	1,000
2021	1,358	0	1,200	400	1,300	1,300	900	1,100	1,200	1,100	1,200	1,100
2022	1,356	0	1,200	400	1,300	1,300	900	1,100	1,200	1,200	1,300	1,200
2023	1,344	0	1,200	400	1,300	1,300	900	1,100	1,200	1,300	1,400	1,300
2024	1,332	0	1,200	400	1,300	1,300	900	1,100	1,200	1,400	1,450	1,400
2025	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2026	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2027	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2028	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2029	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450
2030	1,420	0	1,200	400	1,400	1,400	900	1,200	1,200	1,450	1,450	1,450

Year	New MSWD Wells					CVWD Wells				Private Wells		
	(Sec 2)	(Sec 35)	(Sec 35)	(Sec 26)	(Sec 26)	3405	3408	3409	3410	Hidden Springs CC	Mission Lakes CC	Sands RV
2007	0	0	0	0	0	536	817	1,126	1,327	234	1,045	287
2008	0	870	0	870	0	536	817	1,126	1,327	234	1,045	287
2009	0	870	870	870	870	536	817	1,126	1,327	234	1,045	287
2010	0	910	910	910	910	536	817	1,126	1,327	234	1,045	287
2011	0	900	900	900	900	536	817	1,126	1,327	234	1,045	287
2012	0	950	950	950	950	536	817	1,126	1,327	234	1,045	287
2013	800	950	950	950	950	536	817	1,126	1,327	234	1,045	287
2014	1,000	1,000	1,000	1,000	1,000	536	817	1,126	1,327	234	1,045	287
2015	1,100	1,100	1,100	1,100	1,100	536	817	1,126	1,327	234	1,045	287
2016	1,200	1,200	1,200	1,200	1,200	536	817	1,126	1,327	234	1,045	287
2017	1,300	1,300	1,300	1,300	1,300	536	817	1,126	1,327	234	1,045	287
2018	1,400	1,400	1,400	1,400	1,400	536	817	1,126	1,327	234	1,045	287
2019	1,500	1,500	1,500	1,500	1,500	536	817	1,126	1,327	234	1,045	287
2020	1,000	1,000	1,000	1,000	1,000	536	817	1,126	1,327	234	1,045	287
2021	1,100	1,100	1,100	1,100	1,100	536	817	1,126	1,327	234	1,045	287
2022	1,200	1,200	1,200	1,200	1,200	536	817	1,126	1,327	234	1,045	287
2023	1,300	1,300	1,300	1,300	1,300	536	817	1,126	1,327	234	1,045	287
2024	1,400	1,400	1,400	1,400	1,400	536	817	1,126	1,327	234	1,045	287
2025	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2026	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2027	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2028	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2029	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287
2030	1,450	1,450	1,450	1,450	1,450	536	817	1,126	1,327	234	1,045	287

All Values in AF/yr
Mission Creek Subbasin

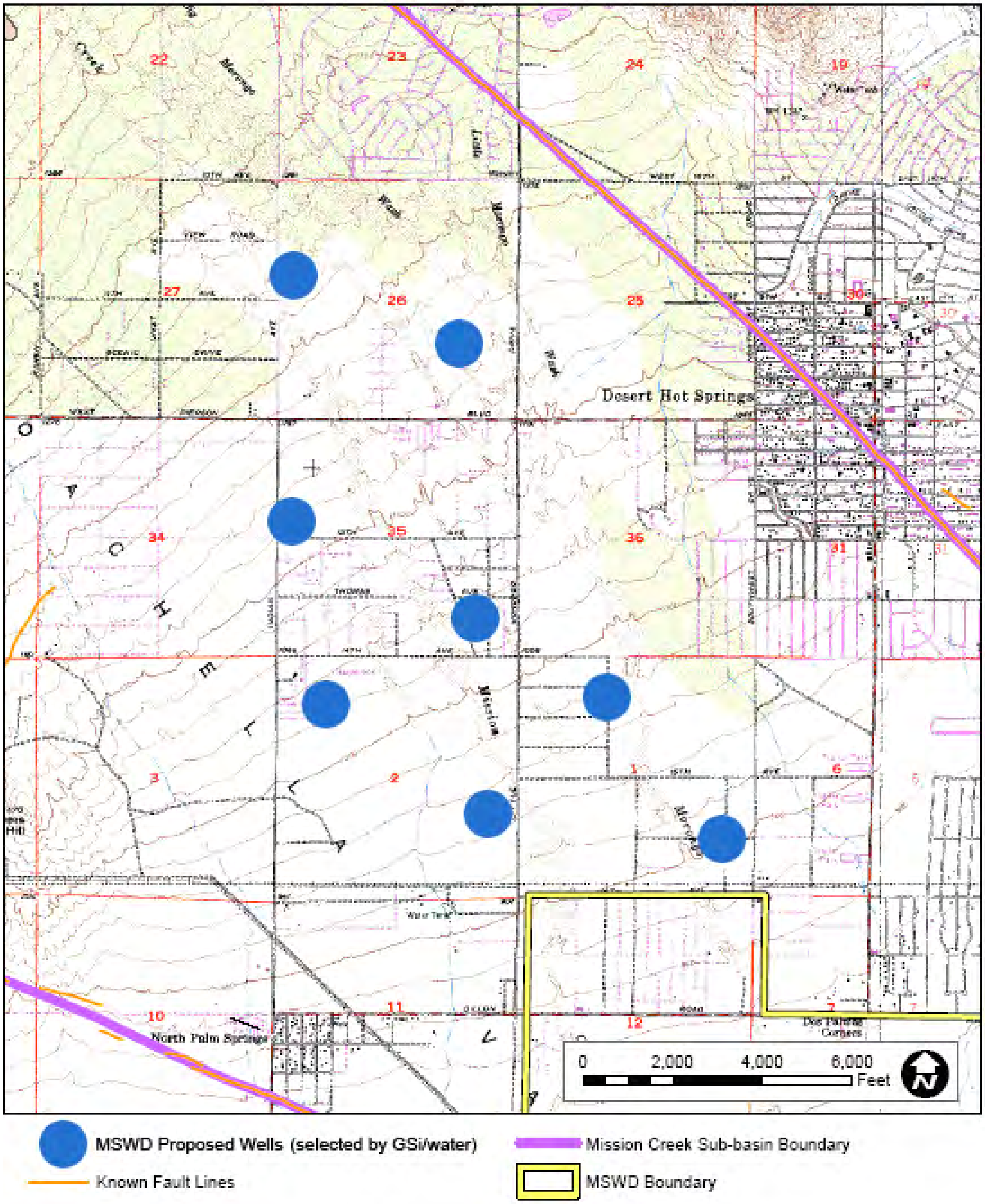


Figure 5-1
MSWD Proposed Wells **(Selected by GSi/water)**

5.2 Boundary Conditions

Initial boundary heads were estimated and validated during model calibration. It was assumed that boundary heads would continue to decline during the analysis period. Therefore, the decrease in head each year was estimated in order to simulate the general condition of lowering groundwater during simulation runs. Although it is recognized that recent spreading of Colorado River water in the western area of the model domain caused a recovery of groundwater levels in 2005 and 2006, the declining boundary head represents a worst-case scenario.

5.3 Groundwater Recharge

Average annual spreading basin water delivery volumes were derived from the 2005 Coachella Valley Water District and the 2005 Mission Springs Water District Urban Water Management Plans. It is anticipated that CVWD and DWA intend to recharge an annual average of almost 16,000 AF/yr during the years covered in this analysis.

It is recognized that some spreading water will not recharge the underlying groundwater basin but will be lost to evaporation and the initial wetting of the unsaturated zone. Although future losses to wetting the unsaturated zone are expected to be minimal after several years of operation, evaporative losses are probable but will depend seasonal conditions and daily temperatures at the time spreading water is released. For the purposes of this analysis, it was assumed that an average of 15,000 AF of spread water will reach the groundwater basin annually.

5.4 Water Budget Summary

Table 5-3, *Summary of Groundwater Budget,* summarizes the storage change anticipated in the declining boundary head scenario described in Section 5.2, above.

Table 5-3
Summary of Groundwater Budget

Scenario	Inflow			Outflow			Storage Change
	Spreading	Boundary Inflow	Total Inflow	Pumping	Boundary Outflow	Total Outflow	
Declining Boundary Head	15,000	5,978	20,978	26,961	3,218	30,179	-9,202

All values represent average of 2007-2030 Simulation and are in AF/yr.

5.5 Drawdown Results

Anticipated drawdown in the MCGS was estimated by subtracting the groundwater elevations estimated by the model in 2006 from the groundwater elevations estimated by the model at the end of each simulation period. Simulations were run in five (5) year increments from 2006 thru 2030 and the average model estimated drawdown is presented below in Table 5-4, *Model Estimated Drawdown*. Figure 5-2 shows the drawdown in each model cell after the end of the simulation period (i.e., 2030). In addition, five (5) year incremental groundwater elevation contours are presented graphically in Figures 5-3 thru 5-7.

Table 5-4
Model Estimated Drawdown

Year		Model Estimated Average Drawdown (ft)
Year 5	2011	14
Year 10	2016	32
Year 15	2021	50
Year 20	2026	67
Year 25*	2030	82

The final simulation is 24 years.

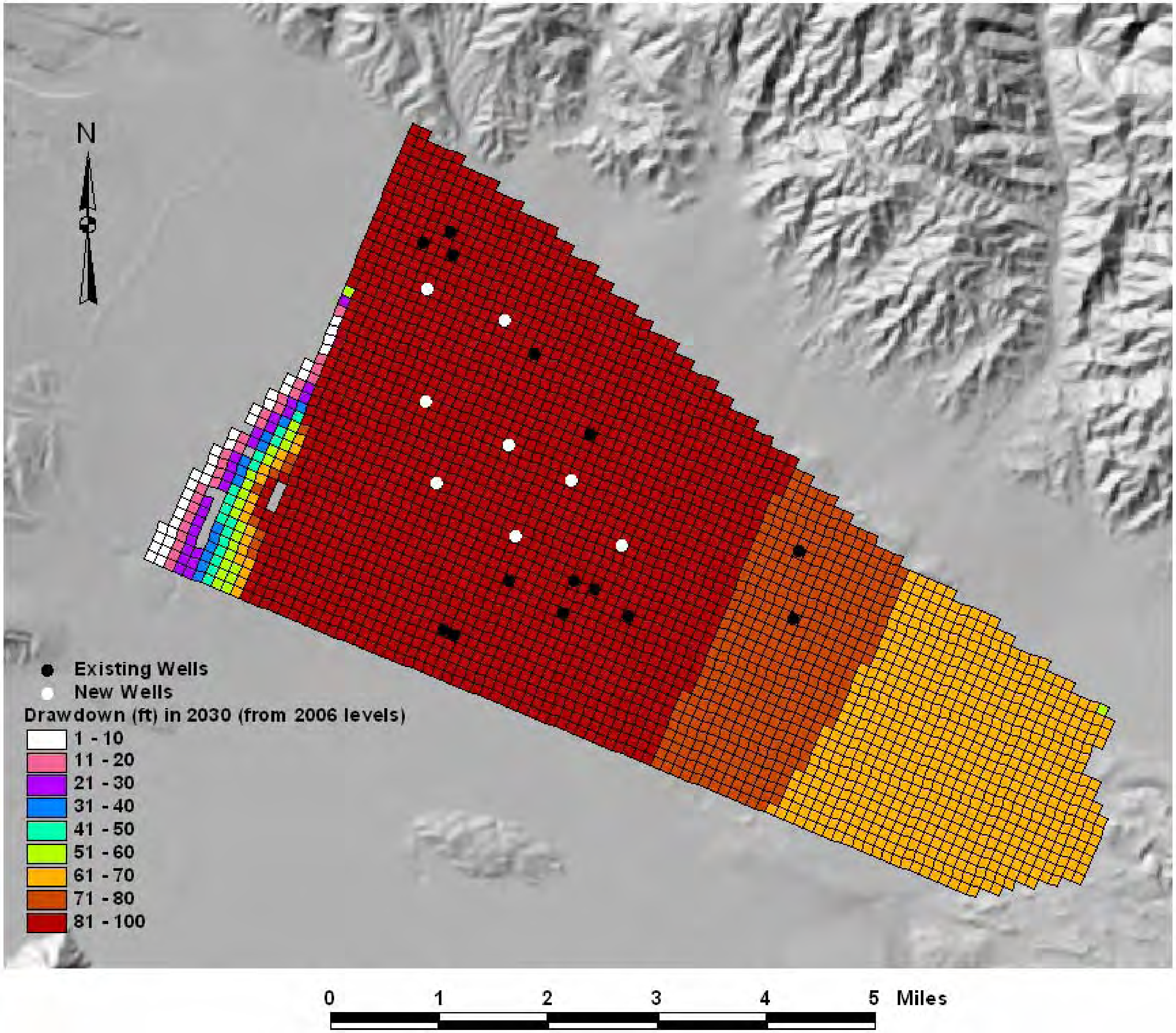


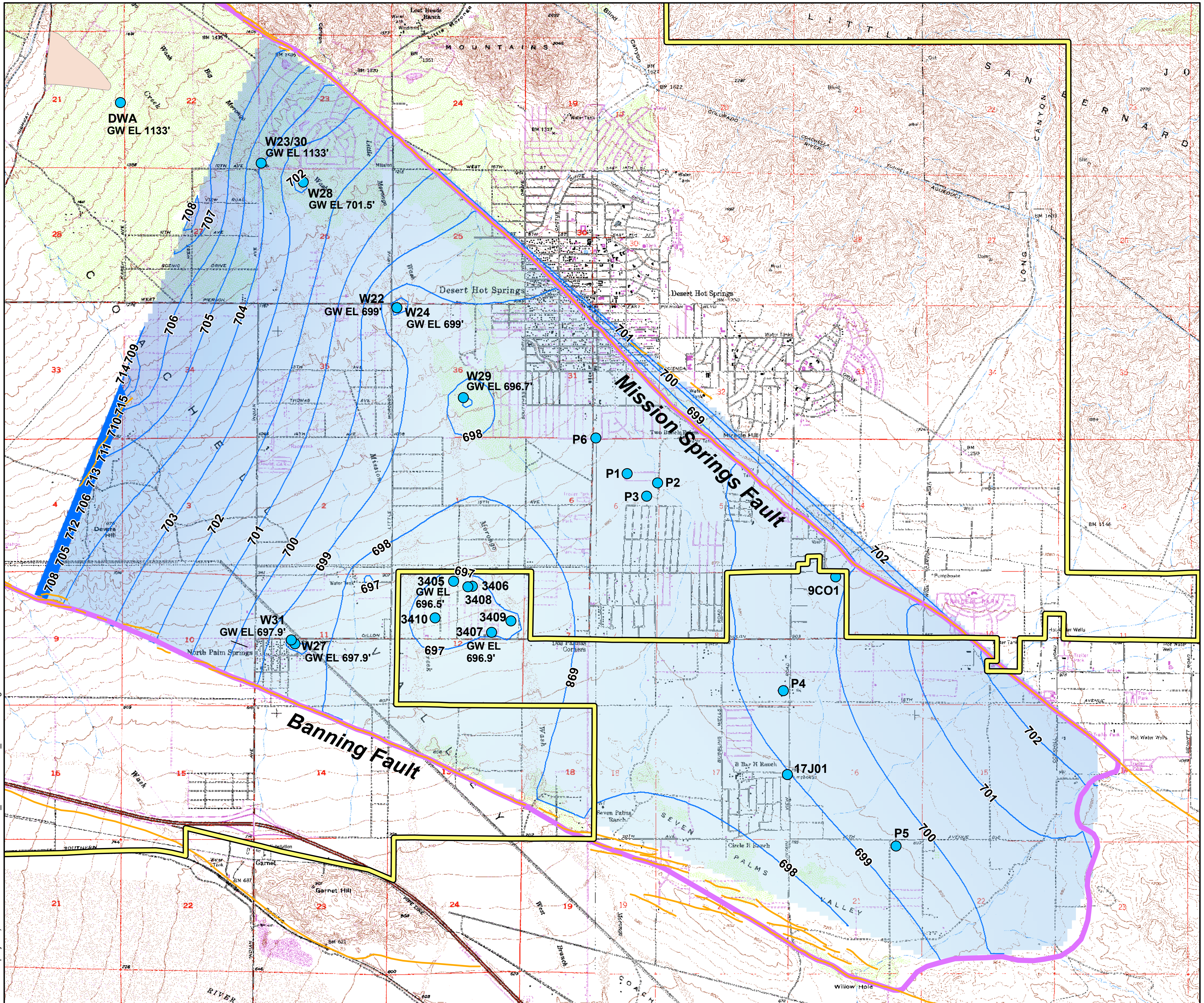
Figure 5-2
Model Estimated Drawdown

Mission Springs Water Budget Report

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

0 0.5 1 1.5 2 Miles



Scenario: Declining Boundary Heads
& 15K Spreading Basin - Year 0

Modeled Groundwater Elevation - 2006

MSWD PSOMAS

Figure 5-3

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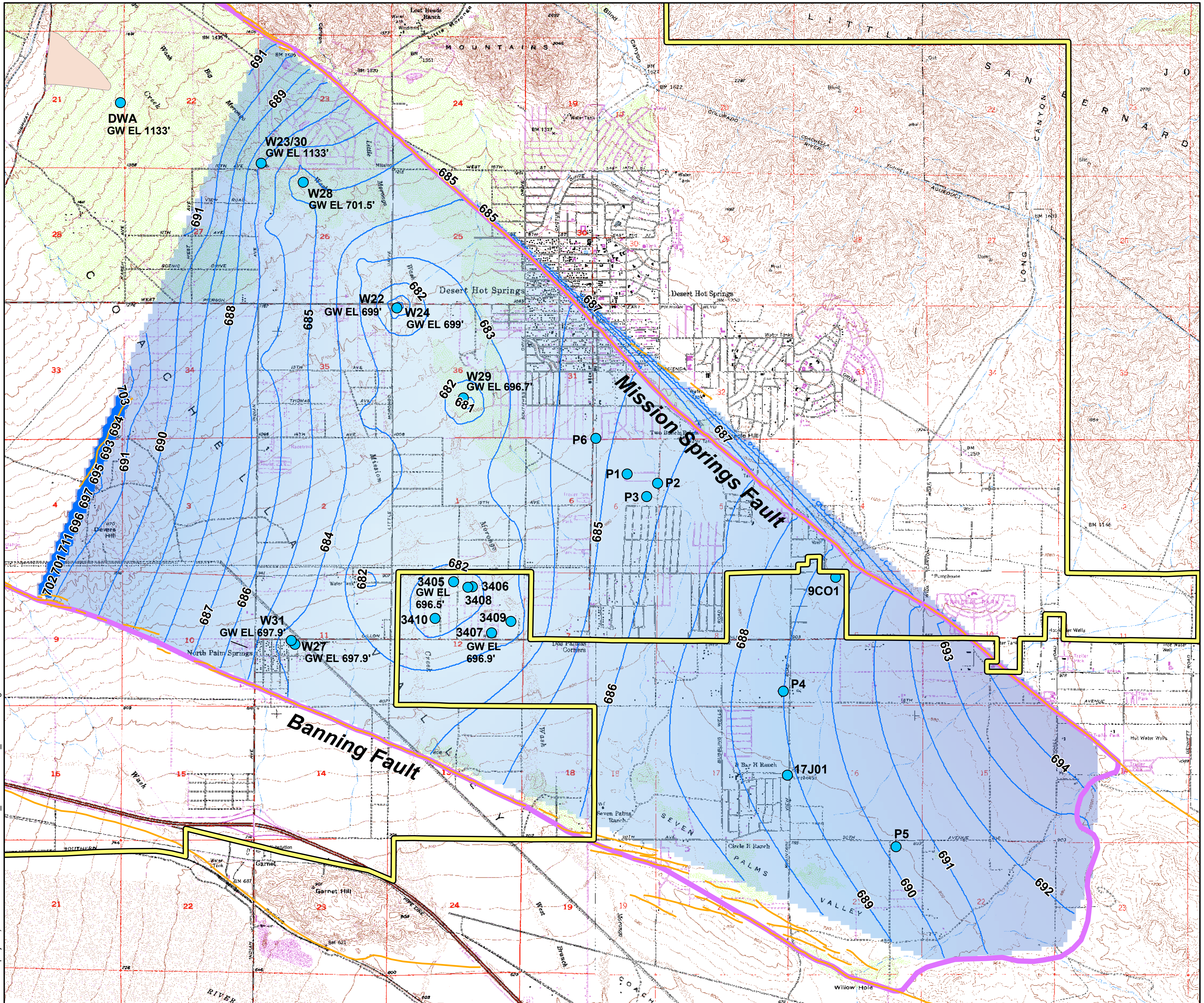

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Mission Springs Water Budget Report

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

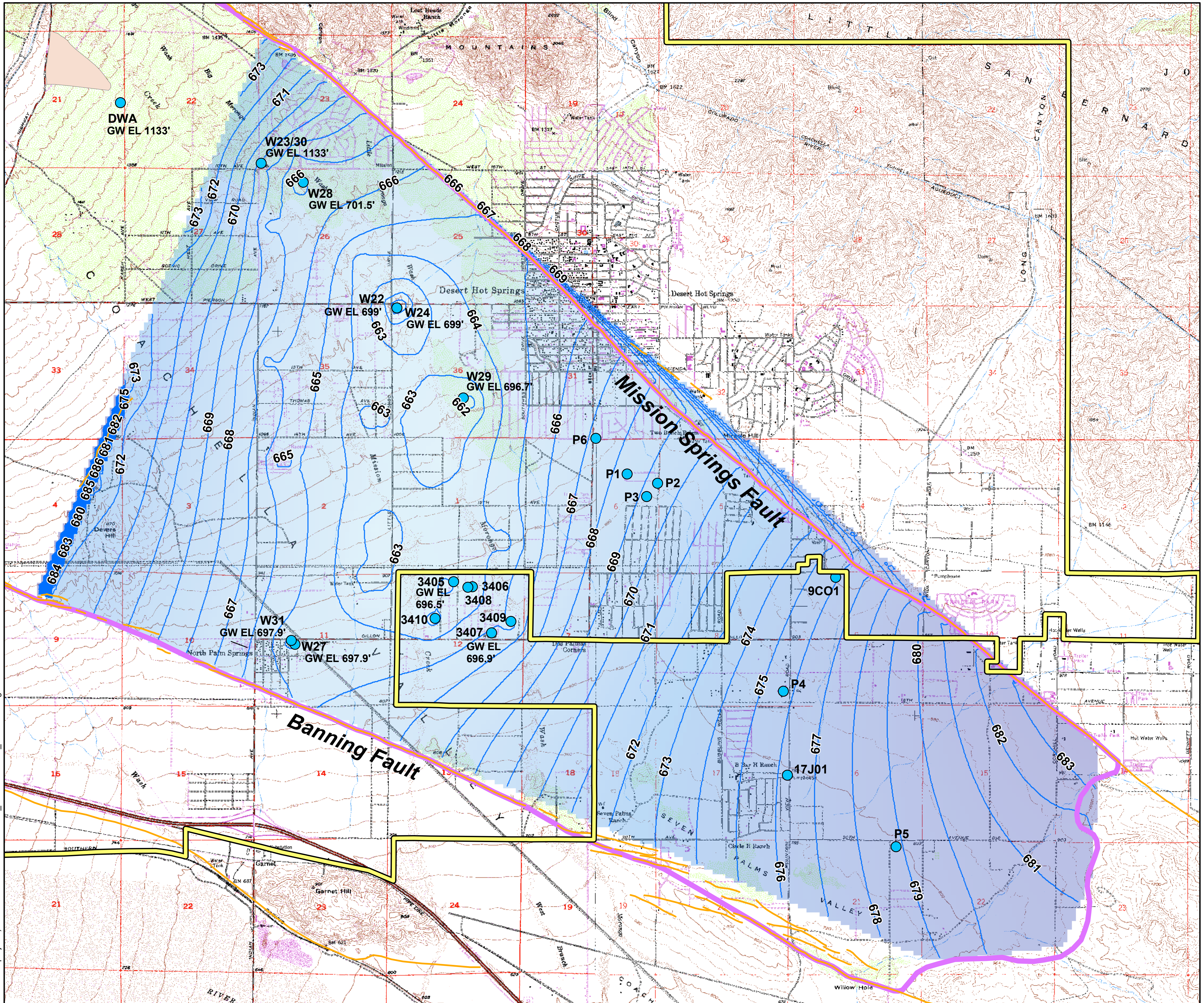
0 0.5 1 1.5 2 Miles

Scenario: Declining Boundary Heads & 15K Spreading Basin - Year 5

Modeled Groundwater Elevation - 2011

MSWD PSOMAS

Figure 5-4



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Mission Springs Water Budget Report

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

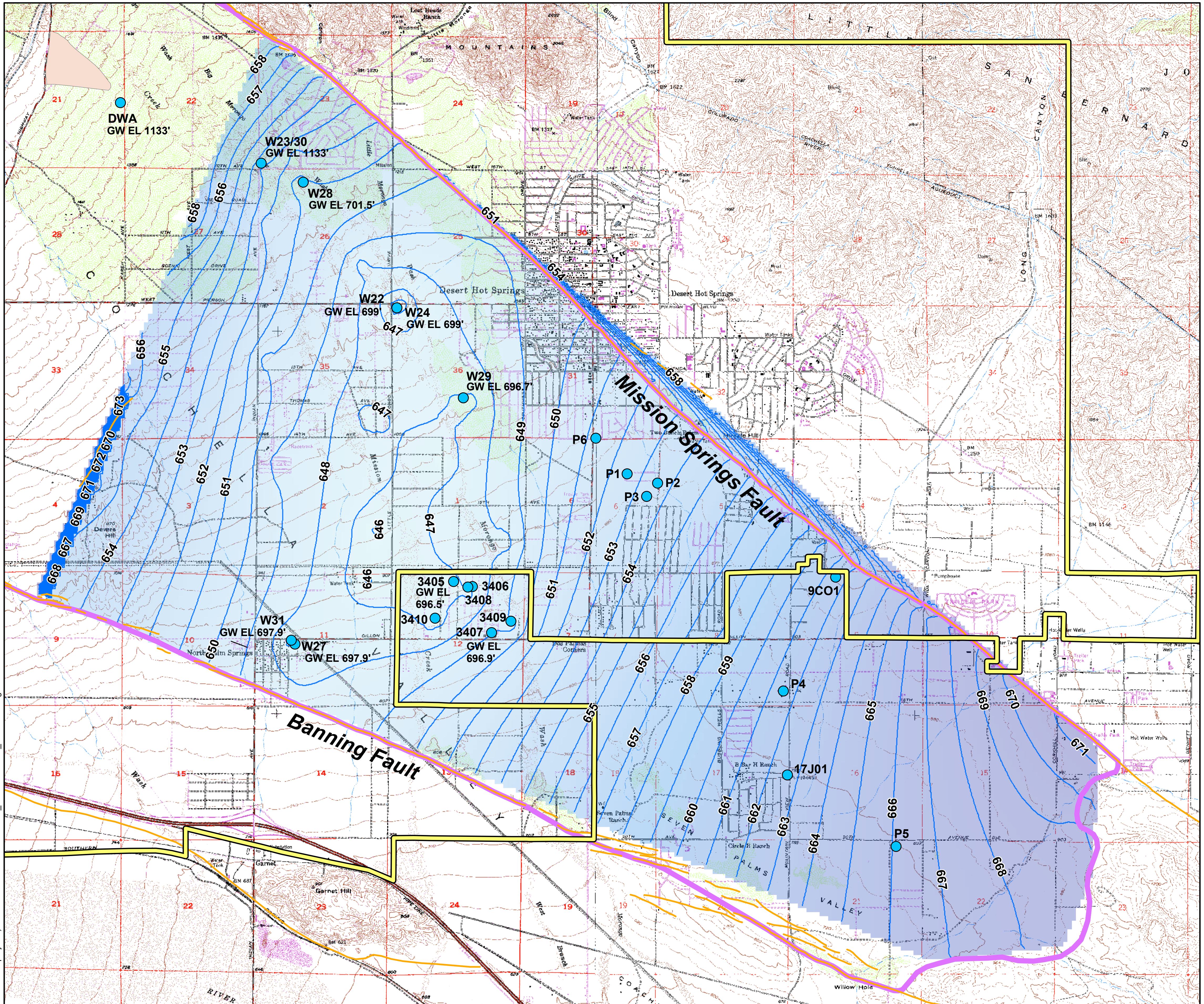
0 0.5 1 1.5 2 Miles

Scenario: Declining Boundary Heads & 15K Spreading Basin - Year 10

Modeled Groundwater Elevation - 2016

MSWD PSOMAS

Figure 5-5



Mission Springs Water Budget Report

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

0 0.5 1 1.5 2 Miles

Scenario: Declining Boundary Heads & 15K Spreading Basin - Year 15

Modeled Groundwater Elevation - 2021

MSWD PSOMAS

Figure 5-6

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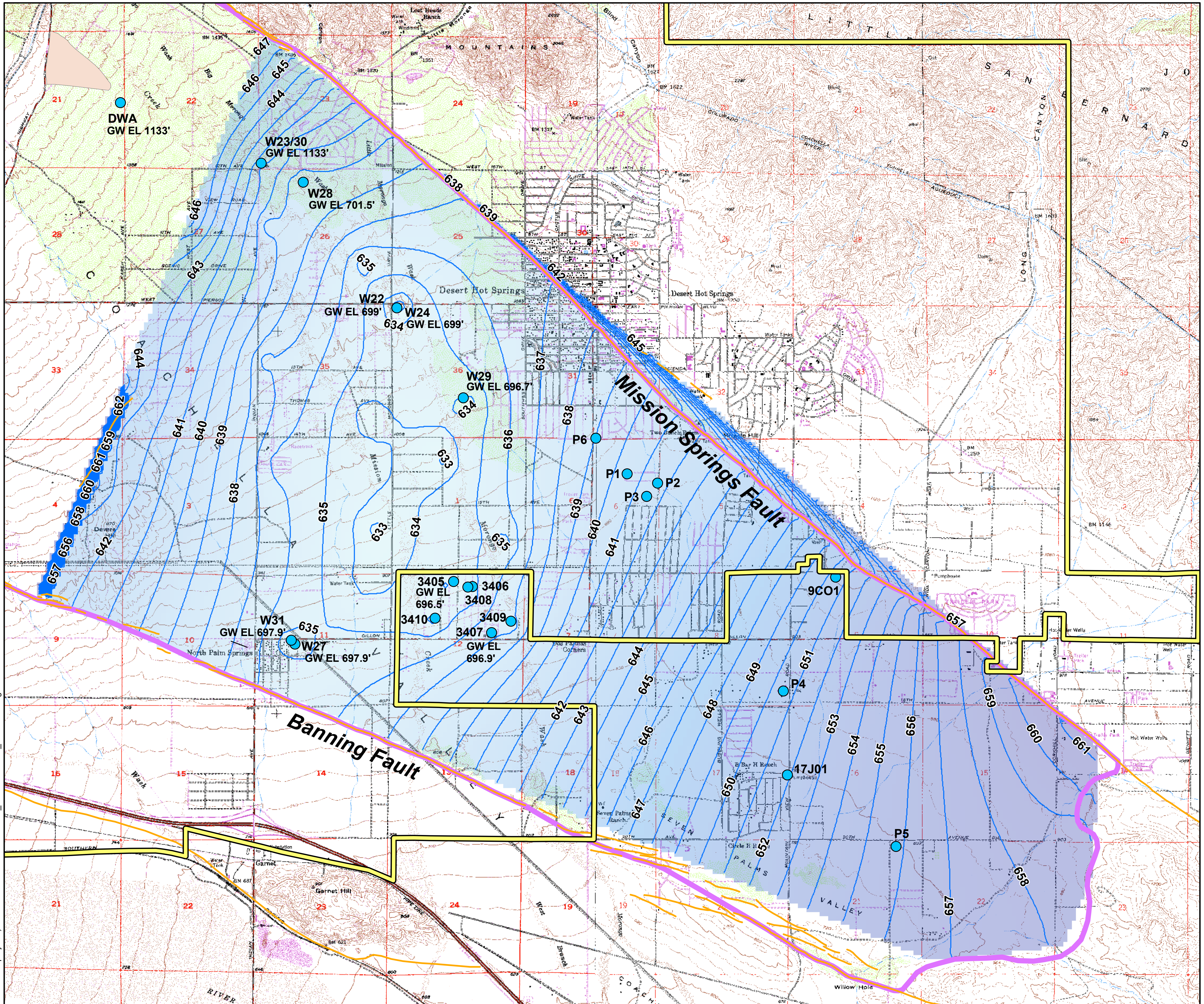
Mission Springs Water Budget Report



Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

0 0.5 1 1.5 2 Miles

Scenario: Declining Boundary Heads & 15K Spreading Basin - Year 20

Modeled Groundwater Elevation - 2026

MSWD PSOMAS

Figure 5-7

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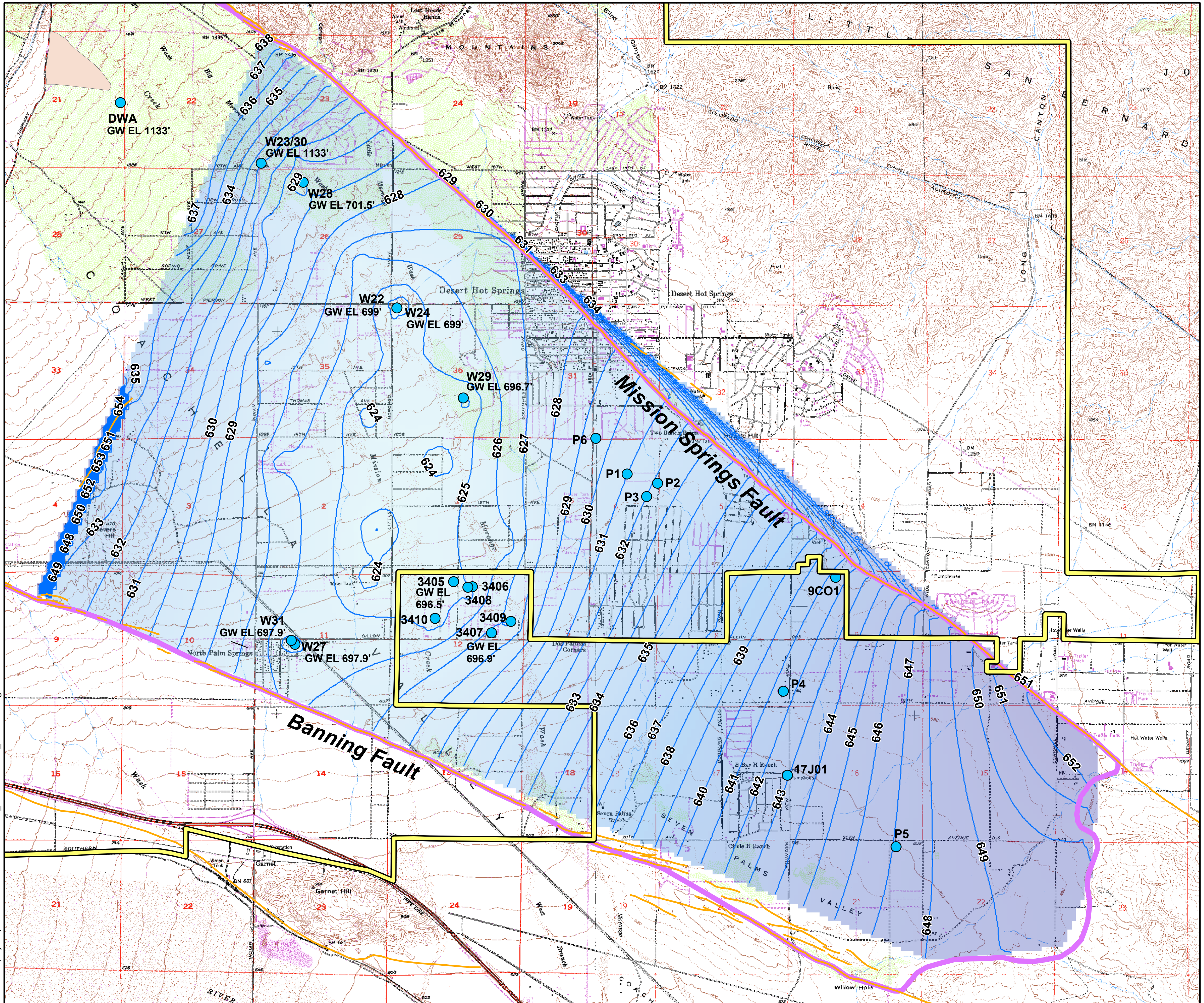

Mission Springs Water Budget Report

Legend

- MSWD Service Area Boundary
- Mission Creek Sub-basin Boundary
- Known Fault Lines
- Modeled Groundwater Elevation Contours (1-Foot Contour Interval)
- Production Wells (2006)

0 0.5 1 1.5 2 Miles

Scenario: Declining Boundary Heads & 15K Spreading Basin - Year 24

Modeled Groundwater Elevation - 2030

MSWD PSOMAS

Figure 5-8

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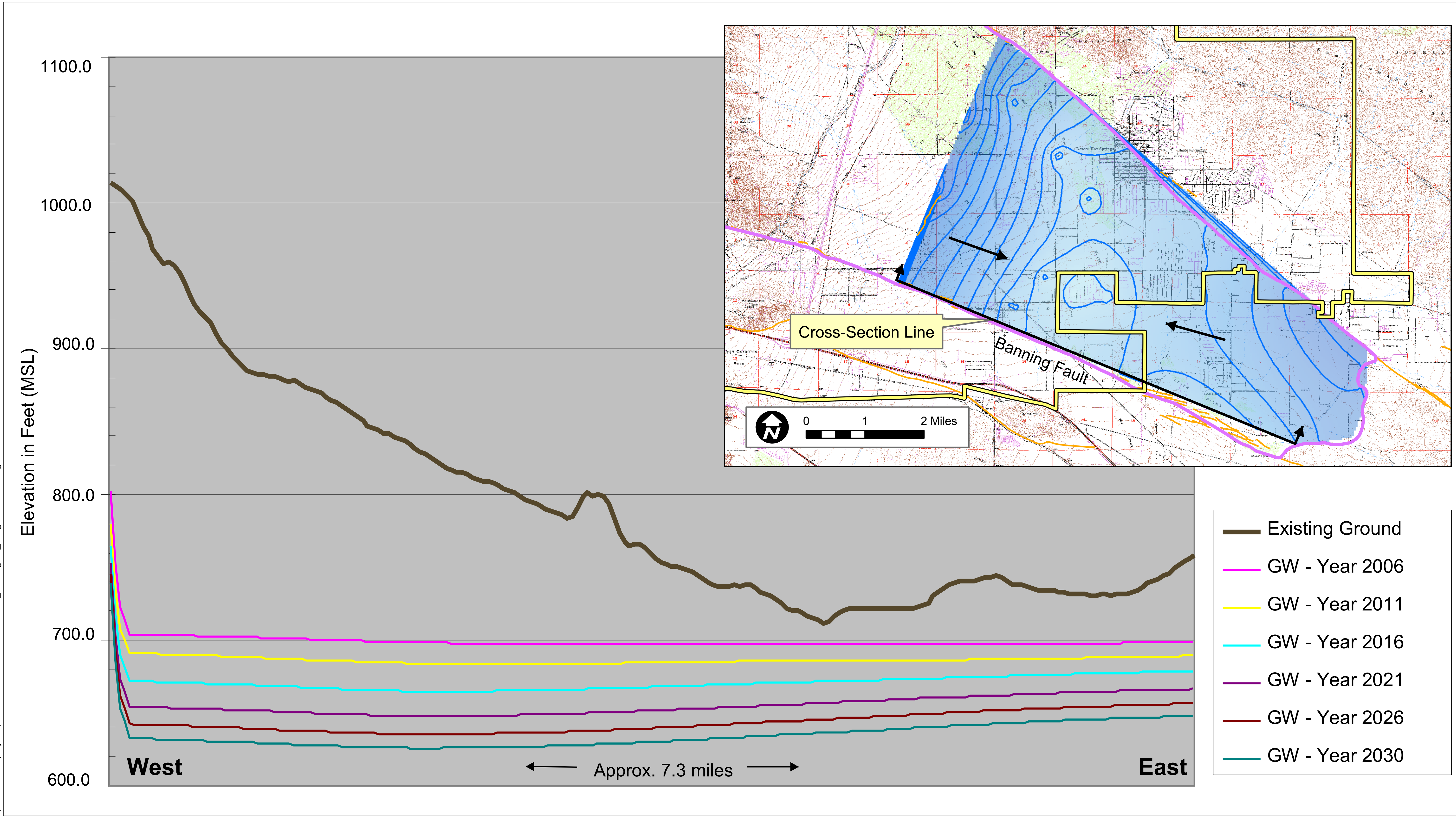

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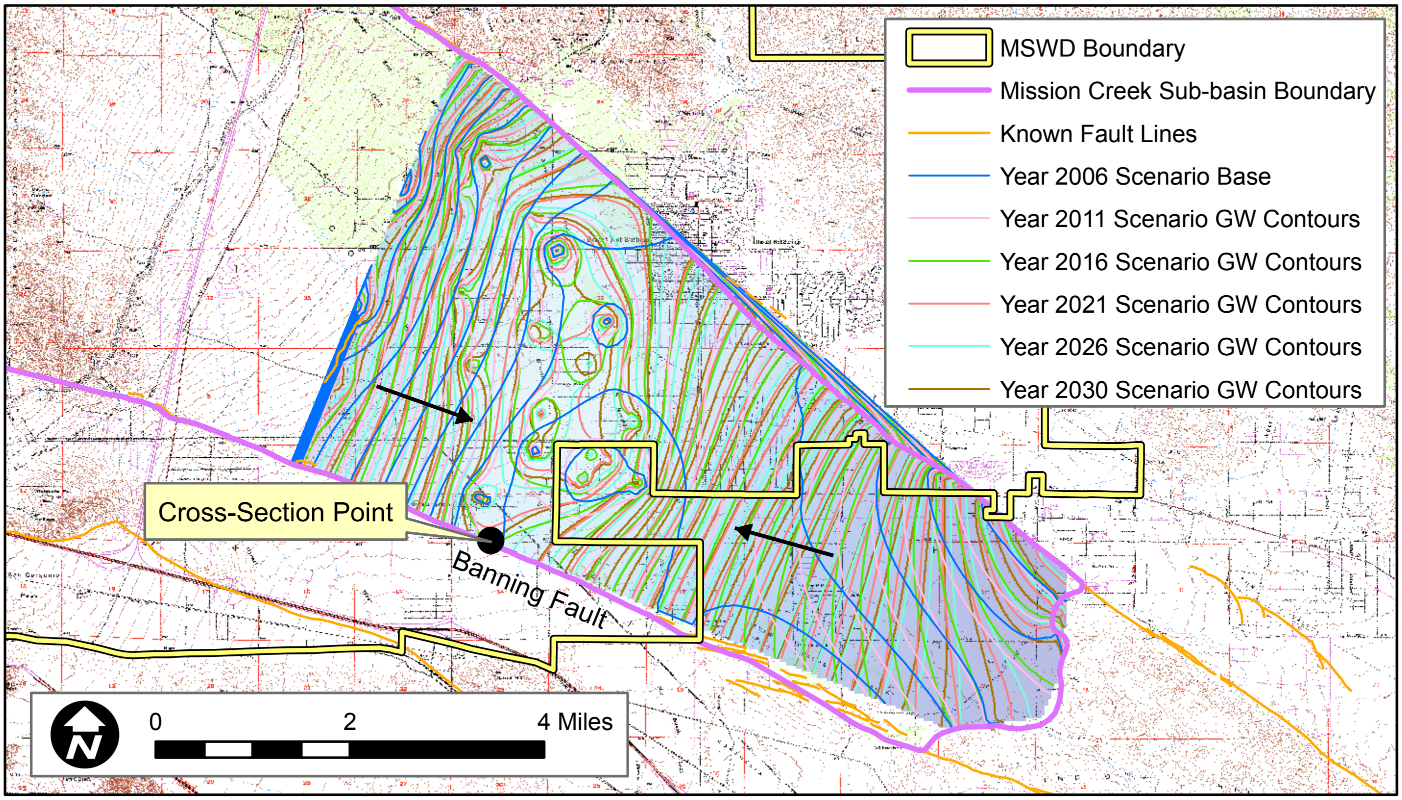
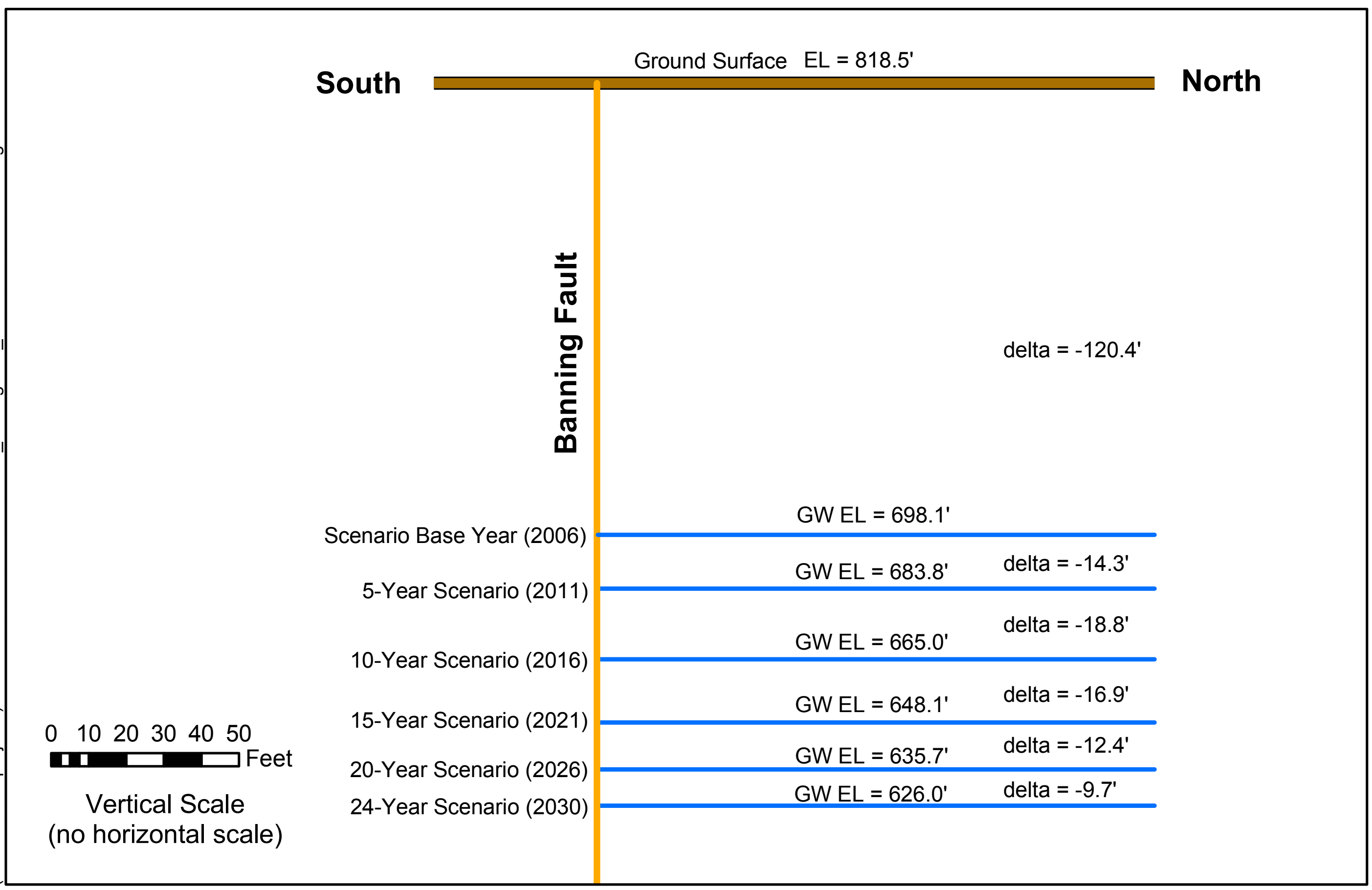
Groundwater Elevation Longitudinal Cross Section
Along Banning Fault -- All Scenarios

MSWD PSOMAS

Figure 5-9





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Groundwater Elevation Cross Section Point at Banning Fault -- All Scenarios

6.0 Sensitivity

The sensitivity analysis was performed to assess the response of the model results to changes in various input parameter values. The model is sensitive to a parameter when a change of the parameter value changes the distribution of simulated hydraulic head. When the model is sensitive to an input parameter, the value and distribution of that parameter within the model are more accurately determined during model calibration because small changes to the parameter value cause large changes in hydraulic head. If a change of parameter value does not change the simulated hydraulic head distribution, the model is insensitive to that parameter. When the model is insensitive to an input parameter, the value and distribution of that parameter within the model are more difficult to accurately determine from model calibration because large changes to the parameter do not cause large changes in hydraulic head. These values of these parameters may not represent actual values

It is recognized that annual future spreading basin water will affect the groundwater level decline simulated in this analysis. Several simulations were run to test the sensitivity of spreading basin water to MCGS water level decline. The five scenarios used evaluated are presented below:

1. Spreading of 5,000 AF/yr
2. Spreading of 10,000 AF/yr
3. Spreading of 15,000 AF/yr
4. Spreading of 20,000 AF/yr
5. Spreading of 25,000 AF/yr

In order to simulate the full range of potential conditions, two sets of simulations were run for each spreading scenario: 1) the annual decline in boundary heads continued from 2007 to 2030 at the same rate as in the calibration period, and 2) there is no continued annual decline in boundary heads - assigned equivalent to 2006 heads.

Table 6-1, *Summary of Groundwater Budget for Ten Simulations*, summarizes the groundwater budget for each of the ten simulations. Note that the boundary inflow and outflow are relatively constant across spreading scenarios and between the two alternative boundary head assumptions. Boundary outflow increases as spreading increases and the change in total outflow is relatively small as compared to boundary inflow and to storage changes. This observation is significant to future groundwater management activities in that future investigations that resulted in refinement of boundary heads would be a lower priority than investigations related to the spreading operations or the geologic features between the spreading basins and the production wells.

Table 6-1
Summary of Groundwater Budget for Ten Simulations

Scenario	Inflow			Outflow			Storage Change
	Spreading	Boundary Inflow	Total Inflow	Pumping	Boundary Outflow	Total Outflow	
2006 Boundary Heads & 5K Spreading	5,000	6,936	11,936	26,961	1,335	28,296	-16,360
2006 Boundary Heads & 10K Spreading	10,000	6,458	16,458	26,961	2,117	29,078	-12,620
2006 Boundary Heads & 15K Spreading	15,000	6,198	21,198	26,961	3,117	30,078	-8,880
2006 Boundary Heads & 20K Spreading	20,000	5,995	25,996	26,961	4,175	31,136	-5,141
2006 Boundary Heads & 25K Spreading	25,000	5,834	30,835	26,961	5,276	32,237	-1,402
Declining Boundary Heads & 5K Spreading	5,000	6,676	11,676	26,961	1,394	28,356	-16,680
Declining Boundary Heads & 10K Spreading	10,000	6,230	16,231	26,961	2,210	29,171	-12,940
Declining Boundary Heads & 15K Spreading	15,000	5,978	20,978	26,961	3,218	30,179	-9,202
Declining Boundary Heads & 20K Spreading	20,000	5,785	25,785	26,961	4,288	31,249	-5,464
Declining Boundary Heads & 25K Spreading	25,000	5,631	30,631	26,961	5,396	32,357	-1,726

All values represent average of 2006-2030 Simulation and are in AF/yr.

7.0 Analysis Assumptions and Limitations

The modeling was completed in accordance with the following technical methodology and assumptions:

- Because of the volume of previously published data available for the MCGS, no subsurface soil or groundwater investigations were performed as part of this scope of services. Accordingly, Psomas' interpretations and recommendations are based solely on our analyses of available data from previous investigations and reports, extensive discussions with MSWD staff, and limited field investigations.

- It is further assumed that existing and proposed pumping occurs an average of 18 hours per day, 365 days a year and that the total volume for each well is as presented in Table 4-2. This is simulated as an equivalent constant pumping rate.

- This analysis assumes that the water produced from proposed wells will be in addition to the existing pumping from other production wells. This approach provides for a "worst-case" drawdown prediction from proposed pumping. Any gradual increase in pumping during initial startup of new wells and/or any reduction of other production wells during the twenty-five year evaluation period will result in a water level drawdown that is lower than estimated.

- The aquifer formation is composed of porous media, with groundwater flow obeying Darcy's law.

- All well diameters are sufficiently small that the volume of water removed from the well bore during pumping is negligible.

Model Limitations

- A groundwater model is an approximation of actual conditions. The accuracy of the model results depends on the accuracy of the input data. The groundwater water model for this study was constructed with available historical and site specific hydrological data to determine groundwater flow direction, contributing recharge areas to the MCGS, and spreading basin water deliveries. A correct interpretation of the model results should consider the following:

    - Model parameters such as hydraulic conductivity are applied uniformly to a model cell. The assumption of homogeneity may case inaccuracies because field conditions, geologic formations, and climatic conditions are typically heterogeneous.
    - The groundwater model was discretized using a grid with cells measuring 500 feet by 500 feet. Model results are evaluated on a regional basin scale and should not be used for detailed analyses such as simulating water level drawdown near a single well.

- Well pumping rates used in the groundwater model were average annual rates for municipal and private wells. Use of average annual pumping rates may introduce some error in the smaller time increments (e.g., monthly, weekly, or daily) water level drawdown results.

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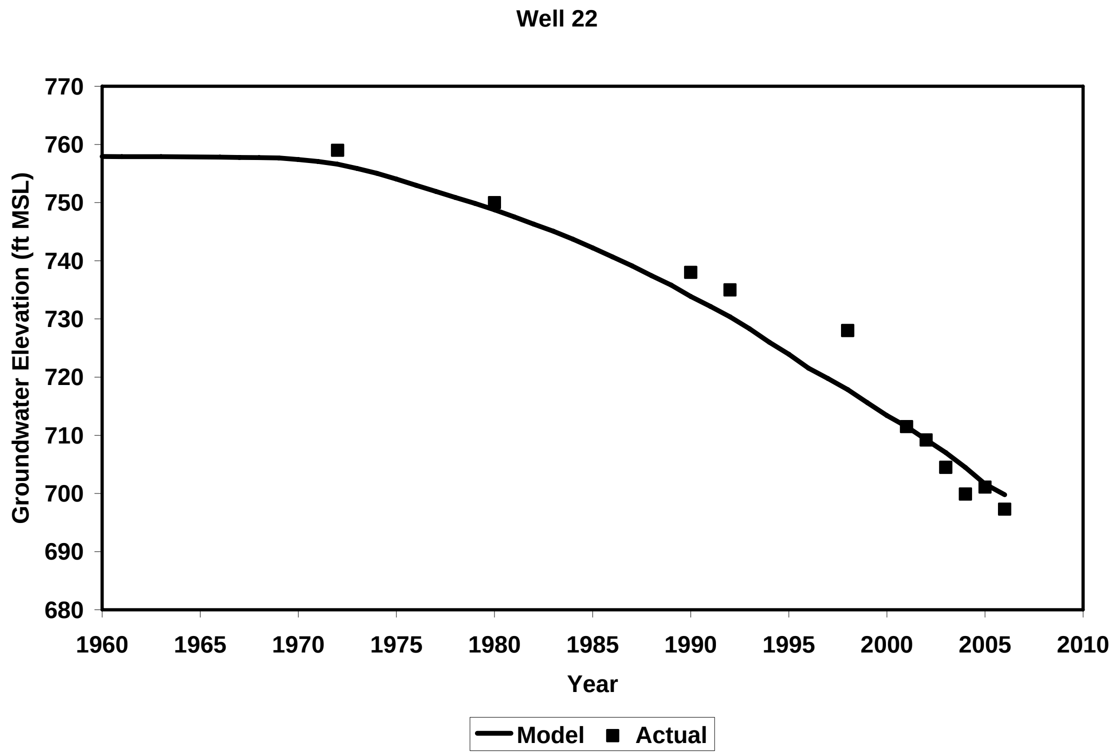
Appendix A
Hydrographs of Actual and Model Estimated Groundwater Elevations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770
760
750
740
730
720
710
700
690
680
Groundwater Elevation (ft MSL)
1960
1965
1970
1975
1980
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1990
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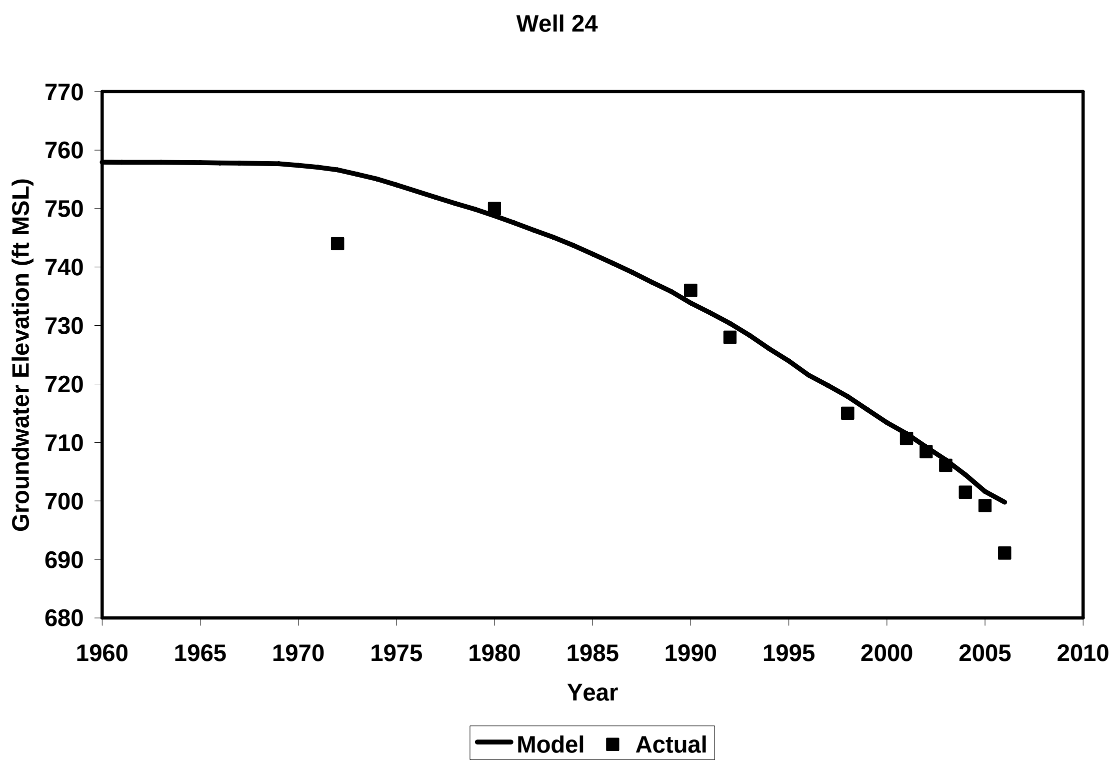
2000
2005
2010
Year
Model
Actual


Well 24
770
760
750
740
730
720
710
700
690
680
Groundwater Elevation (ft MSL)
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1965
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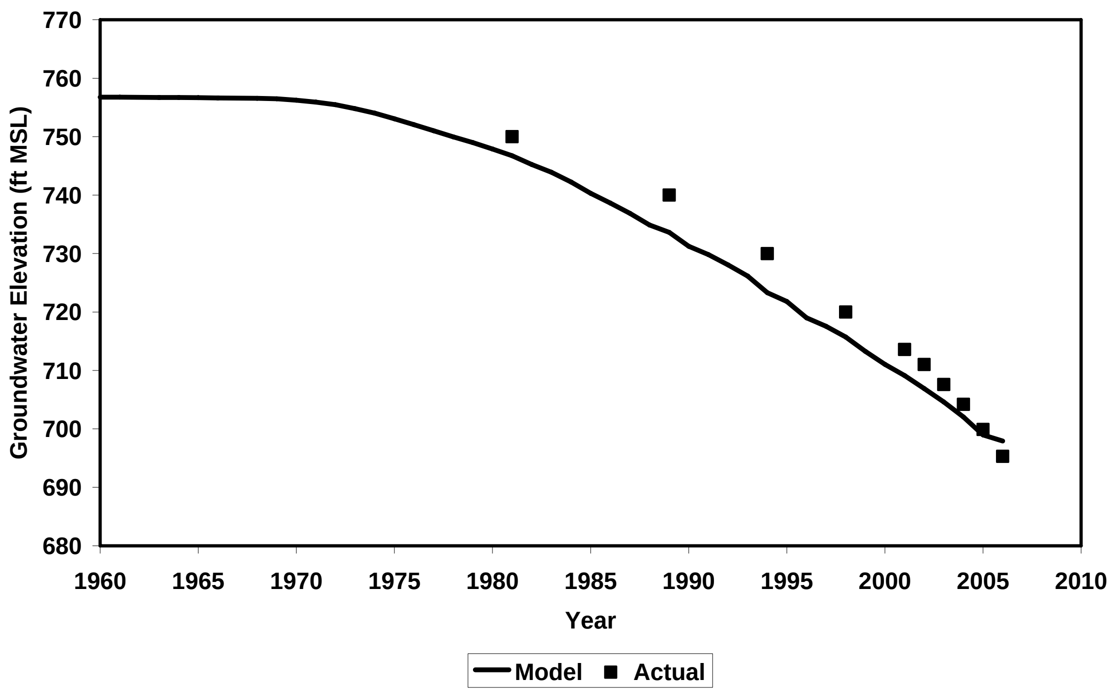
1990
1995
2000
2005
2010
Year
Model
Actual

Well 27



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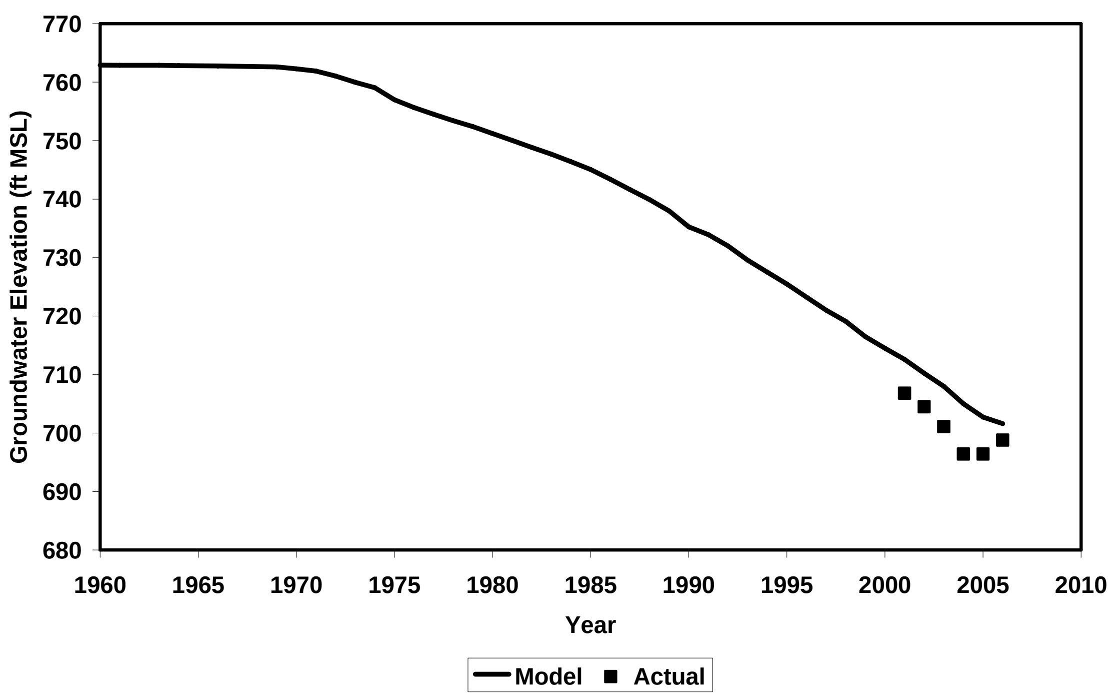

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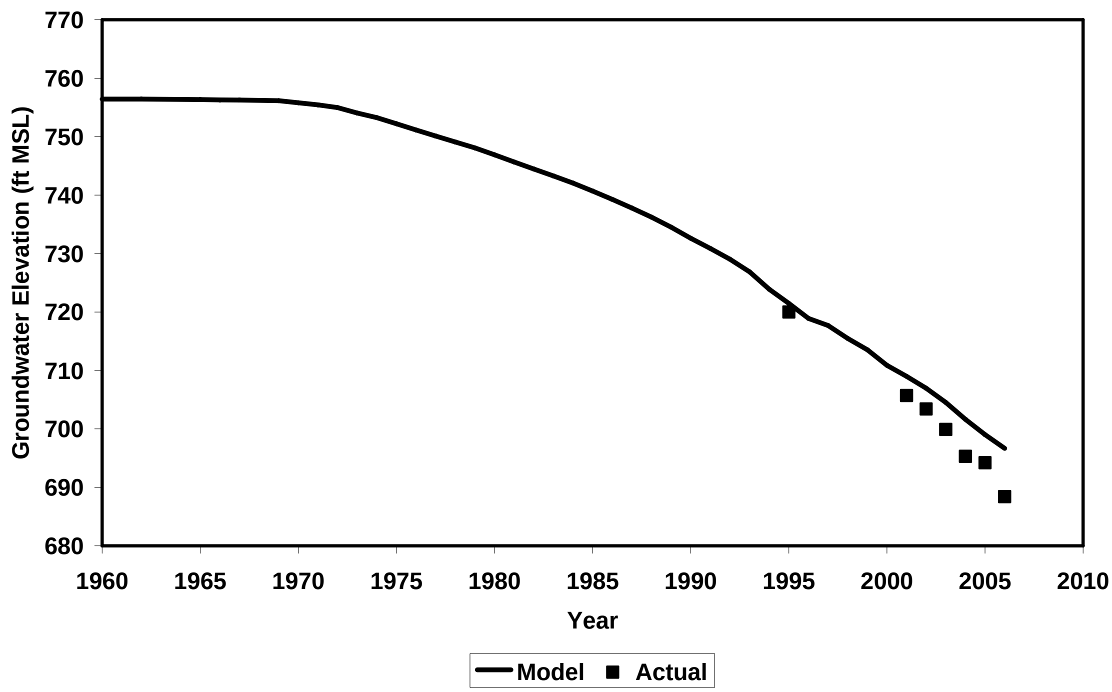

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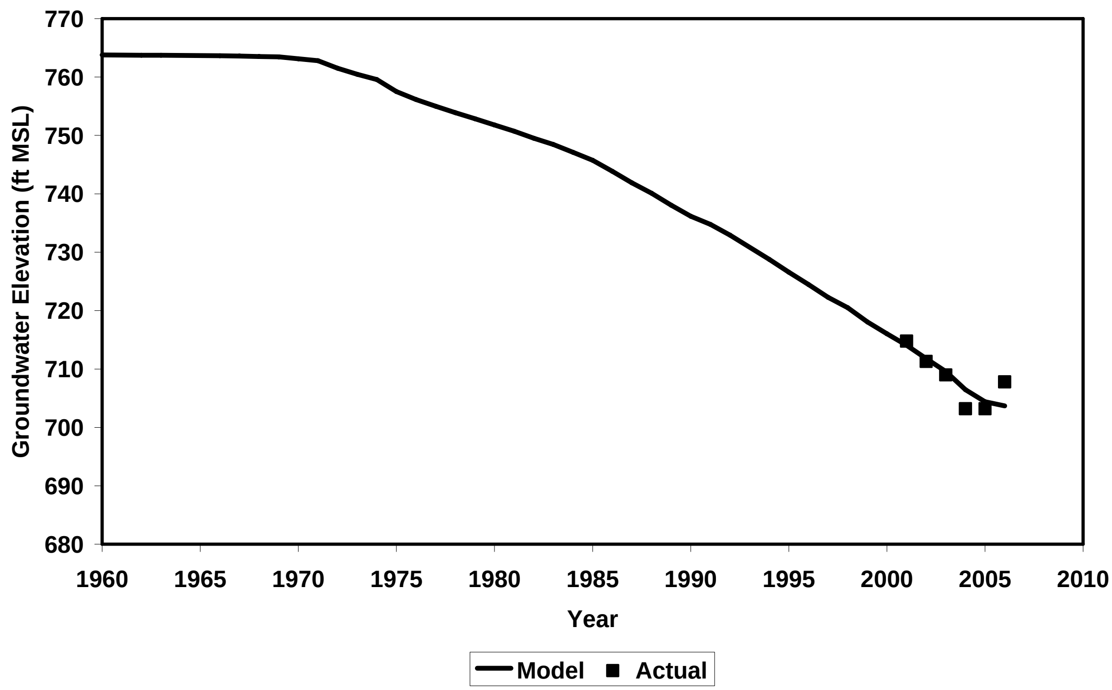

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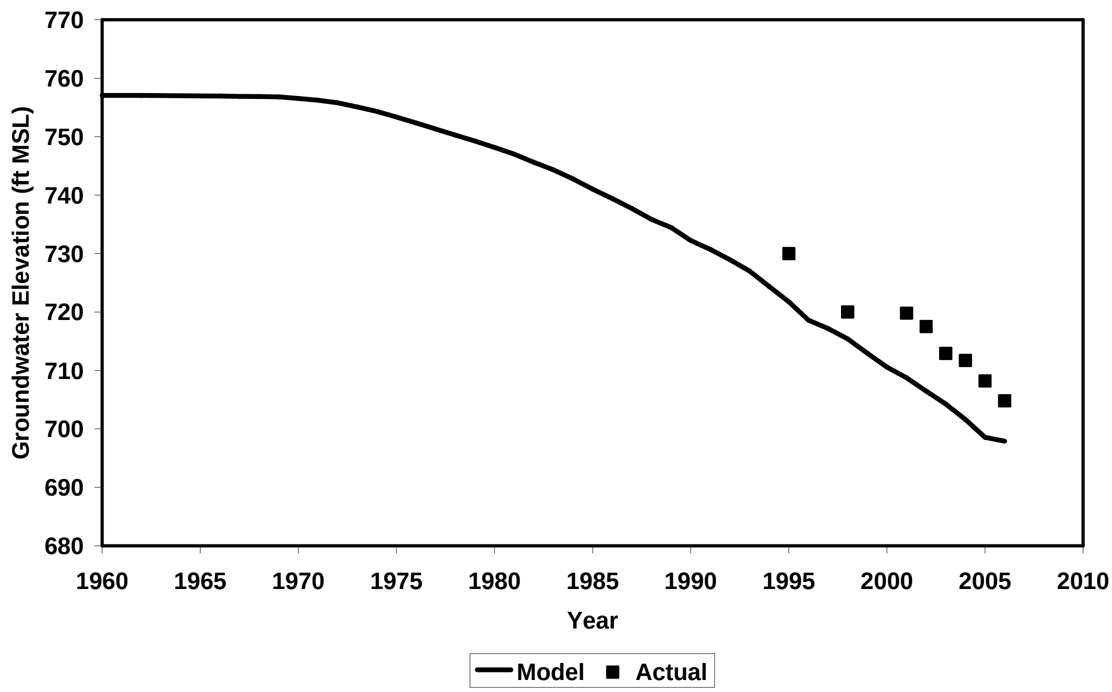

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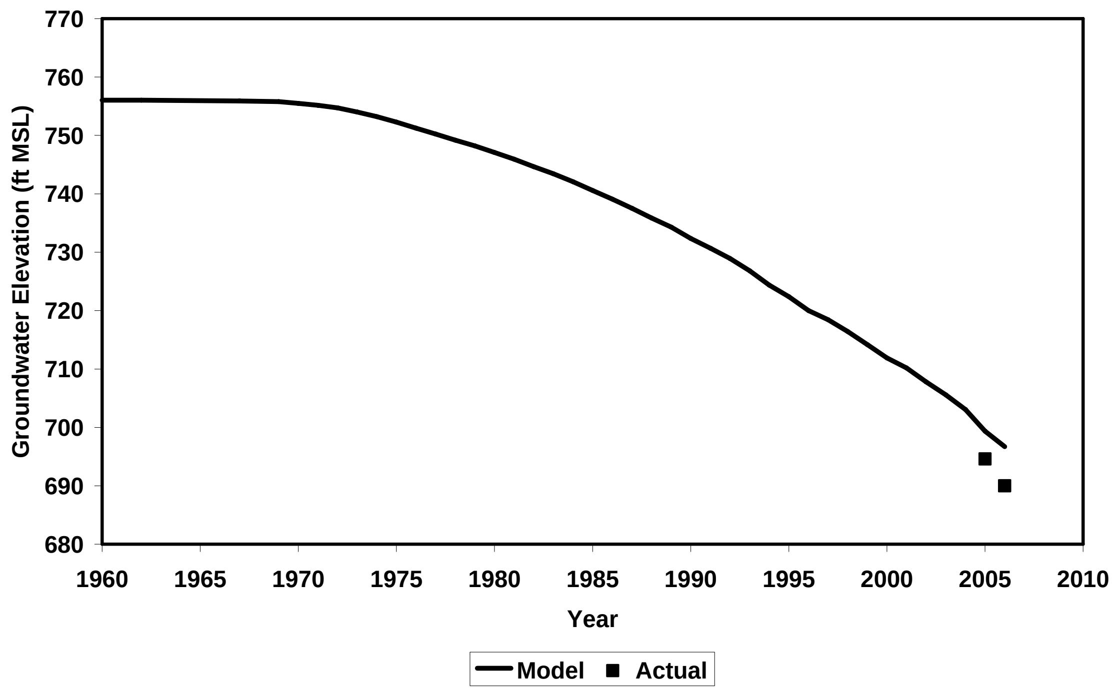

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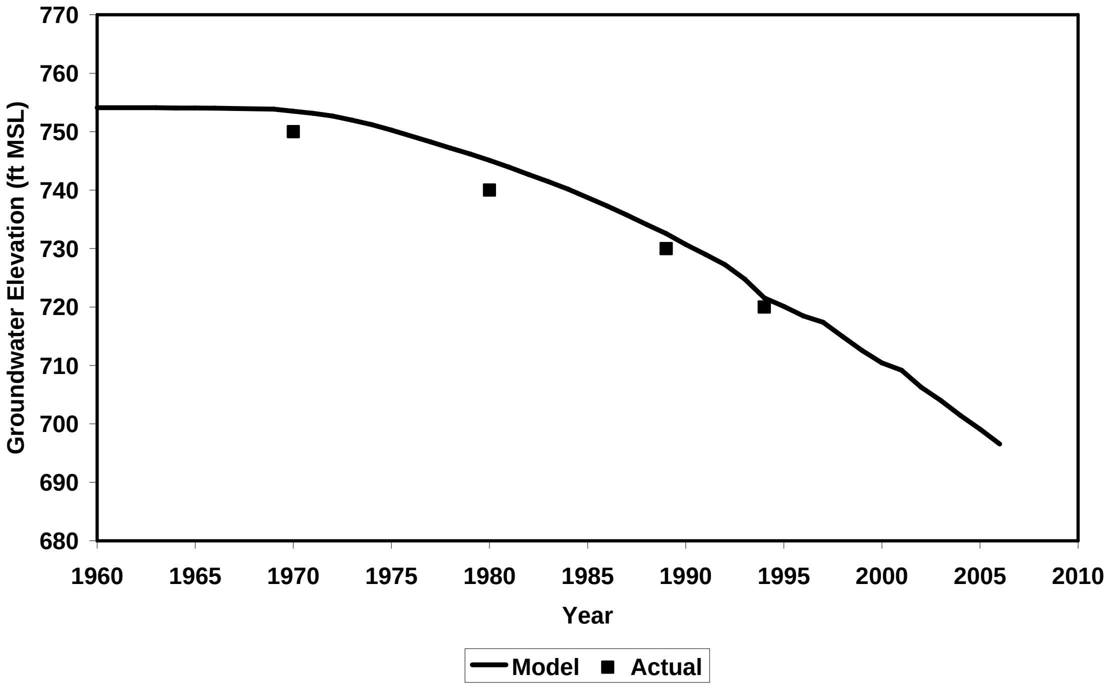

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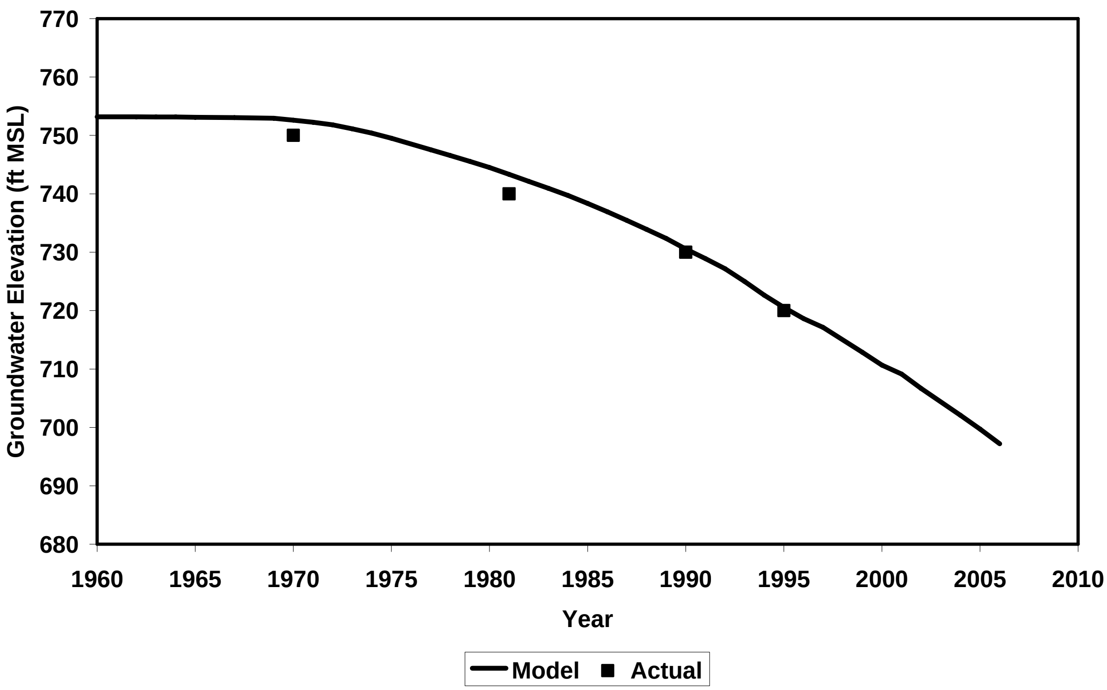

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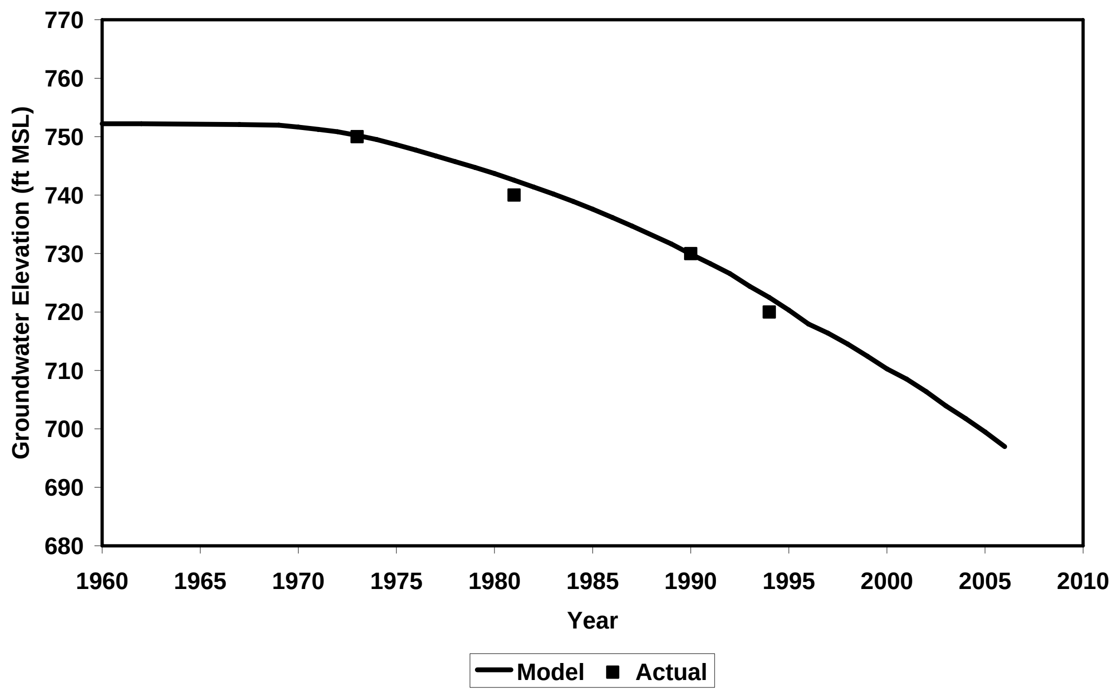

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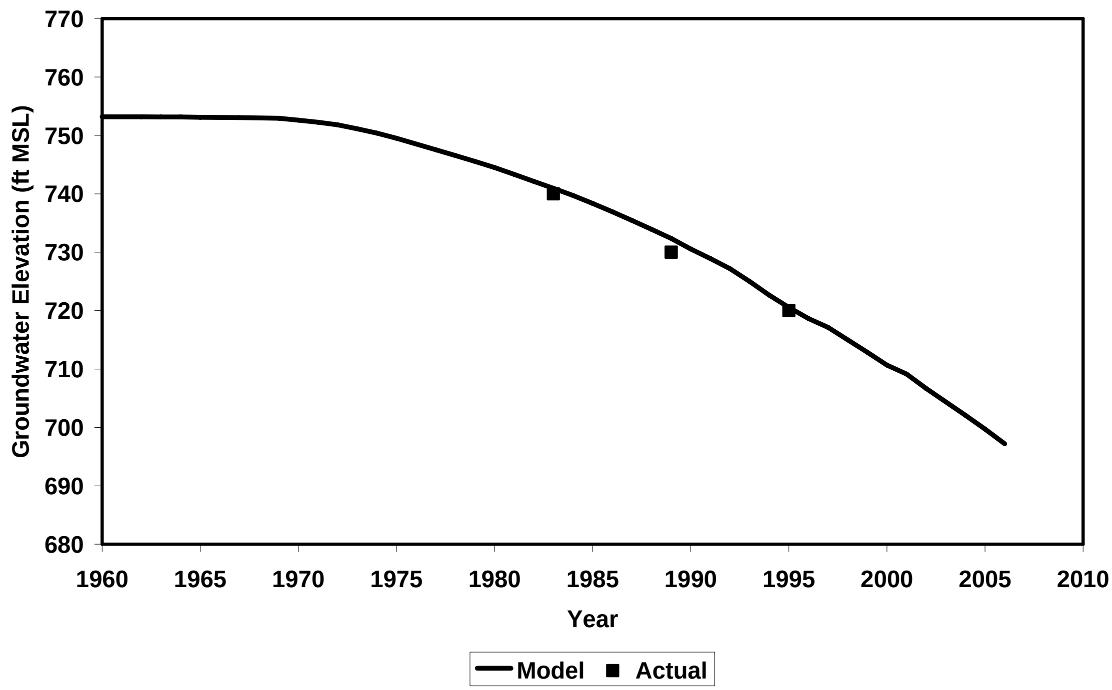

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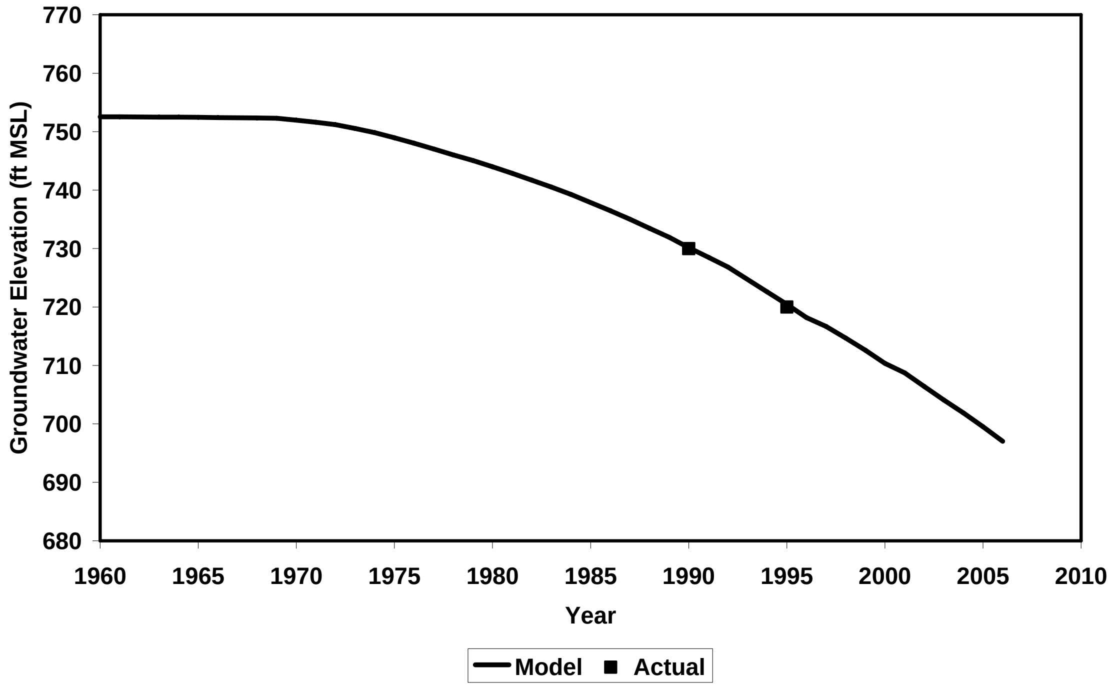

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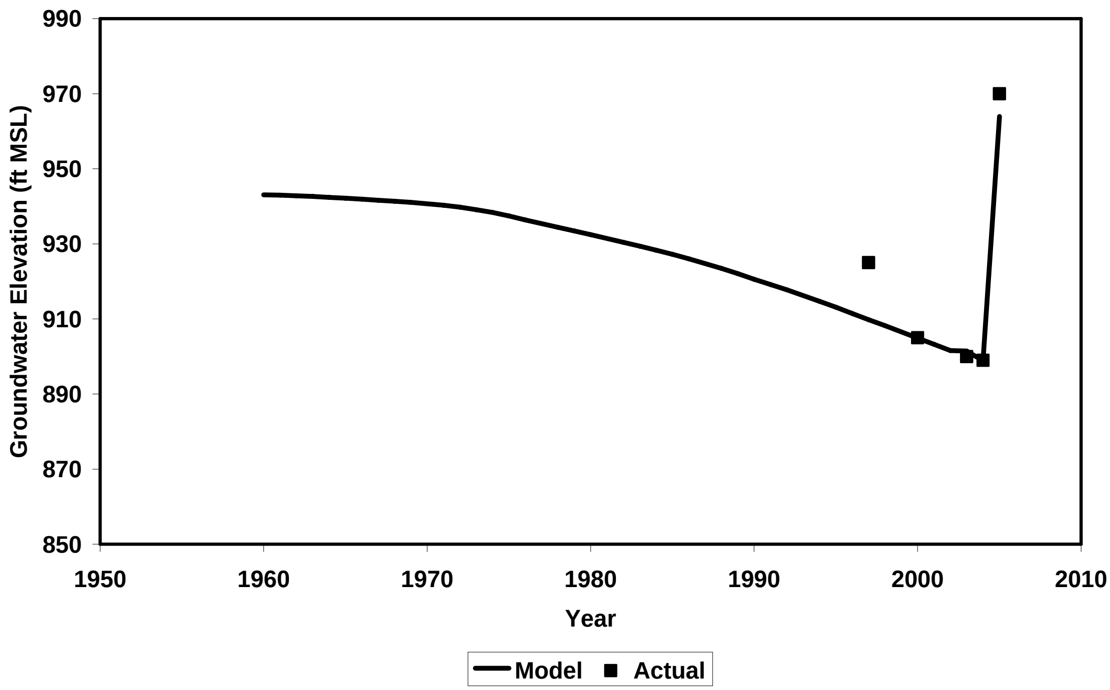

APPENDIX C

TDA General Biological Survey

FOCUSED DESERT TORTOISE, BURROWING OWL AND GENERAL BIOLOGICAL SURVEY FOR THE LITTLE MORONGO ROAD TRANSMISSION WATERLINE PROJECT, DESERT HOT SPRINGS, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Prepared by:

Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, California 92405

December 2007

CERTIFICATION: I certify the statements furnished in this report and in the attached exhibits presents the data and information required for this biological survey report, and the facts, statements, and information presented are true and complete to the best of my knowledge.

____
Shay E. Lawrey
Ecologist/Regulatory Specialist

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY OF FINDINGS

In 1953, the Mission Springs Water District (MSWD) was formed for the purpose of providing an adequate water supply for the city of Desert Hot Springs and its environs. The MSWD provides domestic water and sewage service to an approximately 133 square mile area, that includes the city of Desert Hot Springs, and the communities of North Palm Springs, West Palm Springs, Desert Crest, West Garnet, Painted Hills, and Mission Lakes. Tom Dodson & Associates (TDA) conducted biological surveys per the request of MSWD for its proposed water transmission line project.

The project is located along Little Morongo Road, between Two Bunch Palms Trail and Mission Lakes Boulevard in the City of Desert Hot Springs, Riverside County. The project can be found on USGS – Desert Hot Springs Quadrangle, 7.5 Minute Series topographic within Sections 23-26 and 35-36 T2S, R4E, SBM.

Within the surrounding vicinity of the project area , potentially significant biological resources, such as desert tortoise (*Gopherus agassizii*) and burrowing owl (*Athene cunicularia*), are known to occur. Neither of theses species, or any other sensitive species were detected during protocol surveys of the pipe alignment, well and site construction area, and zone of influence. Big Morongo Creek Crosses Little Morongo Road just north of Pierson Boulevard. Prior to construction disturbance MSWD shall verify that no burrowing owls or desert tortoise have wandered into the construction area.

Tom Dodson & Associates biologists, Shay Lawrey, conducted focused, protocol surveys for desert tortoise and burrowing owl along the project area on December 2 and 3, 2007. The purpose of the survey was to determine biological resources present within and adjacent to the project area, and to assess potential project related impacts to those resources. Pedestrian surveys covered the entire pipeline alignment, well site, and zone of influence. The existing site conditions range from heavily disturbed to pristine habitat. Most of the adjacent habitat consists of disturbed creosote bush scrub habitat, in which principal disturbances are roads, offroad vehicles, dumping, litter, and shooting. In heavily disturbed areas, principal disturbances are off road vehicles and dumping. The only natural drainage within the project area is Big Morongo Creek, which contains a variety of native annual and perennial plants associated with Sonoran creosote scrub habitat.

The the pipeline alignment follows existing paved and dirt roads. The habitat directly adjacent to the road ways suffers an edge effect and as such is highly disturbed containing mostly non-native perennial and annual vegetation. Outside of the road "edge effect", the habitat consist of Sonoran creosote bush scrub as described in the Coachella Valley Multi Species Habitat Conservation Plan (CVMSHCP). This community is termed Creosote bush-white bursage series in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995). There are over 400,000 acres of Sonoran creosote bush scrub in the Coachella Valley. Sonoran creosote bush scrub is the most widespread vegetation type in the Colorado Desert and is found on the vast intermountain bajadas on coarse, well-drained soil with a total salinity of less than 0.02%. This vegetation community is characterized by low species diversity and broadly spaced shrubs with bare ground between. Many species of ephemeral herbs may flower in late winter/early spring if winter rains are sufficient. The Coachella Valley MSHCP habitat description identifies the following species as associated with portions of this community: Peninsular bighorn sheep, Palm Springs ground squirrel, Palm Springs pocket mouse, desert tortoise, burrowing owl, Coachella giant sand treader cricket, Coachella Valley grasshopper, Casey's June beetle, Coachella Valley milkvetch, triple ribbed milkvetch, Mecca aster, and Orocopia sage.

No desert tortoise or burrowing owl individuals or recent sign indicative of these burrowing species was found on or adjacent to the project.

SPECIES BACKGROUND INFORMATION

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is listed under both state and federal law as a threatened species. Throughout its range it is threatened by habitat loss, domestic grazing, predation, collections, and increased mortality rates (Feldmeth et al. 1990). Critical habitat for the desert tortoise was designated on February 8, 1994 (*FR 59 5820 5866*). The project site is not located within designated critical habitat. The desert tortoise is typically found in creosote bush scrub. They are most often found on level ground where the substrate is firm but not too rocky. Tortoise burrows are typically found at the base of shrubs, in the sides of washes and in hillsides. Recent activity at tortoise burrows may be indicated by footprints, fresh dirt on the apron of the burrow, fresh scat, crushed vegetation or recently exposed roots in the burrow wall. Tortoise scat is very distinctive and may remain on the desert floor for many years. General estimates of the age of tortoise scat can be made based upon sun bleaching and moisture levels. Home ranges for desert tortoise vary, depending upon the size and sex of a tortoise as well as the availability of food and shelter. According to the California Department of Fish and Game (CDFG), information on the western Mojave population of desert tortoise, home range typically varies from 5 to 38 acres. Neonatal tortoises can travel up to 3-5 km after hatching (Becky Jones-CDFG, pers. comm.). Because a single tortoise may have many burrows distributed throughout its home range, it is not possible to predict exact numbers of individuals on a site based upon burrow numbers.

In 1992 the US Bureau of Land Management issued the California Statewide Desert Tortoise Management Policy which included categorizing habitat into three levels of classification. The management goal for Category I areas is to maintain stable, viable populations and to increase the population where possible. The management goal for Category II areas is to maintain stable, viable populations. The management goal for Category III areas is to limit population declines to the extent feasible. The entire project occurs in desert tortoise habitat designated as Class II.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is a state and federal Species of Special Concern. This owl is a mottled brownish and sand colored, dove sized raptor, with large yellow eyes, a rounded head lacking ear tufts, white eyebrows, and long legs compared to other owl species. It is a ground dwelling owl typically found in arid prairies, fields, and open areas where vegetation is sparse and low to the ground. The burrowing owl is heavily dependent upon the presence of mammal burrows, commonly ground squirrel, in its habitat to provide shelter from predators, inclement weather, and to provide a nesting place (Coulombe 1971). They are also known to make use of human-created structures such as cement culverts and pipes for burrows.

Burrowing owls spend a great deal of time standing on dirt mounds at the entrance to a burrow, or perched on a fence post or other low to the ground perch from which they hunt for prey. Burrowing owls frequently hunt by hovering in place above the ground and dropping on their prey from above. Burrowing owls feed primarily on insects such as grasshoppers, June beetles, and moths, but will also take small rodents, birds, and reptiles. They are active during the day and night, but are considered a crepuscular owl; generally observed in the early morning hours or at twilight. The breeding season for the burrowing owl is February 1 through August 31. Up to eleven, but typically seven to nine eggs are laid in a burrow, abandoned pipe, or other subterranean hollow where incubation is complete in 28-30 days. Young burrowing owls fledge in 44 days. The burrowing owl is considered a migratory species in portions of its range, which includes western North America from Canada to Mexico, and east to Texas and Louisiana. Burrowing owl populations in California are considered to be sedentary or locally migratory.

Throughout its range it is vulnerable to habitat loss, predation, vehicular collisions, destruction of burrow sites and poisoning of ground squirrels (Grinnell and Miller 1944, Zarn 1974, Remsen 1978). Burrowing owls have disappeared from significant portions of their range in the last 15 years and overall nearly 60% of the breeding groups of owls known to have existed in California during the 1980s had disappeared by the early 1990s (Burrowing Owl Consortium 1993). The burrowing owl is not listed under the state or federal Endangered Species Act, but is considered both a federal and state “species of special concern.” The burrowing owl is a migratory bird protected by the international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California Fish and Game Code (CDFG Code #3513 & #3503.5).

REGULATORY SETTING

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to the continued existence and existing knowledge of population levels. The U.S. Fish and Wildlife Service (USFWS) administers the federal Endangered Species Act (ESA) of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

Migratory Bird Treaty Act: The Migratory Bird Treaty Act protects all native breeding birds, whether or not they are considered sensitive by resource agencies.

The CDFG administers the state Endangered Species Act. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management; and a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under '3503.5 of the California Fish and Game Code. Species that are California fully protected include those protected by special legislation for various reasons, such as the California condor. Species of Special Concern is an informal designation used by CDFG for some declining wildlife species that are not proposed for listing as threatened or endangered, such as the burrowing owl. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFG.

A Multiple Species Habitat Conservation Plan has been developed for the Coachella Valley, under the Federal and Califomia Endangered Species Acts, and under the provisions of the state's Natural Community Conservation Planning Act (Fish and Game Code Section 2800 et seq.) It is intended to protect species in the Coachella Valley by providing sufficient unfragmented habitat for the long-term viability of 30 species of plants and animals. The 30 species covered by the CVMSHCP include species that are either (1) currently listed by USFWS or CDFG as rare, threatened, or endangered; or (2) could become listed in the foreseeable future. The 30 species are termed the "covered species". Extensive work has been conducted for the CVMSHCP documenting the natural history, known occurrences, habitat preferences, and historic distributions of the 30 species covered by the CVMSHCP. Additionally, species distribution and core habitat models have been developed for many of the species addressed in the CVMSHCP. These models map known occurrences, core habitat, and represent a data-based scientific prediction of species distribution. Proposed conservation areas have been established under the Plan.

METHODS

The California Natural Diversity Data Base (CNDDB), literature references, and related environmental documents were examined to obtain information on species occurrences in the project area. TDA biologist, Shay Lawrey conducted focused, protocol surveys for desert tortoise and burrowing owl along the project area on December 2 and 3, 2007. The entire project area was surveyed in accordance with both the desert tortoise and burrowing owl survey protocols. The desert tortoise protocol requires 100% coverage surveys with transects spaced at no more than 30-foot intervals so that 15-foot areas on either side of each transect were observed. Tortoise protocol requires zone of influence transects be conducted wherever possible at 100, 200, 400, 800, 1,200 and 2,400-foot intervals. Focused burrowing owl surveys were conducted in accordance with the "Burrowing Owl Survey Protocol and Mitigation Guidelines" prepared by the California Burrowing Owl Consortium on April 1993 and the October 17, 1995 California Department of Fish and Game staff report on Burrowing Owl Mitigation. The protocol requires surveying the site and a 150-meter (~500 foot) zone of influence on all sides of the project at no more than 30 meter (~100 foot) intervals. The purpose of zone of influence transects is to determine if there is potential for tortoise or owl immigration onto the site. Existing residential development within the zone of influence was not surveyed. The bases of perennial shrubs were checked for burrows and signs. Natural and nonnatural substrates were examined for potential burrow sites. All burrows encountered were examined for shape, scat, pellets and tracks.

RESULTS

The project site is characterized by disturbed Sonoran creosote bush scrub which is dominated by creosote bush (*Larrea tridentata*). White burs sage *(Ambrosia dumosa),* also known as burrobush, and britt1ebush *(Encelia farinosa)* occur as a co-dominants scattered between the creosote bushes and are generally one to two feet in height. There are large areas of unvegetated coarse sand between the creosote and bursage. Overall, the vegetative canopy cover is about 30-40%. Annual herbaceous plants also occur including: brown-eyed primrose *(Camissonia claviformis),* desert chicory *(Rafinesquia neomexicana),* notch-leaved phace1ia *(Phacelia crenulata),* forget-me-nots *(Cryptantha* sp.), Fremont pincushion *(Chaenectis fremontii)*, desert dandelion *(Malacothrix glabrata),* and sand verbena *(Abronia villosa).* There are also a few scattered cholla cactus *(Opuntia* sp.).

The the project alignment contain pavement and hard-packed, graded dirt with Sonoran creosote bush scrub vegetation adjacent to the shoulders. The vegetation along the shoulders are strewn with rubbish from illegal dumping. The rubbish consists of household waste, yard clippings, old furniture and concrete rubble.

Observations of wildlife include scat, tracks, burrows, nest, calls, and individual animals. Commonly observed mammals were coyote, stripped skunk, cottontail rabbit, California jackrabbit, and antelope ground squirrel. Common bird species observed were, Gambel's Quail, red tail hawk, swainson’s hawk, American kestrel, mourning dove, loggerhead shrike, black phoebe, homed lark, northern roughwing swallow, song sparrow, common raven. Invertebrates observed include: ladybird beetle, millipede, aphid, and unidentified fly and ant species.

The results of protocol presence/absence survey for desert tortoise is that no recent tortoise sign was observed on the site. No scat, carapace or other evidence to suggest current or recent occupation by tortoise was encountered on the site during the surveys. Tortoises cannot be subject to take per the requirements of state and federal law. This report does not constitute authorization for incidental take of the desert tortoise. Handling or other inappropriate treatment of tortoises, including impacts to burrows, must be avoided until authorization is obtained from the USFWS and CDFG.

Burrowing owls and sign of burrowing owl activity (burrows, pellets, whitewash) were not observed in or adjacent to the project area.

CONCLUSIONS

The majority of the pipeline will be installed in moderately to heavily disturbed areas of road rights-of-way, and as such is not expected to result in adverse impacts on the biological resources. However, it is possible for a sensitive species, such as a desert tortoise or burrowing owl, to enter into the project site during construction. Therefore, it is recommended that a qualified biologist be onsite during all construction activities. The biologist should have the authority to stop work in the event a sensitive species enters the site until it leaves, or until the biologist has made contact with and received direction from the appropriate regulatory agencies.

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http://www.desertusa.com/june96/du_tort.html
http://www.dfg.ca.gov/whdab/html/R005.html

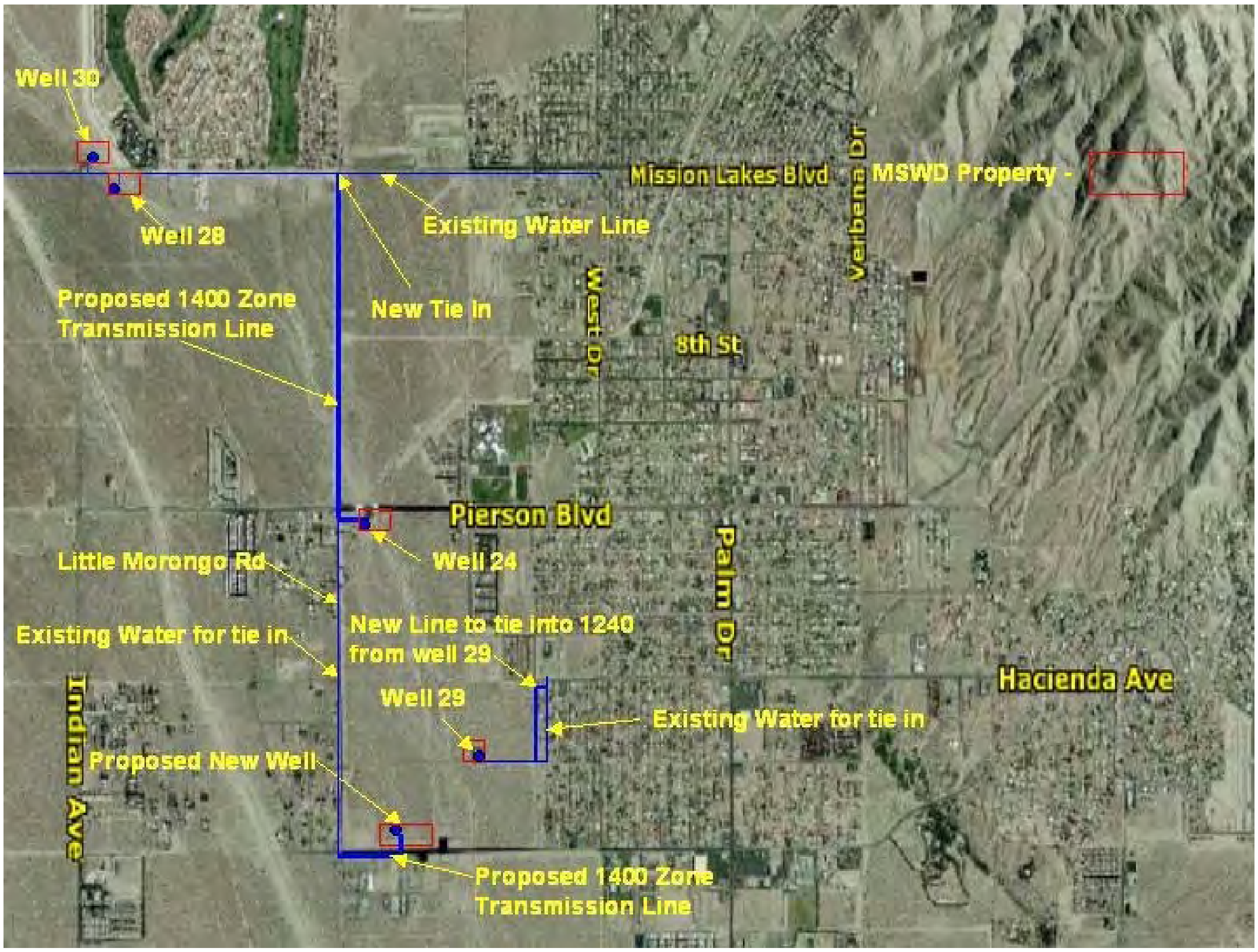
California Fish and Game Code 3503 and 3503.5 state:

3503: *It is unlawful to take, possess or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation made pursuant thereto.*

3503.5: *It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.*

FIGURES

FIGURE 1. PROJECT LOCATION AND SURVEY AREA



APPENDIX A

SPECIES LIST

APPENDIX A
SPECIES LIST

BIRDS

Scientific Name	**Common Name**
Accipitridae	Hawks, Old World Vultures, And Harriers
Buteo jamaicensis	red-tailed hawk
Odontophoridae	New World Quail
Callipepla californica	California quail
Columbidae	Pigeons And Doves
Zenaida macroura	mourning dove
Trochilidae	Hummingbirds
Calypte anna	Anna's hummingbird
Tyrannidae	Tyrant Flycatchers
Sayornis saya	Say’s phoebe
Laniidae	Shrikes
Lanius ludovicianus	loggerhead shrike
Corvidae	Jays, Magpies, And Crows
Corvus corax	common raven
Remizidae	Verdin
Auriparus flaviceps	verdin
Troglodytidae	Wrens
Campylorhynchus brunneicapillus	cactus wren
Mimidae	Mockingbirds and Thrashers
Mimulus polyglottos	northern mockingbird
Emberizidae	Emberizines
Amphispiza belli	sage sparrow

REPTILES

Scientific Name	Common Name
Phrynosomatidae	
Uta stansburiana	side-blotched lizard
Teiidae	Whiptails And Relatives
Cnemidophorus tigris tigris	western whiptail
Viperidae	Vipers
Crotalus sp	rattlesnake

MAMMALS

Scientific Name	Common Name
Leporidae	Rabbits And Hares
Lepus californicus	black-tailed (hare) jackrabbit
Canidae	Foxes, Wolves and Relatives
Canis latrans	coyote
Canis familiaris	dog

PLANTS - FLORAL COMPENDIUM

The following list includes those plant species detected within the project area during the November 2004 and March 2005 surveys. This list is not exhaustive. Specimens were identified in the field by Ms. C.J. Fotheringham, U.C. Los Angeles . Nomenclature follows that of Hickman, et al, The Jepson Manual, Higher Plants of California (1993).

Common Name	Species	Family
cooper frostmat	*Achyronychia cooperi*	Caryophyllaceae
white bursage	*Ambrosia dumosa*	Asteraceae
bristly fiddleneck	*Amsinckia tessellata*	Boraginaceae
wheelscale	*Atriplex elegans*	Chenopodiaceae
saharan mustard	*Brassica tournefortii*	Brassicaceae
foxtail brome	*Bromus madritensis*	Poaceace
pussy paws	*Calyptridium monandrum*	Portulaceae
paleyellow suncup	*Camissonia pallida*	Onagraceae
California sun cup	*Camissonia californica*	Onagraceae
browneyes	*Camissonia claviformis*	Onagraceae
Fremont pincushion	*Chaenactis fremontii*	Asteraceae
brittle spineflower	*Chorizanthe brevicornu*	Asteraceae
pygmy weed	*Crassula connata*	Crassulaceae
purple-root cryptantha	*Cryptantha micrantha*	Boraginaceae
narrow-leaved cryptantha	*Cryptantha angustifolia*	Boraginaceae
Guadalupe cryptantha	*Cryptantha maritima*	Boraginaceae
Nevada cryptantha	*Cryptantha nevadensis*	Boraginaceae
western tansymustard	*Descurainia pinnata*	Brassicaceae
whispering bells	*Emmenanthe penduliflora*	Hydrophyllaceae
brittlebush	*Encelia farinosa*	Asteraceae
woollystar	*Eriastrum sp.*	Polemoniaceae
desert trumpet	*Eriogonum inflatum*	Polygonaceae
kidneyleaf buckwheat	*Eriogonum reniforme*	Polygonaceae
redstem filaree	*Erodium cicutarium*	Geraniaceae
Texas filaree	*Erodium texanum*	Geraniaceae
pygmy poppy	*Eschscholzia minutiflora*	Papaveraceae
California barrel cactus	*Ferocactus cylindraceus*	Cactaceae
burrobrush	*Hymenoclea salsola*	Asteraceae
Bladder Pod,	*Isomeris arborea*	Capparaceae
lilac sunbonnet	*Langloisia setosissima*	Polemoniaceae
creosote bush	*Larrea tridentata*	Zygophyllaceae
shaggyfruit pepperweed	*Lepidium lasiocarpum var. lasiocarpum*	Brassicaceae
golden linanthus	*Linanthus aureus*	Polemoniaceae
strigose bird's-foot trefoil	*Lotus strigosus*	Fabaceae
desertdandelion	*Malacothrix californica*	Asteraceae
smooth desertdandelion	*Malacothrix glabrata*	Asteraceae
yellow blazing star	*Mentzelia affinis*	Loasacea
whitebract blazingstar	*Mentzelia involucrata*	Loasacea
wishbone-bush	*Mirabilis bigelovii*	Nyctaginaceae
Mojave desert star	*Monoptilon bellioides*	Asteraceae
purple mat	*Nama demissum*	Hydrophyllaceae
beavertail pricklypear	*Opuntia basilaris*	Cactaceae
silver cholla	*Opuntia echinocarpa*	Cactaceae
pencil cholla	*Opuntia ramosissima*	Cactaceae

Common Name	Species	Family
chuckwalla combseed	*Pectocarya heterocarpa*	Boraginaceae
curvenut combseed	*Pectocarya recurvata*	Boraginaceae
desert bluebells	*Phacelia campanularia*	Hydrophyllaceae
notch-leaved Phacelia	*Phacelia crenulata*	Hydrophyllaceae
distant phacelia	*Phacelia distans*	Hydrophyllaceae
Fremont indigobush	*Psorothamnus fremontii*	Fabaceae
desert chicory	*Rafinesquia neomexicana*	Asteraceae
chia	*Salvia columbariae*	Lamiaceae
Mediterranean grass	*Schismus sp.*	Poaceae
woollyhead neststraw	*Stylocline micropoides*	Asteraceae

APPENDIX B

CNDDB SPECIES OCCURRENCE POTENTIAL

CNDDB Occurrence overlay for the Desert Hot Springs 7.5" USGS Quadrangle and Agency Recommended Species for Evaluation

Species	Status Federal / State / CNPS	Typical Habitat	Occurrence Potential
Abronia Villosa var. *aurita* Chaparral sand-verbena	N /S3.1 / 1B: 2-3-2	Grows in sandy, bare areas of chaparral and coastal sage scrub. Generally flowers from March through August.	Marginally suitable habitat occurs on the project site. This species was not observed on the project site. Occurrence potential for this species is low.
Astragalus lentiginosus var. coachellae Coachella Valley milk-vetch	E / S2.1 / 1B:3-2-3	An erect winter annual, or short-lived perennial 8 to 12 in tall and covered with white-silky hairs. It blooms from February to May, producing pink to deep magenta-colored flowers. It is distinguished in part from other milkvetches by its strongly inflated, two-chambered, mottled pods. It grows on loose wind-blown and alluvial sands on dunes and flats in the Coachella Valley area of the Sonoran Desert near Palm Springs between 60-360m. Endemic to the Coachella Valley, Riverside County.	This species was not observed on the project site. The MSHCP and CNDDB indicate that this species occurs in the active dune area east of the site. Occurrence potential for this species is low.
Astragalus tricarinatus triple-ribbed milk-vetch	E / S1.2 / 1B:3-2-3	A short-lived perennial, persisting for about 3 to 5 years about 12-20 inches tall. The lower stem is somewhat woody, with a tap root. The white to pale cream-colored flowers appear from February through April, with fruits appearing as early as March and present until at least May. The fruits are distinctive, narrow pods, 2 to 4 cm long and three-ribbed in cross section. Grows on hot, rocky slopes in canyons and along edge of boulder-strewn desert washes often with *Larrea* and *Encelia* in Joshua tree woodland and Sonoran desert scrub. Habitat preferences are poorly understood. It is known only from Riverside and San Bernardino Counties between 450-790m.	The vast majority of habitat on the site are not those where this species is known or expected to occur. However suitable habitat is found in Long Canyon Wash. This species was not observed on the site. This species has a moderate potential to occur along the Long Canyon Wash edges. Otherwise this species is not expected to occur on the project site.
Athene cunicularia burrowing owl	SC / SC	This species is a subterranean nester, dependent upon burrowing animals such as ground squirrels and desert tortoise for burrow sites. Inhabits open, dry annual or perennial grasslands as well as deserts and scrublands characterized by low-growing vegetation.	No suitable burrows for this species were encountered on the project site. No burrowing owl sign was observed on the project site or in the zone of influence. Occurrence potential for nesting is low.
Crotalus exsul northern red-diamond rattlesnake	N / SC	Occurs in rocky areas with dense vegetation and rodent burrows, cracks in rocks or surface cover objects in chaparral, woodland, grassland and desert habitats from coastal San Diego County to the eastern slopes of the mountains.	The site is flat and sandy with sparse vegetation. Occurrence potential for this species is low on the project site.

Species	Status Federal / State / CNPS	Typical Habitat	Occurrence Potential
Dinacoma caseyi Casey's June Beetle	N / N	Occur on fine alluvial terraces and in dry washes, at the point in the slope of the terrain where the organic debris slowly filters out and is deposited as the surface flows abate along the southern edge of the Coachella Valley. Males fly at dusk on warm nights generally from late May through June in search of flightless females. Frank Hovore has observed this species emerging from open sandy areas without any plants nearby, and from around the periphery of many different plants. Based upon these observations he concludes that if larvae eat roots, they are adventitious feeders on whatever is available, but they are likely to be detritivores.	This species was not observed on the site. Occurrence potential is low.
Euphorbia misera cliff spurge	N /S3.2 / 2:2-2-1	Grows on rocky sites in coastal bluff scrub, coastal scrub between 10-500 meters in southern California, Baja and on Guadalupe Island.	No suitable habitat for this species occur on the site. This species was not observed on the site. Occurrence potential is extremely low.
Falco mexicanus prairie falcon	N / SC	Nests on cliffs in dry, open terrain. Forages far afield, even to marshlands and ocean shores.	This species was not observed on the site. No suitable nesting habitat occurs in the project area. Occurrence potential is low.
Gopherus (*Xerobates*) *agassizii* Desert Tortoise	T / T	Most common in desert scrub, desert wash, and Joshua tree habitats, but occurs in almost every desert habitat. Requires friable soil for burrow and nest construction, and prefers Creosote bush habitat with large annual wildflower blooms.	Protocol surveys for this species failed to find any definitive sign of this species. Because no recent sign was observed on or near the site, occurrence potential is extremely low.
Linanthus maculatus Little San Bernardino Mountains linanthus	N /S1.2 / 1B:3-2-3	This minute plant requires soft-to-the-touch, open sandy flats with few or no competing species and certainly with no large shrubs or trees in the microsites occupied. Usually grows in light-colored quartz sand often in washes and bajadas between 195-2075 meters in desert dunes, Sonoran desert scrub, Mojave desert scrub, Joshua tree woodland. Only known from Riverside and San Bernardino Counties.	This species was not observed on the site. Occurrence potential is low.
Macrobaenetes valgum Coachella giant sand treader cricket	SC / S1S2	Occurs exclusively in the active sand hummocks and dunes in the Coachella Valley. Abundance is generally associated with winter rains; however, populations are more predictable near springs. Their preferred habitat in windblown environments is dominated by perennial shrubs including creosote bush, burrobush, honey mesquite, Mormon tea, desert willow, and sandpaper bush. Stabilized sand areas appear to be avoided.	This species was not observed on the site. Occurrence potential is extremely low.
Mesquite Bosque	N / S2.1		This habitat does not occur on the project site. The proposed test well site is south of the fault line and thus has no potential to indirectly impact mesquite bosques associated with high water table north of the fault line.

Species	Status Federal / State / CNPS	Typical Habitat	Occurrence Potential
Nemacaulis denudata var. *gracilis* slender woolly-heads	N /S2S3/ 2:2-2-1	Prefers well developed dunes usually in the desert but rarely along coastal beaches between 0-560 meters. In California it is known only from San Diego and Riverside Counties.	No suitable habitat for this species occur on the site. This species was not observed on the site. Occurrence potential is extremely low.
Ovis canadensis nelsoni Nelson's bighorn sheep	N / S3	This species is widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. It occurs in open, rocky, steep areas with available water and herbaceous forage.	No suitable habitat occurs for this species on the project site. There is no potential for this species to occur in the impact areas.
Ovis canadensis nelsoni dps peninsular ranges bighorn sheep	E / T DFG fully protected species	The Peninsular bighorn sheep is restricted to the east facing, lower elevation slopes (below 1400 meters) of the Peninsular Ranges in the Sonoran desert life zone. Critical habitat and essential habitat identified in the MSHCP species map are located south of I-10 in the mountainous regions.	No suitable habitat occurs for this species on the project site. There is no potential for this species to occur in the impact areas.
Perognathus longimembris bangsi Palm Springs pocket mouse	N / SC	Occurs on level to gently sloping topography with sparse to moderate vegetative cover and loosely packed or sandy soils. This subspecies occurs in the lower Sonoran life zone from the San Gorgonio Pass area east to the Little San Bernardino Mountains and south along the eastern edge of the Peninsular Range to Borrego Valley and the east side of San Felipe Narrows.	Suitable habitat for this species occurs on the project site. The MSHCP species maps indicate that the species is likely to occur on the site. Occurrence potential is high.
Phrynosoma coronatum blainvillei San Diego horned lizard	N / SC	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions. Prefers friable, rocky, or shallow sandy soils.	This species was not observed on the project site during surveys for desert tortoise. Reasonably suitable habitat occurs on the project site. Occurrence potential is low to moderate.
Phrynosoma mcalli flat-tailed horned lizard	PT / SC	Requires fine sand for burrowing into to avoid temperature extremes, vegetation cover and ants. Ants, especially harvester ants, comprise about 98% of their diet. Restricted to desert washes and desert flats in central Riverside, eastern San Diego and Imperial Counties.	The site does not contain areas of fine blow sand. Occurrence potential is extremely low.
Salvia greatae Orocopia sage	N / SC / 1B:2-1-3	Grows on broad alluvial fans and bajadas adjacent to desert washes in gravelly or rocky soils and on rocky slopes of canyons in Mojavean and Sonoran desert scrub.	This species has not been observed in the vicinity of the project site according to the CNDDB and the MSHCP records. It was not observed on the project site. Occurrence potential is low.
Spaniacris deserticola Coachella Valley grasshopper	N / N	Occurs in close proximity to *Tiquilia palmeri* and *T. plicata* in the lower fringes of rocky bajadas, low sandy ridges and sandy alluvial fans.	*Tiquilia* was not observed on the site. Therefore, this species is extremely unlikely to occur on the site.
Spermophilus tereticaudus chlorus Palm Springs round-tailed ground squirrel	C / SC	Prefers open, flat, grassy areas in fine-textured, sandy soil. Density is correlated with winter rainfall. Restricted desert succulent scrub, desert wash, desert scrub, alkali scrub and levees to the Coachella Valley.	Suitable, but degraded, habitat for this species occurs on the project site. The MSHCP species maps indicate that it is likely to occur on the site. Occurrence potential is moderate to high.

Species	Status Federal / State / CNPS	Typical Habitat	Occurrence Potential
Toxostoma lecontei Le Conte's Thrasher	SC / SC	Primarily occurs in open desert washes, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat usually 2-8 feet above ground.	Suitable, but degraded, habitat for this species occurs on the project site. Occurrence potential is moderate.
Uma inornata Coachella Valley fringe-toed lizard	T / E	Requires fine, loose, windblown sand (for burrowing), interspersed with hardpan and widely spaced desert shrubs. Limited to sand dunes in the Coachella Valley, Riverside County.	The site does not contain areas of fine blow sand. Occurrence potential is extremely low.
Vireo bellii pusillus least Bell's vireo	E / E	Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, mesquite. In low riparian, in vicinity of water or in dry river bottoms below 2000 ft.	No suitable habitat occurs on the project site. There is no potential for this species to occur on the site.
Xylorhiza cognata mecca aster	N / N	Grows on steep canyon slopes on sandstone ad clay in Sonoran desert scrub from 20 to 305 meters. Endemic to Riverside County.	This species has not been observed in the vicinity of the project site according to the CNDDB and the MSHCP records. No suitable habitat occurs on the project site. There is no potential for this species to occur on the site.
Oilia maculata Little San Bernardino Mountains gilia	CSC	It occurs in loose soft sandy soils along washes, preferring areas of little shrub cover. It is found in creosote bush scrub habitats but is not found in the shadow of taller plants. The gilia has not been found where there is a hard surface layer or on loose blows and. The giliais known to occur near Desert Hot Springs, in Mission Creek canyon across Hwy.62 to Dry Morongo Wash and Big Morongo Canyon and near the mouth of Dry Morongo Canyon and in Whitewater Canyon in the eastern San Bernardino Mountains. The largest known populations are found in the vicinity of Desert Hot Springs and Highway 62.	The vast majority of habitat on the site are not those where this species is known or expected to occur. However suitable habitat is found in Long Canyon Wash. This species was not observed on the site. This species has a moderate potential to occur along the Long Canyon Wash edges. Otherwise this species is not expected to occur on the project site.

Coding and Terms				
E = Endangered R = Rare	T = Threatened C = Candidate	SC = Species of Concern PT = Proposed Threatened	N = None PE = Proposed Endangered	N/A = Not Applicable

Federal Species of Concern: "taxa for which the U.S. Fish and Wildlife Service has information that indicates proposing to list the taxa as endangered or threatened is possibly appropriate, but for which substantial data on the biological vulnerability and threats are not currently known or on file to support the immediate preparation of rules." (Arnold). All of these species have a limited range. In fact, some species are limited to the San Bernardino Mountains area, however, they are locally common.

State Species of Special Concern: An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: “It is unlawful to take, posses or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird.”

State Plant Rankings:
- S1 - less than 6 element occurrences, or less than 1,000 individuals, or less than 2,000 acres
- S2 - 6 to 20 element occurrences, or between 1,000 and 3,000 individuals, or between 2,000 and 10,000 acres
- S3 - 21 to 100 element occurrences, or between 3,000 and 10,000 individuals, or between 10,000 and 50,000 acres
- S4 - No Threat Rank
- S5 - No Threat Rank

.1 - very threatened
.2 - threatened
.3 - no current threats known

SH - all sites in California are historical

CNPS Plant Rankings:
- 1A- presumed extinct in California
- 1B - Rare, Threatened or Endangered in California and elsewhere
- 2 - Rare, Threatened or Endangered in California but more common elsewhere
- 3 - Plants for which more information is needed
- 4 - Plants with a limited distribution

R-E-D Code:

R - Rarity
- 1 - Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time
- 2 - Distributed in a limited number of occurrences, occasionally more if each occurrence is small
- 3 - Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported

E - Endangerment
- 1 - Not endangered
- 2 - Endangered in a portion of its range
- 3 - Endangered throughout its range

D - Distribution
- 1 - More or less widespread outside California
- 2 - Rare outside California
- 3 - Endemic to California

? uncertainty about distribution or identity
* extirpated
?* uncertainty about distribution, but extirpated if once present
(*?) occurrence confirmed, but possibly extirpated

APPENDIX D1

CRM TECH 2007a Report

CRM TECH

4472 Orange Street
Riverside, CA 92501

April 9, 2007

Bill Gatlin, Vice-President
Tom Dodson and Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405

Re: Paleontology Records Search and Literature Review
Mission Springs Water District Due Diligence Project
Desert Hot Springs Area, Riverside County, California
CRM TECH Contract No. 1998P

Dear Mr. Gatlin:

At your request, we have completed a paleontological resources records search and literature review on lands within the Mission Springs Water District (MSWD). As Figure 1 illustrates, the district encompasses approximately 130 square miles, stretching 19 miles east-west from R2E to R5E and more than nine miles north-south from T2S to T3S, San Bernardino Base Meridian. It spans the northwestern portion of the Coachella Valley, the northeastern portion of the San Gorgonio Pass, the southeastern end of the San Bernardino Mountains, and the southwestern end of the Little San Bernardino Mountains. It includes most of the Burro Flats area, a sedimentary-filled basin within the San Bernardino Mountains.

As part of the study, CRM TECH initiated records searches at the Natural History Museum of Los Angeles County and the San Bernardino County Museum, and reviewed pertinent geological/paleontological literature and maps of the region. A brief summary of the findings from these research procedures is presented below for your reference.

SETTING

The study area includes portions of three of California's geomorphic provinces (Jenkins 1980:40-41; Harden 2004:63-64; Harms 1996:iii). The San Bernardino Mountains to the north of the Banning Branch of the San Andreas Fault System and the Little San Bernardino Mountains lie within the Transverse Range Province. The San Gorgonio (Banning) Pass area, in the Banning Fault Zone, is located in the northern part of the Peninsular Range Province. The Painted Hills and Coachella Valley portion of the study area to the southeast is part of the Colorado Desert Province.

Colorado Desert Province

The Colorado Desert Province is bounded on the southwest by the Peninsular Range Province, on the north by the eastern Transverse Ranges Province, and on the northeast by the southern portion of the Mojave Desert Province. It widens to the southeast through the Imperial Valley and on into Mexico where it becomes part of the Gulf of California.

A major feature in the northwestern portion of the Coachella Valley is that of the San Andreas Fault System. The fault system has brought to the surface rocks that date to the

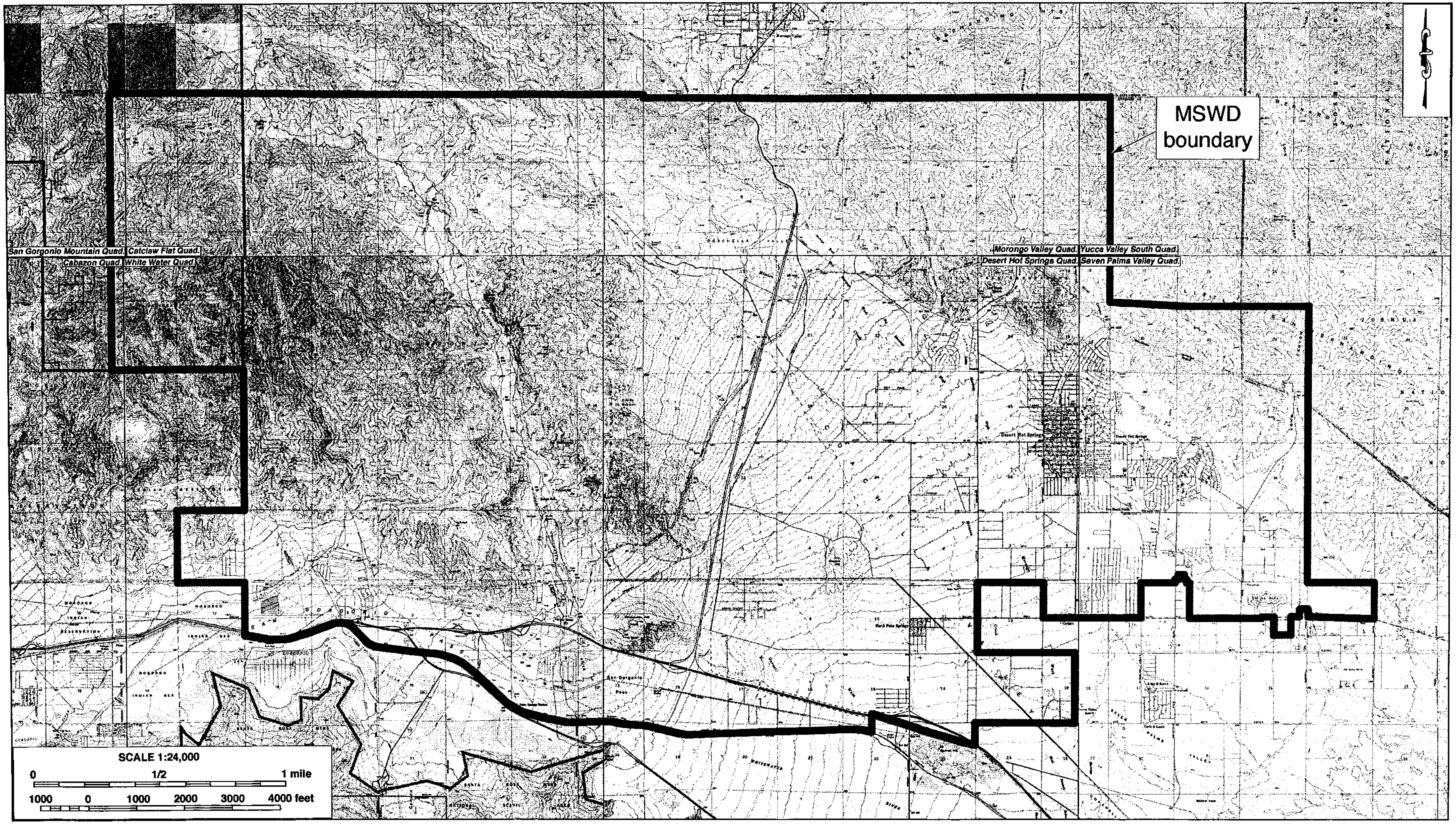


Figure 1. The study area. Based on USGS Cabazon, Catclaw Flat, Desert Hot Springs, Morongo Valley, San Gorgonio Mountain, Seven Palms Valley, White Water, and Yucca Valley South, Calif., 1:24,000 quadrangles.

lower Pliocene and probably as old as the late Miocene (Dibblee 1954:Plate 2; Proctor 1968:Plate 1). This portion of the study area contains the tectonically uplifted features of Painted Hill and Garnet Hill. It is here that some of these older sedimentary rocks are exposed at the surface.

Peninsular Range Province

The Peninsular Range Province is bound on the north by the Transverse Range Province, on the northeast by the Colorado Desert Province, and on the west by the Pacific Ocean (Jenkins 1980:40-41; Harmes 1996:131). It extends southward to the southern tip of Baja California (Jahns 1954; Harden 2004:465).

The Peninsular Range Province consists of a series of roughly northwest-southeast trending structural blocks of uplifted mountains separated by valley basins along the intervening fault zones. The mountains are primarily igneous intrusive rocks, metasedimentary rocks, and some metavolcanic rocks (Norris and Webb 1976:169-173; Harden 2004:466-468). The non-crystalline rocks in the western portion consist of both metavolcanic and metasedimentary rocks primarily of Mesozoic age, while the eastern portion contains metasedimentary rocks dating to the Paleozoic age or older (Norris and Webb 1976:169-173; Harden 2004:471-472). The crystalline basement rocks are present in both the western and eastern portions, consisting largely of Mesozoic-age granitic rocks with some scattered gabbroic intrusions (Harden 2004:466-468).

The intervening valley basins are filled mainly with Pliocene to Recent non-marine sedimentary rocks (Woodford et al. 1971:3421), with the exception of the San Bernardino Valley, which contains Miocene through Recent non-marine sedimentary rocks (Clarke 1978-1979:15). Reynolds and Reeder (1986:52) state:

> Dibblee (1981) suggest that the San Timoteo formation was probably deposited in a northwest-southeast trending depositional basin which extended from the San Bernardino plain into the San Jacinto Valley, and eastward through the San Gorgonio Pass and into the Salton Trough. The upper Pliocene basin in which the San Timoteo formation was deposited was probably partially coincident with the former Mio-Pliocene marine embayment responsible for the deposition of the Imperial formation.

Such an idea is supported by a wildcat well that was drilled in 1926 for oil and gas on the Shutt Ranch in Section 16, T2S, R2W, SBBM, to a depth of 5,358 feet without encountering crystalline basement rocks (Oakeshott et al. 1950:32). Reynolds and Reeder (1986:51) state that "records on file with the California Division of Oil and Gas indicate the well encountered some oil-bearing sands at a depth of 5,187 feet. The well log also indicated that 28 feet of 'marine sands' were encountered at a depth of 4,872 feet."

Transverse Range Province

The Transverse Range Province is a very complicated and diverse structural feature made up of a group of discrete mountains and basins structurally oriented in a nearly east-west direction (Harms 1996:158; Norris and Webb 1976:190). Rocks within this province range in age from Precambrian to Recent (Harms 1996:158). The San Bernardino Mountains are the largest and tallest mountain range within the Transverse Range Province and consist of igneous and metamorphic rock of Mesozoic and pre-Mesozoic age along with a few Cenozoic-age volcanic and sedimentary rocks (*ibid.*:169-170; Norris and Webb 1976:220-221). Some Cenozoic-age sedimentary and volcanic rocks can be found along the southern flanks and filling some of the interior basins of this mountain range (Vaughn 1922:Map; Dibblee 2004:DF-119, -120, and -121).

The Little San Bernardino Mountains are separated from the San Bernardino Mountains by the Morongo Fault (Harmes 1996:173) or the Pinto Mountain Fault (Bortugno and Spittler 1986). These mountains are much lower in elevation and are considered to be the eastern terminus of the Transverse Range Province (*ibid.*; Norris and Webb 1976:221-222). The geology of these mountains is very similar to that of the San Bernardino Mountains (*ibid.*). Some Cenozoic-age sedimentary and volcanic rocks can be found along the southern flanks and filling some of the interior basins of this mountain range (Proctor 1968:Plate 1; Trent and Hazlett 2002:Geologic Map).

RECORDS SEARCHES

The records search service was provided by the Regional Paleontologic Locality Inventory at the San Bernardino County Museum and the Vertebrate Paleontology section of the Natural History Museum of Los Angeles County. These institutions maintain files of regional paleontological localities as well as supporting maps and documents. The records search results are used to identify previously discovered paleontological localities in and near the study area.

The results of the records searches conducted by both museums indicate that no paleontological localities have been discovered within or in close proximity to the boundaries of the study area. The records searches results further indicate that the igneous and metamorphic rocks and the Holocene-age surface alluvium present within the study area have a low potential for containing significant nonrenewable paleontologic resources (McLeod 2007; Scott 2077; see App. 1).

The Los Angeles County Museum considers all of the sedimentary rocks of Miocene through Pleistocene age to have a high potential for paleontological resources (McLeod 2007). With the exception of the Ocotillo Conglomerate, the San Bernardino County Museum concurs to this conclusion (Scott 2007). Both museums indicate the need for monitoring of these Miocene- through Pleistocene-age sedimentary rocks and consider the sediments of the Imperial Formation to have a high sensitivity for important nonrenewable vertebrate fossil remains (McLeod 2007; Scott 2007).

LITERATURE REVIEW

Colorado Desert Province

The Colorado Desert Province includes all of the upper Coachella Valley and the mountainous (Painted Hill) area east of the Whitewater Fault. The Whitewater Fault Zone trends north-northwest to south-southeast and virtually parallels the Whitewater River

(Vaughn 1922:Plate 1; Allen 1957:Plates 1, 3, 4; Dibblee 2004:DF-120). This fault zone appears to separate Tertiary- and Quaternary-age sedimentary rocks to the east from Mesozoic and older Igneous and Metamorphic rocks to the west.

Allen (1957:Plates 1, 4) mapped the sedimentary geology of the Painted Hills as **Mcu, Mcl, Mcb, Mcm, Mcd, Pi, Pp, Ppc, Ppb, Ppd, Qc**, and **Qal**. The **Mcu, Mcl, Mcb, Mcm, Mcd** are all shown as parts of the Coachella fanglomerate of Upper Miocene age and are described as follows: "upper member, **Mcu**; lower member, **Mcl**; interlayered flows of olivine basalt, **Mcb**; and associated dikes of olivine basalt, **Mcd**; marker horizon containing distinctive clasts, **Mcm**" (*ibid.*). The **Pi** is shown as the Imperial formation of lower Pliocene age and no description is given (*ibid.*). The **Pp, Ppc, Ppb, Ppd** are all shown as parts of the Palm Springs formation of lower Pleistocene age and are described as follows: "resistant conglomerate bed, **Ppc**; interlayered flows of olivine basalt, **Ppb**; and associated dikes of olivine basalt, **Ppd**" (*ibid.*). The **Qc** is shown as the Cabezon fanglomerate middle Quaternary age and no description is given (*ibid.*). The **Qal** is shown as alluvium of late Quaternary age and no description is given (*ibid.*).

Rogers (1965) mapped the sedimentary geology of the Painted Hills as **Muc, Mvb, Pml, Pc, Qc**, and **Qal**. The **Muc** is shown as Upper Miocene nonmarine, the **Mvb** as Miocene volcanics, basalt, the **Pml** as Middle and/or lower Pliocene marine, the **Pc** as undivided Pliocene nonmarine, the **Qc** as Pleistocene nonmarine, and the **Qal** as alluvium of Recent age (*ibid.*).

Geologic mapping by Proctor (1968:Plate 1) indicates both the Mission Creek Branch and the Banning Branch of the San Andreas Fault System have been active since at least the late middle Pleistocene. Tectonic activity along these faults has uplifted rocks of Miocene age and older just east of the Whitewater Fault to form the Painted Hills, and erosion has exposed them at the surface. The outcropping geology in the Painted Hills is mapped by Proctor (*ibid.*) as **Tc, Tcb, Ti, Tph, Qc, Qt**, and **Qal**, and the exposed geology at Garnet Hill is mapped as **Ti** and **Qc**.

The **Tc** is shown as the Coachella Fanglomerate of upper Miocene age and is described as a "red-brown conglomerate and coarse sandstone" (*ibid.*). The **Tbc** is shown to be an "olivine basalt" interbedded within the Coachella Fanglomerate and considered to be upper Miocene in age (*ibid.*). The **Ti** is shown as the Imperial Formation of lower Pliocene age and is described as "marine sandstone and shale, fossiliferous" (*ibid.*). The **Tph** is shown as the Painted Hill (Palm Springs) Formation of lower Pleistocene age and composed of "sandy well rounded conglomerate" (*ibid.*). The **Qc** is shown as the Cabezon Fanglomerate and is considered to be upper Pleistocene in age (*ibid.*). It is described as "sandy, ill-sorted light brown conglomerate" (*ibid.*). The **Qt** is shown as Terrace Deposits of upper Pleistocene age and described as "thin orange mantle of gravel" (*ibid.*). The **Qal** is shown as Alluvium of Recent age (*ibid.*).

Bortugno and Spittler (1986) mapped only the northern portion of the Painted Hills. They mapped the rocks as **Mcf, Mvb, QT, Qod**, and **Qal**. The **Mcf** is shown as the Coachella Fanglomerate of Miocene age, the **Mvb** as Miocene volcanic rocks (basalt), the **QT** as undifferentiated continental deposits of Plio-Pleistocene age, the **Qoa** as well dissected alluvial fans of Pleistocene age, and the **Qal** as alluvium of Holocene age (*ibid.*).

Dibblee (2004:DF-120, -121) mapped the geology of the Painted Hills as **Tcs**, **Tcf**, **Tb**, **Ti**, **Tps**, **Tbc**, **Tpb**, **Qoa**, and **Qa**, and the geology at Garnet Hill as **Ti** and **Qcf**. The **Tcs** is shown as the Coachella Fanglomerate of Miocene age and is described as "sandstone, lithified, light gray, arkosic and interbedded cobble conglomerate and some greenish to reddish claystones" (*ibid.*). The **Tcf** is shown as the Coachella Fanglomerate of Miocene age and is described as "fanglomerate, gray-brown, massive to crudely bedded, of unsorted detritus of plutonic and gneissic rocks derived from the San Bernardino Mountains" (*ibid.*).

The **Tb** is shown as "basalt, black olivine bearing locally vesicular, about 50 m (150 ft) thick," which forms a lens within the Coachella Fanglomerate (*ibid.*). The **Ti** is shown as the Imperial Formation of late Miocene to early Pliocene age and is described as "light-gray clay/siltstone, weathered tan and sandstone, tan to rusty brown, semi-friable, arkosic; contains shallow marine molluscan shell fragments; exposed at east and west border of [Whitewater] quadrangle in upended sections where it is about 200 m (700 ft) thick; conformable between Palm Springs and Coachella Formations; at east border unconformable on **gn** and **qd** complex" (*ibid.*).

The **Tps** is shown as the Palm Springs Formation of early Pleistocene age and described as "clastic sedimentary deposits, alternating layers of light gray arkosic sandstone, pebbly sandstone and pebble-cobble conglomerate, includes a few thin layers of gray to reddish claystone, clasts of mostly granitic rocks, others of gneissic and dioritic rocks, from San Bernardino Mountains, few of basalt (from Coachella Fanglomerate); about 100 m (300 ft) above base includes two resistant cobble conglomerate lenses (**Tpc**) of mostly basalt clasts (derived from basalt flows of Coachella Fanglomerate; at Devils Garden, includes thin lens of black vesicular olivine basalt (**Tpb**), similar to those in underlying Coachella Fanglomerate; conformable on Imperial Formation and Coachella Fanglomerate in the quadrangle)" (*ibid.*).

The **Qoa** is shown as "older alluvial fan gravel and sand, gray, of mostly cobbles and pebbles but includes small boulders of granitic and gneiss detritus reworked from Tertiary Formations to the west and basement rocks in mountains northwest of quadrangle" (*ibid.*). It is considered to be late Pleistocene in age (*ibid.*). The **Qa** is shown as "alluvial sand and gravel of valleys areas" (*ibid.*). The **Qcf** is shown as the Cabazon Fanglomerate (Vaughn 1922; Allen 1957; Proctor 1968) alluvial fan gravel similar to **Qoa** but thicker" and is considered to be late Pleistocene in age (*ibid.*).

Dibblee (1953:Plate 2) mapped the surface geology within the Coachella Valley portion of the study area as **Qa**, or alluvium of Recent age, and **Qo**, or non-marine sediments of the Pleistocene-age Ocotillo conglomerate (*ibid.*). Rogers (1965) mapped the surface geology as **Qal-Qs**, or alluvium and sand dune deposits of Recent age, and as **Qco**, or non-marine sediments of Pleistocene age. Proctor (1968:Plate 1) mapped the surface geology in this area as **Qal**, or alluvium of Recent age, and **Qc**, or the Cabezon Fanglomerate. He shows the **Qal** to rest on top of the **Qc**, which he describes as rocks of the Pleistocene-age Cabezon Fanglomerate (*ibid.*). The Cabezon Fanglomerate (**Qc**) is stratigraphically equivalent to the Ocotillo Conglomerate (**Qo**), and both are considered to be uppermost Pleistocene in age (*ibid.*). However, no fossils are shown to have been recovered from these rock units to confirm that age (*ibid.*:25). The contact between the Recent alluvium (**Qal**) and the older alluvium (**Qc**) may be hard to determine in some areas, as they are composed of similar rock material (*ibid.*). Because of this similarity, the distinction often has to be based on the degree of induration (*ibid.*).

Fault trenching across the Mission Creek Fault in the Desert Hot Springs area found most of the upper sediments to be less than 2,000 years in age (Reeder and Rasmussen 1986:72). However, the age determination is based on surface geomorphology and soil development, not on paleontologic data (*ibid.*). Some alluvial materials found at a depth of six meters were estimated to be at least 6,000 years old and possibly as old as 9,000 years (*ibid.*). These dates were inferred from clast weathering, abundance of secondary calcium carbonate, and the presence of paleosols, and not from any contained fossils (*ibid.*). These finding indicate a rather thick sequence of post-Pleistocene sedimentary rocks in some portions of the Desert Hot Spring region.

Thomas and Barnes (1993:34-35) reported finding whale bones in the Imperial Formation at Painted Hill. Murphy (1986:63-68) reported finding marine mollusks, hermatypic corals, barnacles, ostracodes, and foraminifera from the Imperial Formation at Painted Hill. Powell (1995) reported finding mollusks, barnacles, and echinoids in the Imperial Formation at Garnet Hill.

Peninsular Range Province

The Peninsular Range Province includes the San Gorgonio (Banning) Pass area and the hills within the Banning Branch of the San Andreas Fault System, which is the hilly area along the north flank of the pass. Vaughn (1922:Geologic Map) mapped most of the surface geology within the pass area proper as **Qa**, but mapped some minor **Qc** as well. The **Qa** is shown to be alluvium of late Quaternary age and the **Qc** as Cabazon fanglomerate of middle Quaternary age (*ibid.*).

Vaughn (1922) mapped the sedimentary rocks within the Banning Fault Zone area as **Th**, **Tb**, **Qd**, **Qco**, **Qc**, and **Qh**. The **Th** is shown as the Hathaway sandstone and shale of Pliocene age, the **Tb** as basalt of Pliocene age, the **Qd** as the Deep Fanglomerate of early Quaternary age, the **Qco** as Coachella fanglomerate of early to middle Quaternary age, the **Qc** as the Cabazon fanglomerate of middle Quaternary age, and the **Qh** as Heights fanglomerate of middle to late Quaternary age (*ibid.*). Fraser (1931:Geologic Map) only mapped the area within the pass south of the railroad. He mapped the entire area as **Qal**, or alluvium of late Quaternary age.

Allen (1957:Plate 1-4) mapped the surface geology within the pass area proper as **Qal**, or alluvium of late Quaternary age. He mapped the geology within the Banning Fault Zone as **Pu**, **Qc**, **Qh**, **Qal**, and **Qls** (*ibid.*). The **Pu** is shown as "Pliocene and Lower Pleistocene sedimentary and volcanic rocks, undifferentiated," the **Qc** as the Cabezon fanglomerate of lower Quaternary age, the **Qh** as the Heights fanglomerate of middle Quaternary age, the **Qal** as alluvium of late Quaternary age, and the **Qls** as landslide deposits of late Quaternary age (*ibid.*).

Rogers (1965) mapped the geology in the pass area as **Qal**, or alluvium of Recent age. He mapped the geology within the Banning Fault Zone as **Pc**, **Qc**, and **Qal** (*ibid.*). The **Pc** is shown as undivided Pliocene non-marine, the **Qc** as Pleistocene non-marine, and the **Qal** as alluvium of Recent age (*ibid.*).

Dibblee (2004:DF-119, -120, -121) shows the surface geology in the pass area proper to be mainly **Qf** with some **Qg**, **Qa**, and **Qcf**. The **Qf** is described as "alluvial fan of San Gorgonio Pass, sand and gravel of plutonic and gneissic detritus derived from rising San Bernardino Mountains to north; slightly dissected by stream channels; includes small alluvial fans at base of and detritus from San Jacinto Mountains in south area" (*ibid.*). This material is considered to be Pleistocene in age (*ibid.*). The **Qg** is described as "alluvial gravel and sand of stream channels" and is considered to be Holocene in age. The **Qa** is described as "alluvial sand and gravel of flat flood plains and small valleys mostly near and in San Jacinto Mountains" and is considered to be Holocene in age (*ibid.*). The **Qcf** is shown as the Cabazon Fanglomerate and is described as "alluvial fanglomerate, light gray, weakly indurated, crudely bedded, of unsorted boulders, cobbles and pebbles of detritus quartz diorite (**qdi** & **qdx**) derived from San Jacinto Mountains, base not exposed" (*ibid.*). It is considered to be Pleistocene in age (*ibid.*).

Dibblee (2004) mapped the rocks within the Banning Branch of the San Andreas Fault zone as **Tcs**, **Tcf**, **Tb**, **Ti**, **Tpf**, **Tps**, **TQsf**, **Qof**, **Qcf**, **Qf**, and **Qg**. The **Tcs** is shown as the Coachella Fanglomerate and is described as "sandstone, lithified, light gray, arkosic, and interbedded cobble conglomerate and some greenish to reddish claystone," and is considered to be Miocene in age (*ibid.*). The **Tcf** is shown as Coachella Fanglomerate, described as "fanglomerate, gray-brown, massive to crudely bedded, of unsorted detritus of plutonic and gneissic rocks derived from San Bernardino Mountains," and is considered to be Miocene in age (*ibid.*). The **Tb** is shown to be a unit within the Coachella Fanglomerate, described as "basalt, black olivine bearing, locally vesicular, about 50 m (150 ft) thick," and is considered to be Miocene in age (*ibid.*).

The **Ti** is shown as the Imperial Formation, described as "light gray claystone, weathered tan, and sandstone, tan to rusty brown, semi-friable, arkosic; contains shallow marine molluscan shell fragments; exposed only at east border of quadrangle in an upended section where it is about 200 m (700 ft) thick; conformable between Palm Springs and Coachella Formations; not present in areas to the west," and is considered to be late Miocene to lower Pliocene in age (*ibid.*). The **Tpf** is shown as the Palm Springs Formation and is described as "fanglomerate, gray-brown of unsorted subangular and subrounded clasts of plutonic and gneissic detritus from San Bernardino Mountains (included in Painted Hills Formation by Allen, 1954)" (*ibid.*). It is considered to be Pliocene in age (*ibid.*). The **Tps** is shown as the Palm Springs Formation, described as "sandstone light gray to white, locally pebbly, arkosic and interbeds of greenish to reddish claystone, minor pebble-cobble conglomerate of plutonic and gneissic detritus," and is considered to be Pliocene in age (*ibid.*).

The **TQsf** is shown as the "San Timoteo Formation near Banning, similar to unit **Tpf** in east area," and is considered to be Pliocene in age (*ibid.*). The **Qof** is described as "alluvial fan of quartz diorite detritus as small erosional remnants in east central area" and is considered to be Pleistocene in age (*ibid.*). The **Qcf** is shown as the Cabazon Fanglomerate, described as "alluvial fanglomerate, light gray, weakly indurated, crudely bedded, of unsorted boulders, cobbles and pebbles of detritus quartz diorite (**qdi** & **qdx**) derived from San Jacinto Mountains, base not exposed," and is considered to be Pleistocene in age (*ibid.*). The **Qa** is described as "alluvial sand and gravel of flat flood plains and small valleys mostly near and in San Jacinto Mountains" and is considered to be Holocene in age (*ibid.*). The **Qf** and **Qg** have been discussed above.

Transverse Range Province

The Transverse Range Province includes the San Bernardino Mountains north of the Banning Branch of the San Andreas Fault System and west of the Whitewater Fault Zone, as well as the Little San Bernardino Mountains north of the Mission Creek and Coachella Valley areas.

Vaughn (1922:Map) mapped all but the extreme western part of the study area within the San Bernardino Mountains and the portion within the Little San Bernardino Mountains. He mapped most of this part of the study area as igneous and metamorphic rocks of Mesozoic and pre-Mesozoic age, but his map shows some sedimentary rocks in the canyon bottoms and in what is now called the Burro Flats area (*ibid.*). The sedimentary rocks are mapped as **Qh** and **Qc**. The **Qh** is shown to be the Heights fanglomerate and the **Qc** as the Cabazon fanglomerate, and both are considered Quaternary in age, with the **Qh** being the younger of the two (*ibid.*).

Allen (1957:Plate 1, 3, 4) and Rogers (1965) both mapped this portion of the study area as mainly igneous and metamorphic rocks that are "Mesozoic and older" in age. They also mapped some sedimentary rocks filling canyon bottoms and basins within the area, with the greatest amount in the Burro Flats area. The sedimentary rocks outside the Burro Flats area are mapped as **Qc**, **Qh**, **Qt**, and **Qal** and those rocks within the Burro Flats area are mapped as **Qc**, **Qh**, and **Qal** (*ibid.*). The **Qc** is shown as Cabezon fanglomerate of lower Quaternary age, the **Qh** as the Heights fanglomerate of middle Quaternary age, the **Qt** as fanglomerates and terrace deposits of unknown correlation, and the **Qal** as alluvium of late Quaternary age (*ibid.*).

In Rogers' map, the sedimentary rocks outside the Burro Flats area are mainly **Qal** with some **Qc**. The **Qal** is shown as alluvium of Recent age and the **Qc** as Pleistocene non-marine rocks (*ibid.*). In the Burro Flats area, he mapped a large amount of **Qal** and **Qc**. (*ibid.*). He also mapped some **Qc** and **Qal** along the south flank of the Little San Bernardino Mountains (*ibid.*).

Proctor (1968:Plate 1) mapped some sedimentary rocks along the south flank of the Little San Bernardino Mountains as **Qc**, **Qt**, and **Qal**. The **Qc** is shown as Cabezon Fanglomerate of upper Pleistocene age and is described as "sandy, ill-sorted light brown conglomerate" (*ibid.*). The **Qt** is shown as Terrace Deposits of upper Pleistocene age and is described as "thin orange mantle of gravels" (*ibid.*). The **Qal** is shown as alluvium of Recent age (*ibid.*).

Bortugno and Spittler (1986) mapped only the extreme northern portion of the study area within the Transverse Range Province. They mapped most of the area as igneous and metamorphic rocks of Mesozoic or older (*ibid.*). They did, however, map some **Qyf** in the Burro Flats area, some **Qod** along the west side of the Whitewater River, and some **Mcf** along the south flank of the Little San Bernardino Mountains (*ibid.*). The **Qyf** is shown as younger fan deposits of Holocene age, the **Qod** as well dissected alluvial fans of Pleistocene age, and the **Mcf** as the Coachella Fanglomerate of Miocene age (*ibid.*).

Dibblee (2004:DF-119, -120) only mapped the southern portion of the study area that is within the Transverse Range Province. He mapped most of the area as igneous and metamorphic rocks of Mesozoic and pre-Mesozoic age, with some sedimentary rocks in the canyon bottoms and in the Burro Flats area (*ibid.*). The sedimentary rocks consist mainly of patches of **Qa**, **Qof**, **Qls**, **Qf**, and **Qoa**, but include a large amount of **Tcf**, **Qoa**, and **Qf** in the Burro Flats area (*ibid.*). The **Qa** is described as "alluvial sand and gravel of flat flood plains and small valleys mostly near and in San Jacinto Mountains" and is considered to be Holocene in age (*ibid.*). The **Qof** is described as "alluvial fan of quartz diorite detritus as small erosional remnants in east central area" and is considered to be Pleistocene in age. The **Qls** is shown as landslide debris of Holocene age (*ibid.*).

The **Qf** is described as "alluvial fan of San Gorgonio Pass, sand and gravel of plutonic and gneissic detritus derived from rising San Bernardino Mountains to north; slightly dissected by stream channels; includes small alluvial fans at base of and detritus from San Jacinto Mountains in south area" (*ibid.*). This material is considered to be Pleistocene in age (*ibid.*). The **Qoa** is described as "older alluvial fan gravel and sand, gray, of mostly cobbles and pebbles but includes small boulders, of granitic and gneiss detritus reworked from Tertiary Formations to west and basement rocks in mountains northwest of quadrangle," and is considered to be Pleistocene in age (*ibid.*). The **Tcf**, which is only mapped in the Burro Flats area, is shown as the Coachella Fanglomerate and is described as "fanglomerate, gray-brown, massive to crudely bedded, of unsorted detritus of plutonic and gneissic rocks derived from San Bernardino Mountains" (*ibid.*). It is considered to be Miocene in age (*ibid.*).

Dibblee (2004:DF-121) mapped **QTs** along the south flank of the Little San Bernardino Mountains. The **QTs** is described as "fanglomerate of Whitehouse Canyon in northeast area (assigned to Cabazon Fanglomerate by Proctor, 1968), light gray, of unsorted boulders, cobbles and pebbles in sandy matrix, of locally derived granitic and some gneissic detritus, rarely bedded, as thick as 230 m (800 ft) unconformable on gneiss and diorite" (*ibid.*). It is considered to be late Pleistocene in age (*ibid.*).

CONCLUSIONS AND RECOMMENDATIONS

Colorado Desert Province

Most of the Coachella Valley proper within the study area is covered by **Qal**, or alluvium of Recent (Holocene) origin, and this material is generally considered low in sensitivity for paleontological resources. However, it rests directly on top of older sediments that are likely to contain vertebrate fossils, and its thickness is unknown and variable. Based on the sediments outcropping in the Painted Hills and Garnet Hill areas, some important, potentially older fossiliferous sediments are likely be present in the subsurface of the northwestern portion of the Coachella Valley proper. Because of this stratigraphic configuration, it will be necessary to start periodic monitoring in this area when excavations exceed five feet in depth, and continuous monitoring will be required if any of the older potentially fossiliferous sediments are encountered below the **Qal** or if excavations exceed ten feet in depth.

In the few areas where Pleistocene-age Cabezon Fanglomerate or Ocotillo Conglomerate are in outcrop, periodic monitoring will be necessary from the start of ground disturbances and continuous monitoring will be required should any potentially fossiliferous sediments be encountered. The San Bernardino Museum does not consider the Cabezon Fanglomerate/Ocotillo Conglomerate to be highly fossiliferous (Scott 2007), but the Los

Angeles County Museum does (McLeod 2007). While the Los Angeles County Museum reports a fossil locality from the Ocotillo Conglomerate at Flat Top Mountain, northwest of Edom Hill (McLeod 2007), the rest of the paleontological literature suggests that if this fossil did come from the Ocotillo conglomerate it is the only vertebrate fossil reported to have been found in this formation in the Coachella Valley.

The older sedimentary rocks present in and near the Painted Hills area, such as the Coachella Fanglomerate, Imperial Formation, and Palm Springs Formation, will need continuous monitoring from the start of any excavations.

Peninsular Range Province

Most of the study area lying within the San Gorgonio Pass proper is also covered by **Qal**, alluvium of Recent (Holocene) origin. As in the adjacent area within the Colorado Desert Province, periodic monitoring is recommended when excavations exceed five feet in depth, and continuous monitoring is recommended if any of the older, potentially fossiliferous sediments are encountered below the **Qal**. Similarly, in the few areas with Pleistocene-age Cabezon Fanglomerate or Ocotillo Conglomerate in outcrop, periodic monitoring will be required from the start of ground disturbances and continuous monitoring will be necessary should any potentially fossiliferous sediments be encountered.

Most of the area within the Banning Fault Zone will need continuous monitoring from the beginning of ground disturbances. This is especially true for the Coachella Fanglomerate, Imperial Formation, and Palm Springs Formations. The areas with **Qal** or Cabezon Fanglomerate outcropping at the surface will need periodic monitoring during excavations that reach deeper than five feet, or continuous monitoring if older sediments are encountered.

Transverse Range Province

The sedimentary rocks present along the south flank of the Little San Bernardino Mountains are described as coarse grained and probably do not make a good environment for preserving vertebrate fossils. These sediments will require periodic monitoring during all earth-moving operations, and continuous monitoring if any potentially fossiliferous sediments are encountered. The area in the San Bernardino Mountains is primarily igneous and metamorphic rocks and these will not require paleontological monitoring. Some Cabezon Fanglomerate mapped along the west side of the Whitewater River will need periodic monitoring should they be impacted. Again, full-time monitoring will become necessary if potential fossiliferous sediments are encountered.

The **Qal** mapped within the Burro Flats area will need periodic monitoring for any cuts deeper than five feet, with continuous monitoring to be implemented when older sediments are encountered. If the Cabazon Fanglomerate and older sedimentary rocks are in outcrop, then periodic monitoring will be needed from the start of ground disturbances.

Summary

Generally speaking, the areas of igneous and metamorphic rocks and those with Recent (Holocene) alluvium will not require any monitoring, although some of the Recent alluvium will need periodic monitoring for any cuts deeper than five feet, in case older sediments buried underneath are encountered. The areas with outcroping Ocotillo and/or Cabazon Fanglomerate will need to be periodically monitored from the start of ground disturbances in order to determine if any fossil-bearing soils are present and to see what might be exposed below them. Outcrops of any of the Tertiary-age sedimentary rocks (**Tcs, Tcf, Ti, Tpf,** and **Tps**) will require monitoring on a continuous basis from the start of any ground disturbances.

Thank you for this opportunity to be of service.

Sincerely,

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APPENDIX 1:

RECORDS SEARCH RESULTS

SAN BERNARDINO COUNTY MUSEUM

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(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org
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COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

13 March 2007

CRM Tech
attn: Laura Shaker
4472 Orange Street
Riverside, CA 92501

re: **PALEONTOLOGY RECORDS REVIEW, MISSION SPRINGS WATER DISTRICT DUE DILIGENCE PROJECT, DESERT HOT SPRINGS AREA, RIVERSIDE COUNTY, CALIFORNIA**

Dear Laura,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named property in the Desert Hot Springs area, Riverside County, California. Specifically, the property is located in portions of the following United States Geological Survey 7.5' topographic quadrangle maps: Catclaw Flat, California (1972 edition), Desert Hot Springs, California (1955 edition), Morongo Valley, California (1972 edition), San Gorgonio Mountain, California (1970 edition), Seven Palms Valley, California (1958 edition), White Water, California (1955 edition), and Yucca Valley South, California (1972 edition; photo inspected 1978).

Previous geologic mapping (Rogers, 1965; Bortugno and Spittler, 1986) indicates that the study area is situated primarily upon large portions of sheared and deformed igneous and metamorphic rocks of the San Bernardino and Little San Bernardino Mountains. These rocks have low potential to contain significant nonrenewable paleontologic resources and so are assigned low paleontologic sensitivity. Remaining portions of the study area are situated upon surficial exposures of Quaternary and Tertiary sedimentary deposits bounded by the San Bernardino and Little San Bernardino Mountains. These sedimentary deposits have variable paleontologic sensitivity based on lithology and indicators of depositional modes which favor fossil preservation.

Surficial exposures of Holocene (recent) alluvium dominate the interiors of San Gorgonio Pass and the Coachella Valley. These sediments are too young to contain significant nonrenewable paleontologic resources, and so are assigned low paleontologic sensitivity. However, these sediments likely overlie older Pleistocene alluvium that, depending upon its lithology, may have high potential to contain fossil resources. Similar Pleistocene sediments from elsewhere in Riverside and San Bernardino Counties and the Inland Empire, often found at depths of ~10' or more below the existing ground surface, have yielded the fossil remains of plants (Reynolds and Reynolds, 1991; Anderson and others, 2002) and extinct terrestrial Pleistocene vertebrates (Jefferson, 1991; Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999).

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Older Pleistocene and Tertiary alluvial fans and conglomerates occur along valley margins of San Gorgonio Pass and the Coachella Valley at the headwaters of the Whitewater River. In San Gorgonio Pass, Rogers (1965) described surficial older Pleistocene exposures in the study area as consisting of the Cabazon Fanglomerate and deformed gravels of Whitewater River. These rock units have been extensively folded, faulted and dissected, and so are unlikely to contain fossil resources in any abundance. The Cabazon Fanglomerate is a poorly sorted sandstone containing boulders of gneiss and granite derived from the San Bernardino Mountains and transported by the Whitewater River. If the subsurface older Pleistocene sediments here presumed to be present at depth conform with this lithology, it is unlikely that they will contain fossil resources. If, on the other hand, subsurface Pleistocene older alluvium is determined upon exposure to be more suggestive of either a lacustrine (= lake) or a relatively low energy fluvial (= river) depositional environment, the chance for significant fossils to be preserved in such alluvium would be higher.

Similarly, in the southeast portion of the proposed project property, Rogers (1965) described surficial older Pleistocene exposures as the Ocotillo Conglomerate. This conglomerate is a northern extension of the fossiliferous Ocotillo Formation, which in the Anza-Borrego Desert has yielded abundant fossils of mammoths, sabre-toothed cats, ground sloths, short-faced bears, horses, camels, birds, reptiles and fish (Downs and Miller, 1994; Remeika and Jefferson, 1995). No significant fossils have been recorded from exposures of the Ocotillo Conglomerate in the Indio Hills or the Mecca Hills. Rogers (1965) described this formation in the area around Desert Hot Springs as a grey unconsolidated boulder conglomerate. This lithology is generally not conducive to the preservation of fossil remains. In this region, therefore, the Ocotillo Conglomerate is interpreted to have low potential to yield fossil resources, and so is assigned low paleontologic sensitivity.

Mapping by Bortugno and Spittler (1986) indicates that exposures of undifferentiated older alluvium, (probably Cabazon Fanglomerate; Rogers, 1965) and undifferentiated Plio-Pleistocene fluvial gravel, sand, silt, and clay of the Whitewater River occur south of the Mission Creek Fault at the headwaters of the Whitewater River. The Plio-Pleistocene fluvial sediments of Whitewater River have high potential to contain significant nonrenewable paleontologic resources and so are assigned high paleontologic sensitivity based on lithology and mode of deposition. Older sedimentary and volcanic rocks of Pliocene and Miocene age occur adjacent to and to the south of the undifferentiated older alluvium and the Plio-Pleistocene fluvial deposits of Whitewater River. Rogers (1965) described exposures of interbedded conglomerate and sandstone of the Pliocene age terrestrial Painted Hill Formation and incorporated Pliocene olivine basalt flows and associated dikes. The basalt flows and dikes have low potential to contain significant vertebrate fossils and so are assigned low paleontologic sensitivity. Based on lithology, the Painted Hill Formation has undetermined potential to contain significant nonrenewable paleontologic resources at this time. It is recommended that these sediments be evaluated and determined at the time of inspection whether the sediments contain lithologies conducive to fossil preservation.

The Painted Hill Formation overlies middle and/or lower Pliocene marine sedimentary rocks of the Imperial Formation. In Coachella Valley, Rogers (1965) described the Imperial Formation as containing interbedded, claystone, siltstone, and sandstone with abundant oyster shell "reefs". This lithology indicates ideal conditions for the preservation of invertebrate as well as vertebrate marine fossils. Locally, the Imperial Formation contains fossils of scallops, pen shells, oysters, whelks, sea urchins, and corals. Additionally, recent field work by the staff of the San Diego Natural History Museum has resulted in the recovery of rare remains of marine vertebrates from these rocks including bat ray, white shark, tiger shark, giant barracuda, pufferfish, sea cow, and baleen whale. Remains of an early walrus have also been collected from the Imperial Formation. Based upon the presence in the Imperial Formation of fossil vertebrates as well as invertebrates, the formation is assigned high paleontologic sensitivity.

Surficial exposures of late Miocene age conglomerates in the San Gorgonio Pass area have been described by Rogers (1965) as the Coachella Fanglomerate. These massive conglomerates and red-brown sandstones with basal breccia of grey schist fragments includes an unnamed pale red to purple olivine basalt flow overlain by the Imperial Formation unconformably. The basalt flow has low potential to contain significant vertebrate fossils and so is assigned low paleontologic sensitivity. The massive conglomerates and red-brown sandstones of the Coachella Fanglomerate have undetermined potential to contain significant nonrenewable paleontologic resources at this time. It is recommended that these sediments be evaluated and determined at the time of inspection wether the sediments contain lithologies conducive to fossil preservation.

For this review, Craig R. Manker of the Division of Geological Sciences, SBCM conducted a search of the Regional Paleontologic Locality Inventory (RPLI). The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from within the study area, nor from at least one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the excavation in surficial Recent alluvium within the boundaries of the proposed property has low potential to adversely impact significant nonrenewable paleontologic resources. However, should cohesive beds of fine-grained sediments of Pleistocene age suggesting either lacustrine or low energy fluvial deposition be encountered in the subsurface during excavation a qualified professional vertebrate paleontologist would need to be retained to examine the sediments and more fully assess their fossil-bearing potential (areas of undetermined sensitivity such as in the Painted Hill Formation and Coachella Fanglomerates should be treated in a similar manner). If this assessment resulted in a determination of high paleontologic sensitivity, as well as areas determined herein to be of high paleontologic sensitivity such as fluvial sands, silts, and clays of the Whitewater River and the Imperial Formation, a plan to mitigate adverse impacts to paleontologic resources would need to be developed by the paleontologist. This mitigation program would need to be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations implemented by the County of Riverside and with the proposed guidelines of the Society of Vertebrate Paleontology. This program would have to include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by

a qualified paleontologic monitor. Paleontologic monitors would need to be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors would need to be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.

2. Preparation of all recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist would need to have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources would not be considered complete until such curation into an established museum repository had been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

Natural History
Museum of Los Angeles County
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Vertebrate Paleontology Section
Telephone: (213) 763-3325
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28 March 2007

CRM Tech
4472 Orange Street
Riverside, CA 92501

Attn: Laura Hensley Shaker

re: Paleontological resources for the proposed Mission Springs Water District Due Diligence Project, CRM Tech #1998P, in & near the Desert Hot Springs area, Riverside County, Paleo, project area

Dear Laura:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Mission Springs Water District Due Diligence Project, CRM Tech #1998P, in & near the Desert Hot Springs area, Riverside County, Paleo, project area as outlined on the sections of the Catclaw Flat, Morongo Valley, Seven Palms Valley, Desert Hot Springs, and Whitewater USGS topographic quadrangle maps that you sent to me via e-mail on 5 March 2007. We do not have any vertebrate fossil localities that lie directly within the proposed project boundaries, but we do have fossil vertebrate localities farther afield from the same or similar sedimentary deposits as occur in the proposed project area.

The proposed project area encompasses the northern part of the Coachella Valley surrounded by the San Bernardino Mountains in the northwest and the northeast (although in the latter known as the Little San Bernardino Mountains). The Whitewater River runs about north to south through the San Bernardino Mountains in the western part of the proposed project area, while the Mission Creek Wash and the Morongo Wash drainages course more or less from north to south on the eastern side of the Coachella Valley in the eastern part of the proposed project area. In the southern portion of the proposed project area the Banning Fault runs more or less east-west, while in the northeastern portion the Mission Creek Fault runs more or less northwest-southeast, and both are branches of the San Andreas Fault.

In the northwestern portion of the proposed project area, north of the Banning Fault and west of the Whitewater River, bedrock in the elevated areas consists of plutonic igneous rocks and metamorphosed igneous and sedimentary rocks that, of course, will be devoid of fossils. There are pockets of Quaternary fanglomerates within the mountainous terrain and additional exposures of these deposits along the western margin of the Whitewater River along with some Quaternary fan deposits of finer silts and gravels.

In the north-central portion of the proposed project area, north of the Banning Fault and between the Whitewater River on the west and the Coachella Valley on the east, predominately there are exposures of Upper Miocene alluvial fan deposits known as the Coachella Fanglomerate in the elevated terrain with some Quaternary fanglomerate and finer-grained fan deposits along the margins. On the eastern side of the Whitewater River immediately north of the Banning Fault there are some additional exposures of the same igneous and metamorphic rocks found in the mountains to the west. At lower elevation on the eastern side of the hills between the Whitewater River and the Coachella Valley, there are slight exposures of deposits of the marine Pliocene Imperial Formation along with more expansive exposures of the non-marine Plio-Pleistocene Palm Spring Formation and older Quaternary fan deposits as the elevation descends to the east.

In the northeastern portion of the proposed project area, in the Little San Bernardino Mountains northeast of the Mission Creek Fault, the bedrock again consists of igneous and metamorphic rock with the western margins of the mountains, and the margins of some of the drainages, having exposures of coarse Quaternary fan deposits that may be called the Cabezon Fanglomerate.

In the southeastern portion of the proposed project area, on the northern side of the Mission Creek Fault immediately southeast of Desert Hot Springs, there are exposures of coarse fluvial deposits that may be called the Ocotillo Conglomerate.

In the southwestern portion of the proposed project area, south of the Banning Fault, the more elevated areas have additional exposures of the Quaternary Cabezon Fanglomerate that extend eastward around Whitewater Hill and Highway 62 down to Interstate 10.

Otherwise, the lower lying areas in the Coachella Valley in the central and southeastern portions of the proposed project area, as well as in the southwestern portion north of the San Gorgonio and Whitewater River drainages, have surficial deposits of younger Quaternary Alluvium, primarily as fan deposits from the San Bernardino Mountains but as fluvial deposits in and around all of the washes with gravels in the current drainages. These Quaternary deposits also occur to various extent in all the drainages in the more elevated terrain throughout the proposed project area.

We have no vertebrate fossil localities anywhere nearby from younger Quaternary Alluvium deposits and they are unlikely to contain significant vertebrate fossils. Because of the nature of their deposition, conglomeratic rocks also rarely contain significant vertebrate fossils and we have no localities anywhere nearby from such deposits. Our closest fossil vertebrate locality from older Quaternary Alluvium is LACM 1269, southeast of the proposed project area north of Flat Top Mountain on the southern side of Seven Palms Valley, that contained specimens of fossil horse, *Equus*. From older Quaternary deposits further to the southeast in the Indio Hills we have locality LACM 5832 that produced specimens of undetermined fossil camel, Camelidae. We do not have any vertebrate fossil localities nearby from the Palm Spring Formation, but in the Anza-Borrego Desert region, south-southeast of the proposed project area west of the Salton Sea, we have over 800 vertebrate fossil localities from the extensive beds of the Palm Spring Formation that span the boundary between the Pliocene and Pleistocene. These Palm Spring Formation localities have produced many thousands of vertebrate fossils, including the holotype specimens (name-bearing specimens for species new to science) of nineteen species. Our only vertebrate fossil localities from the Imperial Formation are far to the south-southeast north of Interstate 8, but one locality, LACM (CIT) 472, produced the holotype specimen of a new sea lion, *Valenictus imperialensis*.

Excavations in the bedrock igneous and metamorphic rocks in the San Bernardino Mountains in the northwestern and northeastern portions of the proposed project area will not encounter any fossils. Excavations in the conglomeratic rocks exposed around the margins of the San Bernardino Mountains in the proposed project area, and in other somewhat elevated areas in the Coachella Valley, probably will not encounter any significant vertebrate fossils. Shallow excavations in the soil and younger Quaternary Alluvium exposed at the surface throughout most of the expanse of the Coachella Valley, and in the drainages in the more elevated areas, are unlikely to uncover significant vertebrate fossils. Deeper excavations in the latter areas that extend into older Quaternary deposits, as well as any excavations in the exposures of older Quaternary Alluvium in the eastern portion of the proposed project area, however, may well encounter significant fossil vertebrate remains.

Excavations in the limited exposures of the intriguingly located Imperial Formation in the central portion of the proposed project area have a good chance of uncovering highly significant marine vertebrate fossils. Excavations in the Palm Spring Formation deposits in the central portion of the proposed project area have a good chance of uncovering significant vertebrate fossils, and their significance would be increased by their distance from the primary exposures of the Palm Spring Formation in the Anza-Borrego Desert region. Any excavations in the Imperial Formation, the Palm Spring Formation, or in the older Quaternary deposits in the central portions of the proposed project area, as well as any substantial and deep excavations in the Coachella Valley of the proposed project area, therefore, should be closely monitored to professionally and expeditiously collect any vertebrate fossil remains uncovered without impeding development. Many of the best vertebrate fossils from the Palm Spring Formation are quite small and would be missed during typical paleontological monitoring. We recommend that sediment from this area be sampled to determine the small fossil potential. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations. Additional fossil locality information for the area may be available through the University of California at Riverside Department of Geology (collections and records now at the University of California at Berkeley Museum of Paleontology).

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice
Used:

APPENDIX D2

CRM TECH 2007b Report

CRM TECH
4472 Orange Street
Riverside, CA 92501

February 22, 2007

Bill Gatlin, Vice-President
Tom Dodson and Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405

Re: Records Search and Native American Consultation
Mission Springs Water District Due Diligence Project
Desert Hot Springs Area, Riverside County, California
CRM TECH Contract No. 1998

Dear Mr. Gatlin:

At your request, we have completed a historical/archaeological resources records search and Native American consultation on lands within the Mission Springs Water District (MSWD). As Figure 1 illustrates, the district encompasses approximately 130 square miles of both urban and rural land, stretching 19 miles east-west from R2E to R5E and more than nine miles north-south from T2S to T3S, San Bernardino Base Meridian. It features a diverse range of natural settings, including the fully developed downtown area of the City of Desert Hot Springs, a major transportation corridor along Interstate 10 and the Union Pacific Railway, rugged mountain terrain in the San Bernardino and Little San Bernardino Mountains, riparian lands along the Whitewater River and other washes, and the relatively level and barren valley floor of the upper Coachella Valley.

The records search was conducted by CRM TECH archaeologist Nina Gallardo, B.A., and the Native American consultation was performed by CRM TECH archaeologist/Native American liaison Laura H. Shaker, B.S. A brief summary of the methods and results of these research procedures is presented below for your reference.

RESEARCH METHODS

Upon commencement of the study, CRM TECH contacted the State of California's Native American Heritage Commission on December 28, 2006, to request a records search in the commission's Sacred Lands File (SLF). Following the commission's recommendations, CRM TECH further contacted a total of nine Native American representatives in the region in writing on January 2, 2007, to solicit local Native American input regarding any possible cultural resources concerns regarding the study area. The correspondences between CRM TECH and the Native American representatives are attached to this report in Appendix 1.

The historical/archaeological resources records search was completed between January 3 and 18, 2007, at the Eastern Information Center (EIC), University of California, Riverside, which is the State of California's official cultural resource records repository for the County of Riverside. During the records search, Nina Gallardo examined maps and records on file at the EIC for previously identified cultural resources in or near the study area and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of

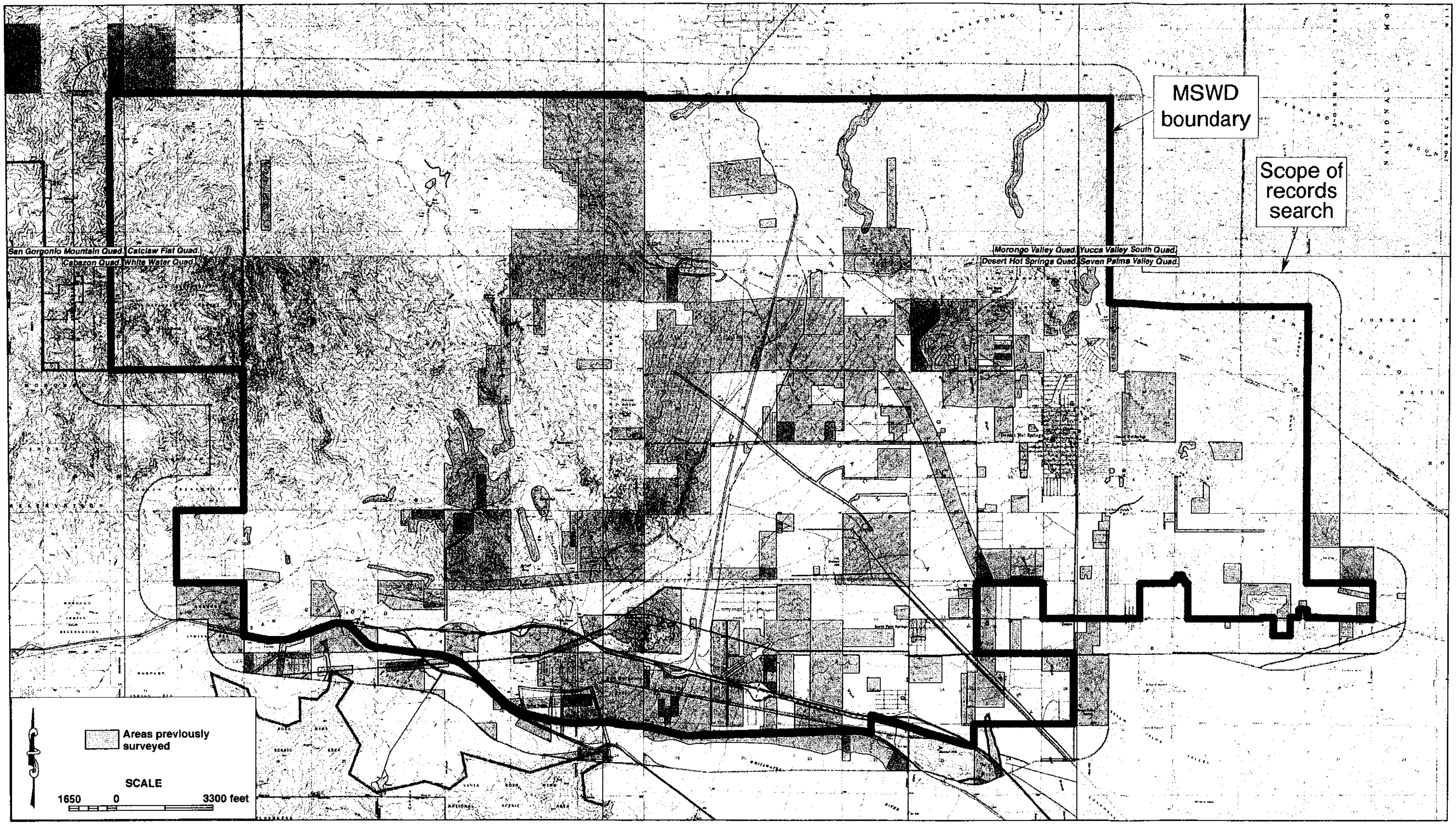

Figure 1. The study area, also showing areas previously surveyed for cultural resources. Based on USGS Cabazon, Catclaw Flat, Desert Hot Springs, Morongo Valley, San Gorgonio Mountain, Seven Palms Valley, White Water, and Yucca Valley South, Calif., 1:24,000 quadrangles. Locations of historical/archaeological sites are not shown as a protective measure.

Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resource Information System.

RECORD SEARCH RESULTS

According to EIC records, nearly 170 previous cultural resource studies have been completed within the scope of the records search, including some 150 within the MSWD boundaries (Fig. 1). As a result of these and other similar studies in the vicinity, a total of 135 historic-period buildings, archaeological sites, or isolates—i.e., sites with fewer than three artifacts—were previously recorded within the scope of the records search, as listed below in Table 1.

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search

Site No.	Recorded by/Date	Description
33-5575	Pritchard-Parker 1994	Isolate: 1 Tizon Brownware sherd
33-5576	Pritchard-Parker 1994	Isolate: 2 Tizon Brownware sherds
33-5722	Warner 1983	Warner Homestead, rectangular residence with 2 geodesic dome additions, ca. 1954
33-6838	Adams 1983	Vernacular and Mediterranean/Spanish-style buildings associated with the B-Bar-H Ranch, ca. 1920
33-6839	Warner 1983	Mediterranean/Spanish-style buildings associated with the B-Bar-H Ranch, ca. 1920
33-6840	Warner 1983	Mediterranean/Spanish-style bungalow, ca. 1936
33-6841	Warner 1983	Vernacular wood-frame house, ca. 1952
33-6842	Adams 1983	"Cabot's Indian Pueblo," Desert Hot Springs pioneer settler Cabot Yerxa's Hopi-style residence, built in 1941-1965
33-6843	Warner 1983	Vernacular wood-frame buildings associated with the Lost Heads Ranch, ca. 1950
33-6844	Adams 1983	Vernacular wood-frame buildings associated with Coffee's Spa and Hotel, ca. 1948
33-6845	Adams 1983	Desert Hot Springs Library and Museum
33-6846	Warner 1983	4 wood and 2 brick structures, part of Norm's Motel/Desert Trails Guest Ranch, ca. 1950
33-6847	Warner 1983	Mediterranean/Spanish-style residence, ca. 1932
33-6848	Warner 1983	Vernacular stone residence, pre-1946
33-6849	Warner 1983	Cliff's automotive repair shop, a vernacular wood-frame garage, ca. 1951
33-6850	Adams 1983	Desert Hot Springs schoolhouse, a vernacular wood-frame structure, ca. 1935
33-6886	Warner 1983	Vernacular wood-frame residence, ca. 1952
33-6887	Warner 1983	Vernacular adobe residence with Pueblo Revival elements, ca. 1946
33-6888	Warner 1983	Vernacular wood-frame farmhouse, ca. 1935
33-6889	Warner 1983	Vernacular stone and adobe residence, ca. 1951
33-6890	Warner 1983	Vernacular stone and adobe residence, ca. 1935
33-6891	Adams 1983	Vernacular wood-frame residence, ca. 1946
33-6892	Warner 1983	Mediterranean/Spanish Revival-style residence, ca. 1946
33-6893	Warner 1983	Vernacular wood-frame residence, ca. 1941
33-6894	Warner 1983	Vernacular wood-frame residence, ca. 1940
33-6895	Warner 1983	Vernacular wood-frame and stone residence, ca. 1946
33-6896	Warner 1983	Vernacular wood-frame residence, ca. 1946
33-6897	Warner 1983	Vernacular wood-frame residence, ca. 1945

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search (Continued)		
Site No.	Recorded by/Date	Description
33-6898	Warner 1983	"Los Chimeneas," a vernacular brick residence, ca. 1949
33-6899	Warner 1983	Mediterranean/Spanish Revival-style adobe residence, ca. 1946
33-6900	Warner 1983	Vernacular wood-frame residence with a Moorish-style dome, ca. 1950
33-6901	Warner 1983	Vernacular wood-frame residence, ca. 1946
33-6902	Warner 1983	Mediterranean/Spanish-style residence, ca. 1945
33-6903	Warner 1983	Mediterranean/Spanish-style residence, ca. 1949
33-6904	Warner 1983	Vernacular wood-frame residence, ca. 1950
33-6905	Warner 1983	Pueblo Revival-style brick residence, ca. 1943
33-6906	Warner 1983	Mediterranean/Spanish Revival-style adobe residence, ca. 1946
33-6907	Warner 1983	"Stone Crest," a vernacular stone residence, ca. 1949
33-6908	Warner 1983	Vernacular wood-frame duplex, ca. 1942
33-6910	Adams 1983	Vernacular wood-frame pool house at B-Bar-H Ranch, ca. 1936
33-7582	Terell 1983	Cylindrical water tower associated with the Palm Springs Railroad Depot, late 1920s
33-7787	Warner 1983	The Whitewater Ranch/Whitewater Adobe site, 1860s-1870s; formerly the Cahuilla village of *Wanapiapa*
33-8403	Brock 1998	20th Avenue, a two-lane asphalt road, ca. 1940
33-8409	Brock 1998	Palm Drive, a two- to four-lane asphalt road, ca. 1930s
33-8410	Brock 1998	Dillon Road, a two-lane asphalt road, ca. 1930s
33-8411	Brock 1998	Devers-Hinds 220-kv power transmission lines, ca. 1950
33-8412	di Iorio 1998	Mediterranean/Spanish-style commercial building, ca. 1948
33-8413	di Iorio 1998	Mediterranean/Spanish-style commercial building, ca. 1948
33-8414	Brock 1998	18th Avenue, a two-lane dirt road, ca. 1940
33-11010	Adams 1983	San Andreas Fault
33-12696	Taskiran and Broomhall 1992	Isolate: 1 prehistoric ceramic sherd
33-12878	Harris 2003	Wooden-box culvert below Long Canyon Road, ca. 1930s
33-12922	Carrico 1979	Isolate: 1 square nail embedded in concrete, ca. 1900-1910
33-13433	Way and Eckhardt 2003	Isolate: 1 obsidian secondary flake
33-13562	Way and Eckhardt 2003	Isolate: 1 quartzite secondary flake
33-13678	Breece 1980	Isolate: 1 Tizon brownware rim sherd
33-13738	Rector 1980	Isolate: 2 black ceramic sherds with mica temper
33-14810	Taniguchi 2004	Modern-style wood-frame residence, ca. 1948
33-14863	Carrico 1979	Isolate: 2 pieces of sun-colored amethyst glass
33-15296	Pollock 2005	1 small sun-colored amethyst glass bottle, pre-1920s
33-15297	Pollock, Knypstra, and Jones 2005	Isolate: Fragment of sun-altered amethyst glass, pre-1920s
33-15298	Pollock et al. 2005	Isolate: Fragment of sun-altered amethyst glass, pre-1920s
CA-RIV-53	Eckhardt and Way 2004	A segment of the Cocomaricopa Trail with an associated lithic scatter
CA-RIV-73	Johnston 1955	2 bedrock mortars, 7 cupules, scatter of Tizon brownware sherds, and 2 redware sherds
CA-RIV-74	Johnston 1956	3 bedrock mortars, 1 broken metate, scatter of redware sherds, exposed midden soil
CA-RIV-75	Johnston 1956	Light ceramic sherd scatter
CA-RIV-154	Eberhart 1952	Burial
CA-RIV-178	Johnston 1960	Site of Palm Springs railway station, with scattered debris, water tank, and several concrete foundations, ca. 1890s

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search (Continued)		
Site No.	Recorded by/Date	Description
CA-RIV-269	Johnston and Johnston 1964	3 bedrock mortars, 1 possible hearth, adobe wall remnants, 2 historic-period graves, 2 metates, 2 Cottonwood triangular projectile points, and a lithic flake scatter
CA-RIV-360	Johnston 1964	Mortar with pestle, 1 metate, 3 cupules, 5 mortars, 1 milling slick, and 1 sherd
CA-RIV-890	?	Unidentified trail
CA-RIV-1068H	Christenson and Cooper 1991	Bonnie Bell, a1930s community of 18 houses with associated buildings, structural remains, and other features, some possibly dating to the 1850s
CA-RIV-1118	Cowan 1976	Colorado buffware sherd scatter
CA-RIV-1119	Wilke 1972	Lithic scatter, Tizon brownware and Colorado buffware sherd scatter, 1 possible quartz core
CA-RIV-1246	Smith 1977	Scatters of ceramic sherds, groundstone fragments, lithic flakes, burned bone, and 1 projectile point
CA-RIV-1380	Morin et al. 1976	1 small cairn on top of a ridge
CA-RIV-1387H	Morin et al. 1976	Historic-period refuse, including 2 hole-in-top cans
CA-RIV-1388	Morin et al. 1976	4 flaked cobble fragments, 2 flakes, and fire-affected rock
CA-RIV-1389	Morin and Toren 1976	1 quartz flake with semi-circle of stones
CA-RIV-1390	Morin 1976	Small cairn and trails, possible mining claim
CA-RIV-1391	Morin and Toren 1976	1 flake, 1 biface scrapper
CA-RIV-1392	Schummer 1976	1 cairn, fragments of wooden grape stakes
CA-RIV-1393	Schummer 1976	1 cairn, animal trials, 2 tin cans
CA-RIV-1394	Schummer 1976	1 Andesite scrapper, 1 cairn
CA-RIV-1808	Carrico et al. 1979	Salton buffware sherd scatter
CA-RIV-1825	Breece 1980	5 Tizon brownware sherds, several projectile points, lithic debitage
CA-RIV-1827	Breece 1980	1 Tizon brownware sherd, 1 piece of white chert debitage
CA-RIV-2166	Ritter 1981	1 16-gauge penny wire nail, aqua-glass insulator, wood beam, ca. 1920s-1930s
CA-RIV-2167	Swenson 1982	Small rock ring, 1 metate, 1 possible mano
CA-RIV-2168H	Ritter 1981	3 cairns, 1 broken brown whiskey bottle
CA-RIV-2169H	Ritter 1981	1 cairn and 1 aquamarine jar, ca. 1900
CA-RIV-2170	Ritter 1981	2 rock-ring features, 1 quartzite chopper, possible cairn
CA-RIV-2241	Ritter 1981	3 sherds and 4 jasper-chert flakes
CA-RIV-2642	Drover 1982	Possible village site with Lower Colorado buffware sherds, burned bone, debitage, and burned adobe fragments
CA-RIV-2643	Drover 19892	Small Lower Colorado buffware scatter and fire-affected rock
CA-RIV-2644	Drover 1982	Small Lower Colorado buffware scatter, fire-affected rock, debitage
CA-RIV-2645	Drover 1982	Lower Colorado buffware scatter, hammerstone, fire-affected rock, groundstone
CA-RIV-2646	Drover 1982	Sparse scatter of lithic debitage and fire-altered rock
CA-RIV-2647	Drover 1982	Burned bone, lithic debitage, Lower Colorado buffware scatter
CA-RIV-2668	McCarthy 1983	1 bedrock milling slick
CA-RIV-2774	Swenson 1984	1 granite mortar
CA-RIV-3395	Mitchell and Noordman 1988	2 ollas, 1 rim fragment with red-brown paint on a white slip, small scatters of sherds
CA-RIV-3423	Altschul 1986	A small rock wall structure within an artificial depression
CA-RIV-3441H	Apple et al. 1988	Scatter of debris, footings for a water tank, early 1900s
CA-RIV-3656H	Goodman and Arkush 1989	Remains of a large water tank and a dense refuse deposit, ca. 1920-1930s

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search (Continued)		
Site No.	Recorded by/Date	Description
CA-RIV-3657H	Goodman 1989	Mine or well shaft with a dense scatter of historic-era refuse
CA-RIV-3658	Goodman 1989	1 bedrock milling slick
CA-RIV-4040	Swope and Diehl 1990	Refuse scatter from a homestead, early 1900s
CA-RIV-4041	Swope and Hallaran 1990	Refuse scatter, rock alignment, earthen depression from a homestead, early 1900s
CA-RIV-4109H	Everson 1990	Concrete foundation, ceramic standing pipe, well casing, demolished wooden structure, refuse and debris
CA-RIV-4873H	Taskiran 1992	Refuse scatter with 1 cone-top beer can, ca. 1930s
CA-RIV-5503	Pritchard-Parker 1994	1 bedrock milling slick
CA-RIV-5504	Pritchard-Parker 1994	Mining claim including cairn and wooden post, 1 cigar can
CA-RIV-5507H	Pritchard-Parker and Conkling 1994	Refuse scatter with cans, ceramics, and glass
CA-RIV-6128	Sawyer and Smith 1998	Refuse concentration, ca. 1940s
CA-RIV-6129	Sawyer and Smith 1998	2 Refuse concentrations, ca. 1940s
CA-RIV-6379H	Love and Tang 2000	Water-conveyance system and associated features, ca. 1920s
CA-RIV-6380H	Love and Tang 2000	Water-conveyance system and associated features, ca. 1920s
CA-RIV-6381H	Taniguchi 2005	Segment of the Southern Pacific (now Union Pacific) Railway, ca. 1876
CA-RIV-6492H	Conkling 1994	Homestead with rock alignments, concrete pads, and several refuse concentrations, ca. 1920s-1940s
CA-RIV-6726H	Dice 2001	Segment of the Colorado River Aqueduct, built in the 1930s
CA-RIV-6945H	Cotterman 2002	Can scatter, ca. 1915-1945
CA-RIV-7161H	Harris 2003	Tailing piles and concrete structural remains associated with the construction of the Colorado River Aqueduct, ca. 1930s
CA-RIV-7162H	Harris and Bircheff 2003	Water level gauge station on a terrace on Long Canyon Road, ca. 1914-1945
CA-RIV-7478	Raschkow 2002	Concentration of brownware sherds, burned bone, and fire-affected rock
CA-RIV-7487	Alexandrowicz and Krautkaner 2004	Early 20th century habitation site with rock alignments and refuse deposits
CA-RIV-7491H	Brock and Eason 2004	Scott Farris Date Farm with concrete foundation, 1 well, and a refuse scatter, ca. 1947
CA-RIV-7590	Smallwood 2004	1 bedrock milling slick
CA-RIV-7591	Smallwood 2004	1 bedrock milling slick
CA-RIV-7606H	Eddy 2004	1 concrete building foundation, 4 refuse concentrations, ca. 1920s
CA-RIV-7832	Dice 2005	2 bedrock milling slicks
CA-RIV-7957	Kind 2006	Triangular concrete foundation, possible water collection tank and trench
CA-RIV-7958	Kind 2006	Rectangular concrete foundation, rock-ringed fire pit
CA-RIV-8054	de Barros 2006	Stone circle
CA-RIV-8080	Pollock et al. 2005	Refuse scatter with tin cans and glass fragments, ca. 1914-1945

As Table 1 shows, more than two-thirds of these recorded cultural resources were from the historic period, including some 40 buildings or groups of buildings. These buildings predominantly dated to the 1930s-1950s, and most of them were concentrated in the downtown area of the City of Desert Hot Springs. The archaeological sites from the historic period consisted mostly of debris or structural remains that reflected early settlement activities, while segments of irrigation lines and early transportation routes were also recorded. The prehistoric—i.e., Native American—sites were typically described as scatters of ceramic, lithic, groundstone, or other artifacts, along with several ancient trails, bedrock milling features, and at least one human burial.

Among these recorded sites, 33-6842, a Hopi Pueblo-style residence built near downtown Desert Hot Springs by local pioneer Cabot Yerxa between 1941 and 1965, has been designated a California Point of Historical Interest and a Riverside County Landmark. Also designated as such was Site 33-7787, which represented both the site of a known Cahuilla village and that of an early Anglo-American settlement and a stage stop on the Cocomaricopa-Bradshaw Trail (Site CA-RIV-53), an ancient Native American trading route that became an important wagon road across the Colorado Desert during the mid-19th century.

Among the prehistoric sites recorded within the scope of the records search, the most notable were CA-RIV-1246 in the Two Bunch Palms area and CA-RIV-2642 in the Seven Palms area. Recent archaeological excavations at both of these sites have revealed rich, multi-layered cultural deposits with a large number and variety of artifacts and features, some of which evidently reflect habitation and other activities in the site areas during the Archaic Period (pre-1000 A.D.).

NATIVE AMERICAN INPUT

In response to CRM TECH's inquiry, the Native American Heritage Commission reports that the SLF indicate an unspecified number of Native American cultural resources within the study area, located on the USGS Cabazon, Desert Hot Springs, and Whitewater, Calif., 1:24,000 quadrangles. In addition, the commission states that although no sites are identified on the other quadrangles, the SLF inventory is by no means exhaustive. Therefore, the commission recommends that local Native American representatives be consulted for additional information, and provided a list of potential contacts (App. 2).

Upon receiving the Native American Heritage Commission's reply, CRM TECH contacted all nine individuals on the referral list and the organizations they represent, as stated above. As of this time, three of these local Native American representatives have responded on behalf of the Morongo Band of Mission Indians, the Agua Caliente Band of Cahuilla Indians, and the Cabazon Band of Mission Indians.

Judy Stapp, Director of Cultural Affairs for the Cabazon Band, responded to CRM TECH's inquiries by telephone on January 5, 2007. During the telephone conversation, she stated that the Cabazon Band did not have any concerns over the study area unless cultural remains were uncovered that would require further consultation with the tribe.

Britt Wilson, Cultural Resources Coordinator for the Morongo Band, also responded by telephone on January 5, 2007. Based on extensive research he had conducted on the Village of *Wanapiapa*, Mr. Wilson stated that there might have been several different locations for the village, all of which lie within the boundaries of the study area. According to Mr. Wilson, the Whitewater River would flood periodically and wash out the entire village site, which would force the occupants of the village to relocate. On January 23, Mr. Wilson offered additional comments by e-mail (App. 2), in which he identifies much of the study area as part of the Morongo Band's culturally affiliated lands. Mr. Wilson further notes in the e-mail:

> As a general statement, rock art sites and village sites are considered sacred to the Tribe and we oppose any destruction of those sites. If development will be placed near those sites, we ask for a buffer zone of at least 75 yards. (App. 2)

In a letter dated January 16, 2007, Richard Begay, Director of the Agua Caliente Tribal Historic Preservation Office, states that the Agua Caliente Cultural Register also shows the presence of Native American cultural resources within the study area, but that he was unable to reveal further information on these sites (App. 2). Since the study area is considered a part of the Agua Caliente Band's traditional use area, Mr. Begay requests copies of cultural resource documentation generated through this study and that Approved Cultural Resource Monitor(s) be present during any ground-disturbing activities in the area.

To date, none of the other local Native American representatives contacted by CRM TECH has responded directly. However, Katherine Siva Saubel, Spokesperson for the Los Coyotes Band of Mission Indians and a well-known authority on Cahuilla culture and history, indicated to Britt Wilson that she was aware of a plant collecting area on the Desert Hot Springs quadrangle that was used by Native people. Based on information relayed to CRM TECH by Mr. Wilson, this is likely one of the Native American cultural resources identified in the Native American Heritage Commission's SLF.

Although at this time neither the commission nor the local Native American representatives would reveal the exact nature or location of the sites identified in the SLF due to confidentiality concerns, it is clear that a number of sites of Native American traditional cultural value are known to be located within the Cabazon, Desert Hot Springs, and Whitewater quadrangles. Among them are a sacred plant collecting area, at least one hill associated with spiritual powers, several burial sites, and at least two important village sites, which also include burials and other locations of spiritual significance.

SENSITIVITY ASSESSMENT

A comprehensive assessment of the study area for cultural resources sensitivity is subject to the limitation of existing data. As Figure 1 shows, more than half of the study area has not been surveyed systematically for cultural resources, especially in the San Bernardino and Little San Bernardino Mountains in the northwestern and northeastern portions of the MSWD. Approximately 35% of land within the MSWD has been surveyed previously, but some of the areas were surveyed more than 10 years ago and typically will need to be resurveyed. The patchwork of past survey work reflects contemporary land use and development patterns, and any determination of cultural resources sensitivity of unsurveyed areas on the basis of available data should only be considered preliminary, pending the completion of systematic and area-specific studies.

In spite of this limitation, the results of past studies in the vicinity, along with findings from similar studies elsewhere in the Coachella Valley, suggest that areas along streambeds, most notably the Whitewater River but also including the various seasonal washes, and along the foothills of the San Bernardino and Little San Bernardino Mountains are of relatively high sensitivity for both prehistoric and historic-period archaeological resources. In addition, in light of recent archaeological discoveries of great scientific significance, the Two Bunch Palms-Seven Palms area in the southwestern portion of the

MSWD and other locations along the fault lines, where the presence of natural springs often brought about desert oases, should also be considered highly sensitive for prehistoric archaeological remains.

For historic-period archaeological resources, essentially all areas on the level valley floor are of at least moderate sensitivity, while sites associated with specific resource procurement activities, such as logging, mining, and development of irrigation systems, may occur sporadically in the rugged mountain terrain. As for historic-period buildings and other built environment features, clearly the largest concentration is located in the downtown area of the City of Desert Hot Springs, as revealed by both the distribution of recorded examples and historic maps from the 1940s-1950s. However, isolated or locally clustered historic-period buildings may be encountered almost anywhere on the valley floor.

According to the historic maps, by the mid-20th century several smaller centers of settlement and land development activities had formed around the mouth of the Whitewater canyon, at the community of North Palm Springs, in the Seven Palms Valley, and in the Miracle Hill-Two Bunch Palms area. Although relatively few historic-period buildings were previously identified at these locations, many of the buildings dating to the mid-20th century, if still present, have by now reached the 45-year age threshold to be recorded and evaluated as potential historical resources.

Finally, because of the presence of an unspecified number of Native American sacred sites or other sites of traditional cultural value within the Cabazon, Desert Hot Springs, and Whitewater quadrangles, all portions of the study area within these quadrangles (Fig. 1) should be considered sensitive for Native American cultural concerns.

CONCLUSION AND RECOMMENDATIONS

In summary, the results of previous studies and consultation with Native American representatives suggest that the likelihood of encountering potential "historical resources" during future projects in different portions of the MSWD range varies significantly depending on the location and the terrain. The determination of a relatively low sensitivity, however, is not equivalent to a declaration of "no potential historical resources." That declaration can be made only on the basis of an adequate, up-to-date, intensive-level field survey of specific project areas.

Based on these considerations, CRM TECH recommends that, once an area is selected for a proposed project, a site-specific, intensive-level cultural resources survey should be conducted on the property in order to facilitate the final determination on whether that project would cause substantial adverse changes to any historical/archaeological resources, unless the area was surveyed within the past 10 years. Any areas previously surveyed for cultural resources more than 10 years ago should be resurveyed using methods consistent to today's standard practice. For areas surveyed during the past decade, documentation generated from the existing studies should be reviewed to determine the adequacy of the research and the presence or absence of cultural resources.

In addition, in accordance with Native American input and requests, CRM TECH recommends that further consultation with the Native American Heritage Commission and local tribal representatives regarding specific project sites be required for any projects located within the Cabazon, Desert Hot Springs, and Whitewater quadrangles prior to the commencement of any earth-moving operations.

Thank you for this opportunity to be of service.

Sincerely,

Bai "Tom" Tang, Principal
CRM TECH

APPENDIX 1

CORRESPONDENCES WITH NATIVE AMERICAN REPRESENTATIVES*

* A total of nine local Native American representatives were contacted; a sample letter is included in this report.

CRM TECH

FAX COVER SHEET

4472 Orange Street
Riverside, CA 92501
951·784·3051·Tel
951·784·2987·Fax

To:
Native American
Heritage Commission

Fax:
(916) 657-5390

From:

Laura Hensley Shaker

Date:
December 28, 2006

Number of pages
(including this cover sheet):

3

HARDCOPY:

______ will follow by mail

√ will not follow unless requested

RE: Sacred Land records search

This is to request a Sacred Lands records search

Name of project:
Mission Springs Water District Due Diligence
CRM TECH #1998

Location:
In and near the City of Desert Hot Springs
Riverside County

USGS 7.5' quad sheet data:
San Gorgonio, Calif.
Cabazon, Calif.
Catclaw Flat, Calif.
White Water, Calif.
Morongo Valley, Calif.
Desert Hot Springs, Calif.
Yucca Valley South, Calif
Seven Palms Valley, Calif.

Please call if you need more information or have any questions.

Results may be faxed to the number above.

I appreciate your assistance in this matter.

Map included

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

December 28, 2006

Ms. Laura Hensley Shaker
CRM TECH
4472 Orange Street
Riverside, CA 92501
951-784-2987-874-4843
Number of pages: 4

Re: Cultural Resource Identification Study/Sacred Lands File Search for Proposed Mission Springs Water District Due diligence (CRM TECH #1998); In City of Desert Hot Springs; Riverside County, California

Dear Laura:

This is a follow-up of telephone conversation today about the above-referenced project. We did run Sacred Lands File search for the USGS 7.5' Quadrangles you provided us. Within the following USGS Quadrangles there were no Native American Cultural Resources in our NAHC Inventory, but we must add that our SLF Inventory is not exhaustive and some sites may exist in the following areas that at this point we have no knowledge:

San Gorgonia, Calif.
Catclaw Flat, Calif.
Morongo Valley, Calif. (Ernest Siva may have a differing opinion on this one)
Yucca Valley, Calif. (Ernest may also comment on this one, but he needs to submit to us)
Seven Palms Valley, Calif.

The Native American Heritage Commission was able to perform a record search of its Sacred Lands File (SLF) for the following USGS 7.5' Quadrangles:

Cabazon, Calif.
White Water, Calif.
Desert Hot Springs, Calif.

The SLF did indicate the presence of Native American cultural resources in the immediate project area or 'area of potential effect (APE).'

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Please contact Ernest Siva, Thomas Lyons, and Katherine Siva Saubel through the Morongo Reservation Cultural Resources Office. As I suggested, contact Britt Wilson to coordinate managing how to determine if the proposed project impacts on the known cultural sites. Britt's contact information is on the attached list of native American Contacts. Also A list of Native American contacts is attached to assist you beyond the initial contacts; special attention must be given the Agua Caliente Band of Cahuilla that .may have knowledge of a one or two of the identified sites.

Also, a lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 15064.5(f) and Section 15097.98 and Health & Safety Code Section 7050.6 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251. And urge Ernest Siva and Britt Wilson to give me a call so that I may provide further details that can be available only to the Tribe pursuant to Government Code §6254.10.

Sincerely,

Dave Singleton, Program Analyst

Attachment: Native American Contact List

Native American Contacts
Riverside County
December 28, 2006

Cabazon Band of Mission Indians
John A. James, Chairperson
34-245 Indio Springs Parkway Cahuilla
ndio , CA 92203-3499
weaver@cabazonindi
760) 342-2593

760) 347-7880 Fax

Cahuilla Band of Indians
Anthony Madrigal, Jr., Interim-Chairperson
P.O. Box 391760 Cahuilla
Anza , CA 92539
tribalcouncil@cahuilla
(951) 763-5549

(909) 763-2808 Fax

Los Coyotes Band of Mission Indians
Katherine Saubel, Spokesperson
P.O. Box 189 Cahuilla
Warner Springs , CA 92086

760) 782-0711

760) 782-2701 - FAX

Alvino Siva
2034 W. Westward Cahuilla
Banning , CA 92220

(951) 849-3450

Morongo Band of Mission Indians
Britt W. Wilson, Cultural Resources Coordinator
245 N. Murray Street, Suite C Cahuilla
Banning , CA 92220 Serrano
britt_wilson@morongo.org
951) 849-8807
951) 755-5206
951) 922-8146 Fax

Cabazon Band of Mission Indians
Judy Stapp, Director of Cultural Affairs
84-245 Indio Springs Parkway Cahuilla
Indio , CA 92203-3499
lweaver@cabazonindi
(760) 342-2593

(760) 347-7880 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibilitiey as defined in Sec. 7050.5 of the Health & Safety Code, Sec. 5097.94 of the Public Resources Code and Sec. 5097.98 of the Publi Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Mission Springs Water Distict Due Diligence (CRM TECH #1998) in City of Desert Hot Springs; Riverside County, California

Native American Contacts
Riverside County
December 28, 2006

\gua Caliente Band of Cahuilla Indians
Richard Milanovich, Chairperson
300 Tahquitz Canyon Way Cahuilla
Palm Springs , CA 92262

760) 325-3400

760) 325-0593 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
245 N. Murray Street, Suite C Cahuilla
Banning , CA 92220 Serrano

(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

\gua Caliente Band of Cahuilla Indians
Richard Begay, THPO Director
350 Tahquitz Canyon Way Cahuilla
Palm Springs , CA 92262
begay@aguacaliente
760) 883-1368

760) 325-6952 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibilitiey as defined in Sec. 7050,5 of the Health & Safety Code, Sec. 5097.94 of the Public Resources Code and Sec. 5097.98 of the Publi Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Mission Springs Water Distict Due Diligence (CRM TECH #1998) in City of Desert Hot Springs; Riverside County, California

January 2, 2007

Richard Begay, THPO Director
Agua Caliente Band of Cahuilla Indians
650 E. Tahquitz Canyon Way
Palm Springs, CA 92262

RE: Mission Springs Water District Records Search
In the Coachella Valley, Riverside County
CRM TECH Contract #1998

Dear Mr. Begay:

CRM TECH is conducting an archaeological records search on the land included in the Mission Springs Water District. I am writing to request your input on potential Native American cultural resources within the district boundaries. In addition to contacting local Native American tribes, CRM TECH has contacted the Native American Heritage Commission, and will be conducting an archaeological records search at the Eastern Information Center. Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional significance within or near the project area that we should be aware of.

The subject of the study is depicted on the accompanying map, based on the USGS San Gorgonio, Cabazon, Catclaw Flat, White Water, Morongo Valley, Desert Hot Springs, Yucca Valley South, and Seven Palms Valley, Calif., 7.5' quadrangles. The Native American Heritage Commission's Sacred Lands File indicated the presence of Native American cultural resources within the boundaries of the district on the Cabazon, White Water, and Desert Hot Springs quadrangles. Dave Singleton, program analyst for the commission, recommends that tribal members who wish to be informed about the nature or location of these cultural resources contact him.

Any information, concerns or recommendations regarding cultural resources in the vicinity of the project area may be forwarded to CRM TECH by telephone, email, facsimile or standard mail. Thank you for the time and effort in addressing this important matter.

Respectfully,

Laura Hensley Shaker
CRM TECH

Encl.: Project location map

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION OFFICE

January 16, 2007

Laura Hensley Shaker
CRM Tech
4472 Orange Street
Riverside, CA 92501

RE: Native American Consultation for the Mission Springs Water District Records Search, Riverside County, CA; CRM Tech Contract No. 1998

Dear Laura:

The Agua Caliente Band of Cahuilla Indians appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in your project. Although, the project area is not within Reservation boundaries, it is within the Tribal Traditional Use Area. Because of this, the Agua Caliente THPO requests the following:

1. Copies of any cultural resource documentation that might be generated in connection with these efforts for permanent inclusion in the Agua Caliente Cultural Register.
   a. Our records show the presence of Native American cultural sites within your project area. However, our records do not provide full documentation of these areas, and we are unable to share any information with you at this point. We may be able to provide some information once you have finished your records search and have drafted a report of your findings. If you would like to send us a draft of your report, we will review and comment on it.
   b. Additionally, you may also want to contact the Bureau of Indian Affairs, Pacific Region offices in Sacramento. Mr. Dan Hall, Regional Archaeologist, maybe able to provide some information.
2. Approved Cultural Resource Monitor(s) be present during any ground disturbing activities related to the project. Should buried cultural deposits (including human remains), be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified (Secretary of the Interior's Standards and Guidelines) Archaeologist to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Officer for review and comment before implementation.

Please contact our offices for further information about Approved Cultural Resource Monitors. If you have questions or require additional information, please call me at (760) 883-1368. You may also email me at rbegay@aguacaliente.net.

Cordially,

Richard M. Begay, THPO
Director of Historic Preservation
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

c: Agua Caliente Cultural Register

P:\THPO\correspondence\2007\external projects\traditional use area\crm_1998_1_16_07.doc

RECEIVED JAN 19 2007

Subject: RE: 1998 Mission Springs
Date: Tuesday, January 23, 2007 2:08 PM
From: Britt Wilson <britt_wilson@morongo.org>
To: Laura <reports@crmtech.us>
Conversation: 1998 Mission Springs

Thank you for contacting the Morongo Band of Mission Indians concerning the Mission Springs project. Much of the land within the project boundaries is traditional or culturally-affiliated lands for Morongo (i.e. Cahuilla or Serrano territory).

All of the information concerning Native American cultural resources (other than the information on Wanapiapa that I sent you) of which the Tribe is aware, is available from the CHRIS.

As a general statement, rock art sites and village sites are considered sacred to the Tribe and we oppose any destruction of those sites. If development will be placed near those sites, we ask for a buffer zone of at least 75 yards.

Thank you for contacting the Tribe and giving it the opportunity to provide comments on this project.

Sincerely,

Britt W. Wilson
Project Manager/Cultural Resources Coordinator
Morongo Band of Mission Indians
Planning & Economic Development Department
245 N. Murray Street, Suite C
Banning, CA 92220
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Wayta' Yawa' (Always Believe)

APPENDIX E

JECSI Air Quality Analysis

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Mr. Bill Gatlin — 13 February 2008
Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, CA 92405

Re: Air Quality Analysis for Mission Springs Water District Master Plan Reservoirs Project in Desert Hot Springs, California.

JE Compliance Services, Inc. (JECSI) was retained by Tom Dodson & Associates (TDA) to prepare a limited air quality analysis to focus on emission calculations for the Mission Springs Water District Master Plan Reservoirs project in Desert Hot Springs, California. The project involves two different construction scenarios. The first scenario is site preparation, well drilling, and well development. The second scenario is the installation of a reservoir, booster pump station, and pipeline.

The analysis does not include the emissions associated with existing or expected operations within the project area. Additionally, the analysis does not include an evaluation of whether the proposed project is in federal conformity nor does it include a federal conformity test in compliance with 40 CFR part 93. JECSI has not evaluated whether the proposed project is included in a regional emission analysis or included in any urban airshed model.

This emissions analysis has been broken down into two scenarios: site preparation and reservoir installation (including pipeline installation). The emissions were calculated for each scenario based on the maximum emissions expected per day. Emissions are estimated for each scenario individually, since it is assumed that the scenarios will not be completed concurrently.

Analysis Methodology

URBEMIS 2007 (version 9.2) was used to estimate emissions during the construction project. Both SCAQMD and California Air Resources Board (CARB) use and suggest the use of the URBEMIS 2007 model for developing emission estimates for construction projects. The following activities were evaluated for each scenario: fine grading, foundation installation (reservoir scenario only), and building construction. The project schedule is provided in **Table 1**.

The equipment schedules used for both phases were based on information provided by TDA. URBEMIS 2007 uses OFFROAD2007 model for off-road vehicle emission factors and EMFAC 2007 for on-road vehicle emission factors. EMFAC data files for Riverside County were used for the emissions estimations.

In lieu of entering a detailed construction schedule, the URBEMIS 2007 input file was configured to calculate the emissions based on the maximum emissions per day.

Emissions from grading activities for both scenarios were estimated using an emission factor of 10 pounds per acre-day. No soil is expected to be imported or exported during grading activities for either scenario. It is estimated that the daily acreage to be disturbed during fine site grading activities for both scenarios will not exceed one acre.

Emissions from the delivery of foundation materials during the reservoir and pipeline installation scenario were calculated outside of URBEMIS 2007. The emissions were calculated using an EMFAC 2007 for on-road vehicle emission factors.

Emissions of carbon dioxide from the manufacturing of concrete and steel during the reservoir construction and pipeline installation phase were calculated outside of URBEMIS. The emissions were calculated using estimated quantities of concrete and steel usages provided by TDA and USEPA and GHG Protocol emissions factors.

Mitigation measures implemented during grading activities include the use of soil stabilizers, replacing ground cover in disturbed areas, watering the site up to three times daily, employing a maximum vehicle speed on unpaved roads of 15 mph, and the use of diesel PM filters on the off-road diesel equipment. Mitigation measures during construction activities include the use of diesel PM filters on the off-road diesel equipment.

Output files from URBEMIS 2007 are provided in **Attachment 1**. Supplemental calculations and detailed summary tables are provided in **Attachment 2.**

Emissions Evaluation

SCAQMD publishes screening levels to determine if a project is regionally significant. [1] Additionally, SCAQMD provides guidance on determining localized significance thresholds (LSTs) for a project.[2] SCAQMD provides mass rate LSTs look up tables that are a function of the project location, project size, and sensitive receptor distance. A site size of one acre and a sensitive receptor distance of 25, 50, 100 and 200 meters were used to determine the LSTs for the project.

Unmitigated criteria pollutant emissions from the site preparation scenario are provided in **Table 2**. The emissions from the site preparation scenario exceed the 25 meter LSTs for PM10 and PM2.5. The emissions of VOC, NOx, CO and SOx do not exceed the regional significance thresholds or the LSTs.

Mitigated criteria pollutant emissions from the site preparation phase of the project are provided in **Table 3**. The emissions of criteria pollutants from the site preparation phase do not exceed the regional significance thresholds or the LSTs.

---

[1] CEQA Air Quality Handbook, SCAQMD, April 1993, Section 6.4 Significance thresholds updated October 2006.
[2] Final Localized Significance Threshold Methodology, SCAQMD, June 2003.

Unmitigated criteria pollutant emissions from the reservoir and pipeline installation scenario are provided in **Table 4**. The emissions from the reservoir and pipeline installation scenario exceed the 25 meter LSTs for PM10 and PM2.5. The emissions of VOC, NOx, CO and SOx do not exceed the regional significance thresholds or the LSTs.

Mitigated criteria pollutant emissions from the reservoir and pipeline installation scenario are provided in **Table 5**. The emissions of criteria pollutants from the reservoir and pipeline installation scenario do not exceed the regional significance thresholds or the LSTs.

Please call me or Daren with any comments or questions.

Sincerely,

Peter G. Stein
Vice President

Daren E. Jorgensen
President

http://jesharepoint.jecsi.com/clients/TDOD/Document%20library/Summary%20letter%20for%20URBEMIS%20calculations%20for%20MSWD%20Reservoir%20Project.DOC

Tables

Table 1 - Project Schedule

Scenario	Activity	Duration (days)*
Site Preparation	Fine grading	26
	Building - construction	44
	Total	70
Reservoir and Pipeline Installation	Fine grading	26
	Foundation	11
	Building - construction	224
	Total	261

* Presented as working days

Table 2 - Overall Maximum Unmitigated Daily Construction Emissions for Site Preparation (lbs/day)

Activity	VOC	NOx	CO	SOx	PM10 (Dust)	PM10 (Exh)	PM10 (Total)	PM2.5 (Dust)	PM2.5 (Exh)	PM2.5 (Total)	CO2
Fine grading	5.4	43.96	20.14	0	10.01	2.36	12.36	2.09	2.16	4.26	4,108.48
Building - construction	2.39	22.55	25.61	0.02	0.1	0.81	0.92	0.04	0.75	0.78	46,719.89
Max. Daily Emissions	5.40	43.96	25.61	0.02	10.01	2.36	12.36	2.09	2.16	4.26	46,719.89
Regional significance threshold	**75**	**100**	**550**	**150**	**150**	**150**	**150**	**55**	**55**	**55**	-
Localized significance threshold - 25m	**-**	**220**	**845**	**-**	**4**	**4**	**4**	**3**	**3**	**3**	-
Localized significance threshold - 50m	**-**	**277**	**1,328**	**-**	**13**	**13**	**13**	**5**	**5**	**5**	-
Localized significance threshold - 100m	**-**	**396**	**2,422**	**-**	**35**	**35**	**35**	**10**	**10**	**10**	-
Localized significance threshold - 200m	**-**	**627**	**5,687**	**-**	**80**	**80**	**80**	**24**	**24**	**24**	-

* Localized significance thresholds based on a project size of 1 acre

Table 3 - Overall Maximum Mitigated Daily Construction Emissions for Site Preparation (lbs/day)

Activity	VOC	NOx	CO	SOx	PM10 (Dust)	PM10 (Exh)	PM10 (Total)	PM2.5 (Dust)	PM2.5 (Exh)	PM2.5 (Total)	CO2
Fine grading	5.4	43.96	20.14	0.00	1.65	0.55	2.19	0.343	0.49	0.84	4,108.48
Building - construction	2.39	22.55	25.61	0.02	0.1	0.26	0.37	0.04	0.24	0.27	46,719.89
Max. Daily Emissions	5.40	43.96	25.61	0.02	1.65	0.55	2.19	0.34	0.49	0.84	46,719.89
Regional significance threshold	**75**	**100**	**550**	**150**	**150**	**150**	**150**	**55**	**55**	**55**	-
Localized significance threshold - 25m	**-**	**220**	**845**		**4**	**4**	**4**	**3**	**3**	**3**	-
Localized significance threshold - 50m	**-**	**277**	**1328**		**13**	**13**	**13**	**5**	**5**	**5**	-
Localized significance threshold - 75m	**-**	**396**	**2422**		**35**	**35**	**35**	**10**	**10**	**10**	-
Localized significance threshold - 100m	**-**	**627**	**5,687**	**-**	**80**	**80**	**80**	**24**	**24**	**24**	-

* Localized significance thresholds based on a project size of 1 acre

Table 4 - Overall Maximum Unmitigated Daily Construction Emissions for Reservoir and Pipeline Installation (lbs/day)

Activity	VOC	NOx	CO	SOx	PM10 (Dust)	PM10 (Exh)	PM10 (Total)	PM2.5 (Dust)	PM2.5 (Exh)	PM2.5 (Total)	CO2
Fine grading	6.14	54.03	23.44	0.00	10.01	2.67	12.68	2.09	2.46	4.55	5,772.55
Building - foundation	2.00	18.02	22.04	0.03	0.51	0.73	1.25	0.41	0.68	1.08	3,242.97
Building - construction	1.59	11.89	22.64	0.02	0.10	0.46	0.57	0.04	0.43	0.46	45,079.23
Max. Daily Emissions	6.14	54.03	23.44	0.03	10.01	2.67	12.68	2.09	2.46	4.55	45,079.23
Regional significance threshold	**75**	**100**	**550**	**150**	**150**	**150**	**150**	**55**	**55**	**55**	-
Localized significance threshold - 25m	**-**	**220**	**845**	**-**	**4**	**4**	**4**	**3**	**3**	**3**	-
Localized significance threshold - 50m	**-**	**277**	**1328**	**-**	**13**	**13**	**13**	**5**	**5**	**5**	-
Localized significance threshold - 75m	**-**	**396**	**2422**	**-**	**35**	**35**	**35**	**10**	**10**	**10**	-
Localized significance threshold - 100m	**-**	**627**	**5,687**	**-**	**80**	**80**	**80**	**24**	**24**	**24**	-

* Localized significance thresholds based on a project size of 1 acre

Table 5 - Overall Maximum Mitigated Daily Construction Emissions for Reservoir and Pipeline Installation (lbs/day)

Activity	VOC	NOx	CO	SOx	PM10 (Dust)	PM10 (Exh)	PM10 (Total)	PM2.5 (Dust)	PM2.5 (Exh)	PM2.5 (Total)	CO2
Fine grading	6.14	54.03	23.44	0.00	1.65	0.59	2.24	0.34	0.55	0.89	5,772.55
Building - foundation	2.00	18.02	22.04	0.03	0.51	0.49	1.01	0.41	0.46	0.86	3,242.97
Building - construction	1.59	11.89	22.64	0.02	0.10	0.21	0.32	0.04	0.19	0.22	45,079.23
Max. Daily Emissions	6.14	54.03	23.44	0.03	1.65	0.59	2.24	0.41	0.55	0.89	45,079.23
Regional significance threshold	**75**	**100**	**550**	**150**	**150**	**150**	**150**	**55**	**55**	**55**	-
Localized significance threshold - 25m	**-**	**220**	**845**	**-**	**4**	**4**	**4**	**3**	**3**	**3**	-
Localized significance threshold - 50m	**-**	**277**	**1328**	**-**	**13**	**13**	**13**	**5**	**5**	**5**	-
Localized significance threshold - 75m	**-**	**396**	**2422**	**-**	**35**	**35**	**35**	**10**	**10**	**10**	-
Localized significance threshold - 100m	**-**	**627**	**5,687**	**-**	**80**	**80**	**80**	**24**	**24**	**24**	-

* Localized significance thresholds based on a project size of 1 acre

Attachment 1

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: S:\clients.wdx\tdod\000000\MSWD - Site Preparation.urb9

Project Name: Mission Springs Water District - Master Plan Site Preparation

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2008-1/31/2008 Active Days: 23	5.39	43.97	20.14	0.00	10.01	2.35	12.36	2.09	2.16	4.26	4,108.48
Fine Grading 01/01/2008-02/01/2008	5.39	43.97	20.14	0.00	10.01	2.35	12.36	2.09	2.16	4.26	4,108.48
Fine Grading Dust	0.00	0.00	0.00	0.00	10.00	0.00	10.00	2.09	0.00	2.09	0.00
Fine Grading Off Road Diesel	5.34	43.85	18.28	0.00	0.00	2.35	2.35	0.00	2.16	2.16	3,921.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.11	1.86	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.64
Time Slice 2/1/2008-2/1/2008 Active Days: 1	**7.78**	**66.51**	**45.75**	**0.02**	**10.11**	**3.17**	**13.27**	**2.13**	**2.91**	**5.04**	**8,669.24**
Building 02/01/2008-12/01/2008	2.39	22.54	25.61	0.02	0.10	0.81	0.91	0.03	0.74	0.78	4,560.76
Building Off Road Diesel	1.62	18.82	6.14	0.00	0.00	0.65	0.65	0.00	0.60	0.60	2,380.12
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Fine Grading 01/01/2008-02/01/2008	5.39	43.97	20.14	0.00	10.01	2.35	12.36	2.09	2.16	4.26	4,108.48
Fine Grading Dust	0.00	0.00	0.00	0.00	10.00	0.00	10.00	2.09	0.00	2.09	0.00
Fine Grading Off Road Diesel	5.34	43.85	18.28	0.00	0.00	2.35	2.35	0.00	2.16	2.16	3,921.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.11	1.86	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.64
Time Slice 2/4/2008-12/1/2008 Active Days: 216	2.39	22.54	25.61	0.02	0.10	0.81	0.91	0.03	0.74	0.78	4,560.76
Building 02/01/2008-12/01/2008	2.39	22.54	25.61	0.02	0.10	0.81	0.91	0.03	0.74	0.78	4,560.76
Building Off Road Diesel	1.62	18.82	6.14	0.00	0.00	0.65	0.65	0.00	0.60	0.60	2,380.12
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43

Phase Assumptions

Phase: Fine Grading 1/1/2008 - 2/1/2008 - Type Your Description Here

Total Acres Disturbed: 5

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Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 2/1/2008 - 12/1/2008 - Default Building Construction Description

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: S:\clients.wdx\tdod\000000\MSWD - Site Preparation.urb9

Project Name: Mission Springs Water District - Master Plan Site Preparation

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

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CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2008-1/31/2008 Active Days: 23	5.39	43.97	20.14	0.00	1.65	0.54	2.19	0.35	0.50	0.84	4,108.48
Fine Grading 01/01/2008-02/01/2008	5.39	43.97	20.14	0.00	1.65	0.54	2.19	0.35	0.50	0.84	4,108.48
Fine Grading Dust	0.00	0.00	0.00	0.00	1.64	0.00	1.64	0.34	0.00	0.34	0.00
Fine Grading Off Road Diesel	5.34	43.85	18.28	0.00	0.00	0.54	0.54	0.00	0.49	0.49	3,921.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.11	1.86	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.64
Time Slice 2/1/2008-2/1/2008 Active Days: 1	**7.78**	**66.51**	**45.75**	**0.02**	1.75	0.80	2.56	0.38	0.74	1.12	**8,669.24**
Building 02/01/2008-12/01/2008	2.39	22.54	25.61	0.02	0.10	0.26	0.36	0.03	0.24	0.27	4,560.76
Building Off Road Diesel	1.62	18.82	6.14	0.00	0.00	0.10	0.10	0.00	0.09	0.09	2,380.12
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Fine Grading 01/01/2008-02/01/2008	5.39	43.97	20.14	0.00	1.65	0.54	2.19	0.35	0.50	0.84	4,108.48
Fine Grading Dust	0.00	0.00	0.00	0.00	1.64	0.00	1.64	0.34	0.00	0.34	0.00
Fine Grading Off Road Diesel	5.34	43.85	18.28	0.00	0.00	0.54	0.54	0.00	0.49	0.49	3,921.84
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.11	1.86	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.64
Time Slice 2/4/2008-12/1/2008 Active Days: 216	2.39	22.54	25.61	0.02	0.10	0.26	0.36	0.03	0.24	0.27	4,560.76
Building 02/01/2008-12/01/2008	2.39	22.54	25.61	0.02	0.10	0.26	0.36	0.03	0.24	0.27	4,560.76
Building Off Road Diesel	1.62	18.82	6.14	0.00	0.00	0.10	0.10	0.00	0.09	0.09	2,380.12
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2008 - 2/1/2008 - Type Your Description Here

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

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PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Off Highway Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rollers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 2/1/2008 - 12/1/2008 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

Phase Assumptions

Phase: Fine Grading 1/1/2008 - 2/1/2008 - Type Your Description Here

Total Acres Disturbed: 5

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

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1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 2/1/2008 - 12/1/2008 - Default Building Construction Description

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: S:\clients.wdx\tdod\000000\MSWD - Reservoir Construction.urb9

Project Name: Mission Springs Water District - Master Plan Reservoir Construction and Pipeline Installation

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2008-1/31/2008 Active Days: 23	6.14	54.03	23.44	0.00	10.01	2.67	12.68	2.09	2.46	4.55	5,772.55
Fine Grading 01/01/2008-02/01/2008	6.14	54.03	23.44	0.00	10.01	2.67	12.68	2.09	2.46	4.55	5,772.55
Fine Grading Dust	0.00	0.00	0.00	0.00	10.00	0.00	10.00	2.09	0.00	2.09	0.00
Fine Grading Off Road Diesel	6.06	53.88	20.96	0.00	0.00	2.66	2.66	0.00	2.45	2.45	5,523.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.86
Time Slice 2/1/2008-2/1/2008 Active Days: 1	**7.44**	**63.13**	**42.76**	0.02	**10.09**	**3.00**	**13.10**	**2.12**	**2.76**	**4.88**	**8,173.39**
Building 02/01/2008-02/15/2008	1.30	9.10	19.32	0.02	0.08	0.33	0.41	0.03	0.30	0.33	2,400.84
Building Off Road Diesel	0.75	8.06	2.01	0.00	0.00	0.28	0.28	0.00	0.26	0.26	666.41
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Fine Grading 01/01/2008-02/01/2008	6.14	54.03	23.44	0.00	10.01	2.67	12.68	2.09	2.46	4.55	5,772.55
Fine Grading Dust	0.00	0.00	0.00	0.00	10.00	0.00	10.00	2.09	0.00	2.09	0.00
Fine Grading Off Road Diesel	6.06	53.88	20.96	0.00	0.00	2.66	2.66	0.00	2.45	2.45	5,523.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.86

Time Slice 2/4/2008-2/15/2008 Active Days: 10	2.89	20.99	41.97	**0.04**	0.18	0.80	0.98	0.06	0.73	0.79	5,320.94
Building 02/01/2008-02/15/2008	1.30	9.10	19.32	0.02	0.08	0.33	0.41	0.03	0.30	0.33	2,400.84
Building Off Road Diesel	0.75	8.06	2.01	0.00	0.00	0.28	0.28	0.00	0.26	0.26	666.41
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Building 02/02/2008-12/01/2008	1.58	11.89	22.65	0.02	0.10	0.47	0.57	0.03	0.43	0.46	2,920.10
Building Off Road Diesel	0.82	8.16	3.17	0.00	0.00	0.30	0.30	0.00	0.28	0.28	739.46
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Time Slice 2/18/2008-12/1/2008 Active Days: 206	1.58	11.89	22.65	0.02	0.10	0.47	0.57	0.03	0.43	0.46	2,920.10
Building 02/02/2008-12/01/2008	1.58	11.89	22.65	0.02	0.10	0.47	0.57	0.03	0.43	0.46	2,920.10
Building Off Road Diesel	0.82	8.16	3.17	0.00	0.00	0.30	0.30	0.00	0.28	0.28	739.46
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43

Phase Assumptions

Phase: Fine Grading 1/1/2008 - 2/1/2008 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed: 5

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

2/11/2008 10:24:53 AM

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 2/1/2008 - 2/15/2008 - Foundation

Off-Road Equipment:

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Building Construction 2/2/2008 - 12/1/2008 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: S:\clients.wdx\tdod\000000\MSWD - Reservoir Construction.urb9

Project Name: Mission Springs Water District - Master Plan Reservoir Construction and Pipeline Installation

Project Location: Riverside County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 1/1/2008-1/31/2008 Active Days: 23	6.14	54.03	23.44	0.00	1.66	0.59	2.25	0.35	0.54	0.89	5,772.55
Fine Grading 01/01/2008-02/01/2008	6.14	54.03	23.44	0.00	1.66	0.59	2.25	0.35	0.54	0.89	5,772.55
Fine Grading Dust	0.00	0.00	0.00	0.00	1.64	0.00	1.64	0.34	0.00	0.34	0.00
Fine Grading Off Road Diesel	6.06	53.88	20.96	0.00	0.00	0.58	0.58	0.00	0.54	0.54	5,523.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.86
Time Slice 2/1/2008-2/1/2008 Active Days: 1	**7.44**	**63.13**	**42.76**	0.02	1.74	0.69	2.42	0.38	0.63	1.00	**8,173.39**
Building 02/01/2008-02/15/2008	1.30	9.10	19.32	0.02	0.08	0.10	0.18	0.03	0.08	0.11	2,400.84
Building Off Road Diesel	0.75	8.06	2.01	0.00	0.00	0.04	0.04	0.00	0.04	0.04	666.41
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Fine Grading 01/01/2008-02/01/2008	6.14	54.03	23.44	0.00	1.66	0.59	2.25	0.35	0.54	0.89	5,772.55
Fine Grading Dust	0.00	0.00	0.00	0.00	1.64	0.00	1.64	0.34	0.00	0.34	0.00
Fine Grading Off Road Diesel	6.06	53.88	20.96	0.00	0.00	0.58	0.58	0.00	0.54	0.54	5,523.69
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.86

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Time Slice 2/4/2008-2/15/2008 Active Days: 10	2.89	20.99	41.97	**0.04**	0.18	0.31	0.49	0.06	0.27	0.34	5,320.94
Building 02/01/2008-02/15/2008	1.30	9.10	19.32	0.02	0.08	0.10	0.18	0.03	0.08	0.11	2,400.84
Building Off Road Diesel	0.75	8.06	2.01	0.00	0.00	0.04	0.04	0.00	0.04	0.04	666.41
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Building 02/02/2008-12/01/2008	1.58	11.89	22.65	0.02	0.10	0.21	0.31	0.03	0.19	0.22	2,920.10
Building Off Road Diesel	0.82	8.16	3.17	0.00	0.00	0.05	0.05	0.00	0.04	0.04	739.46
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43
Time Slice 2/18/2008-12/1/2008 Active Days: 206	1.58	11.89	22.65	0.02	0.10	0.21	0.31	0.03	0.19	0.22	2,920.10
Building 02/02/2008-12/01/2008	1.58	11.89	22.65	0.02	0.10	0.21	0.31	0.03	0.19	0.22	2,920.10
Building Off Road Diesel	0.82	8.16	3.17	0.00	0.00	0.05	0.05	0.00	0.04	0.04	739.46
Building Vendor Trips	0.22	2.69	2.16	0.00	0.02	0.11	0.13	0.01	0.10	0.11	446.20
Building Worker Trips	0.55	1.04	17.31	0.02	0.08	0.05	0.14	0.03	0.05	0.07	1,734.43

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2008 - 2/1/2008 - Default Fine Site Grading/Excavation Description

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

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PM10: 85% PM25: 85%

For Off Highway Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rollers, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Forklifts, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Rubber Tired Loaders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 2/1/2008 - 2/15/2008 - Foundation

For Other Material Handling Equipment, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 2/2/2008 - 12/1/2008 - Default Building Construction Description

For Cranes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

Phase Assumptions

Phase: Fine Grading 1/1/2008 - 2/1/2008 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed: 5

Maximum Daily Acreage Disturbed: 1

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rubber Tired Loaders (164 hp) operating at a 0.54 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 2/1/2008 - 2/15/2008 - Foundation

2/11/2008 11:22:39 AM

Off-Road Equipment:

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Building Construction 2/2/2008 - 12/1/2008 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

Attachment 2

Emissions from Deliveries of Concrete

Y = (N)(D)(EF)

where,
Y = Daily emissions of criteria pollutant, lbs/day.
N = Number of trips per day.
D = Distance per trip, miles.
EF = Emission factor for criteria pollutant, lb/mile.

Emissions from On-Road Vehicles During Foundation Phase

Total daily round trips	Miles during trip	Emission factors (lbs/mile)									Emissions (lbs/day)								
		VOC	CO	CO2	NOx	SOx	PM10, tire and brake	PM2.5, tire and brake	PM10, exhaust	PM2.5, exhaust	VOC	CO	CO2	NOx	SOx	PM10, tire and brake	PM2.5, tire and brake	PM10, exhaust	PM2.5, exhaust
5	40	0.00351579	0.01361368	4.21067145	0.04458017	0.00004136	0.00215635	0.00189990	0.00201296	0.00185303	0.703157	2.722735	842.13429	8.916035	0.008272	0.431270	0.379981	0.402592	0.370605

DRAFT - FOR DISCUSSION PURPOSES ONLY

Indirect Emissions of Carbon Dioxide from the Manufacturing of Cement

$$Y = QKPF/d$$

where,

Y = Daily emissions of carbon dioxide, lbs/day.

Q = Quantity of concrete used for construction activities per day, 75 yd^3.

K = density of concrete, 4,075 lb/yd^3.

P = Proportion of cement in concrete, 0.125 lb/lb.

EF = Emission factor for carbon dioxide, 0.97 lb/lbs (CO_2 Emission Profile of the U.S. Cement Industry, Environmental Protection Agency, 2001).

$$Y = (75\ yd^3)(4{,}075\ lb/yd^3)(0.125\ lb/lb)(0.97\ lb/lb) = 37{,}057.03\ lbs/day$$

Indirect Emissions of Carbon Dioxide from the Manufacturing of Steel

$$Y = QFk/d$$

where,

Y = Daily emissions of carbon dioxide, lbs/day.

Q = Quantity of steel used during building activities, 327 tons (per reservoir).

F = Emission factor for carbon dioxide, 1.75 lb/lbs (GHG Protocol, Appendix B).

k = Conversion factor, 2,000 lb/ton.

d = Duration of building activities, 224 days.

$Y = (327 \text{ tons})(2000 \text{ lb/ton})(1.75 \text{ lb/lb})(224 \text{ days})^{-1} = 5{,}102.11 \text{ lbs/day}$

TOM DODSON & ASSOCIATES
2150 N. ARROWHEAD AVENUE
SAN BERNARDINO, CA 92405
TEL (909) 882-3612 • FAX (909) 882-7015
E-MAIL tda@tdaenv.com

MEMORANDUM

May 30, 2008

From: Bill Gatlin

To: Arden Wallum, Mission Springs Water District

Subject: Completion of the Final Program Environmental Impact Report (PEIR) for the **Mission Springs Water District's Comprehensive Water System Master Plan (Water Master Plan) Project**

The Mission Springs Water District (MSWD) has received several comment letters on the Draft PEIR for the proposed Water Master Plan project (SCH#2006071105). If approved and implemented by the MSWD, the proposed Water Master Plan would consist of construction and operation of the water system facilities that the Water Master Plan and the MSWD have determined to be necessary for the MSWD to provide an adequate supply of water to customers of the MSWD over the 25-year planning period of the Water Master Plan. The purpose of the Water Master Plan is to provide the MSWD with a planning tool to determine the type, location, and timing of water system facilities that may be needed over the next 25 years to allow the MSWD meet is requirements to provide an adequate supply of potable water to customers of the MSWD.

The contents of a final EIR are defined in Section 15132 of the State California Environmental Quality Act (CEQA) Guidelines (Section 15132) and include: the Water Master Plan Project Draft PEIR; comments and recommendations received on the Draft PEIR; a list of parties commenting on the Draft PEIR; responses to the comments received on the Draft PEIR; a mitigation monitoring and reporting program (MMRP); a set of facts, findings and statement of overriding considerations (where required); and any other information added by the Lead Agency as part of its decision-making process for the project. This memorandum and the attached responses to comments and the MMRP contained herein constitute a portion of the Final PEIR for this Water Master Plan project.

The following agencies and parties submitted written comments which are addressed in the attached Responses to Comments:

1. Colorado River Board of California
2 Riverside County Flood Control and Water Conservation District
3. CVP Sentinel, LLC
4. Desert Water Agency
5. Wintec Energy, LTD
6. Worden Williams APC
7. U.S. Bureau of Land Management Palm Springs-South Coast Field Office

This memorandum, combined with the Water Master Plan Draft PEIR, the above list of commenters, the attached comment letters and responses, the Mitigation Monitoring and Reporting Program, and other materials in the final record constitute the Final EIR for the MSWD Water Master Plan Project.

After reviewing and responding to all the comments, the Water Master Plan Final PEIR identifies the same potential significant adverse impacts as were forecast in the Draft PEIR. Additionally, after taking into consideration the comments submitted by the above agencies and parties, the data and analysis continue to indicate the potentially significant impacts to the environment, that may result from implementing the proposed project, remain significant after application of mitigation measures and the impact findings remain consistent with that identified in the Water Master Plan Draft PEIR. Because significant adverse environmental impacts were identified, it is necessary to compile a Statement of Overriding Considerations, which is submitted under separate cover for Board of Director consideration.

Do not hesitate to give me a call if you have any questions regarding the enclosed material.

Attachments

cc: Commenters of Draft PEIR

STATE OF CALIFORNIA – THE RESOURCES AGENCY Arnold Schwarzenegger, Governor

COLORADO RIVER BOARD OF CALIFORNIA
770 FAIRMONT AVENUE, SUITE 100
GLENDALE, CA 91203-1068
(818) 500-1625
(818) 543-4685 FAX

Project #: 05-001-W
File Location: Environmental / Comments
Signature/Date: B.K. 4/16/08

April 9, 2008

State Clearinghouse
1400 Tenth Street
P.O. Box 3044
Sacramento, CA 95812-3044

Regarding: Sch# 2006 071 105: Notice of Completion and Environmental Document Transmittal Form for a draft Program Environmental Impact Report (PEIR) for the Water Master Plan Project, Mission Springs Water District, Desert Hot Springs, California

To Whom It May Concern:

1-1 The Colorado River Board of California (CRB) has received a copy of Notice of Completion and Environmental Document Transmittal Form for a draft PEIR for the Water Master Plan Project, Mission Springs Water District, Desert Hot Springs, California. At this juncture, the CRB has determined that it has no comments regarding the proposed project.

If you have any questions, please contact me at (818) 500-1625.

Sincerely,

for

Gerald R. Zimmerman
Executive Director

Responses to Comment Letter #1
Colorado River Board of California

1-1 Your comment is noted.

WARREN D. WILLIAMS
General Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
FAX 951.788.9965
www.floodcontrol.co.riverside.ca.us

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

April 9, 2008

Project #:	05-001-U
File Location:	ENVIRONMENTAL/COMMENTS
Signature/Date:	[signature] 4/14/08

Mr. Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92440

Dear Mr. Gray:

Re: Notice of Availability of a Draft Program Environmental Impact Report for the Comprehensive Water System Master Plan

2-1 This letter is written in response to the Notice of Availability of a Draft Program Environmental Impact Report (DPEIR) for the Comprehensive Water System Master Plan (WSMP). The WSMP identifies the water system improvements that are forecast to be needed to meet anticipated demand for water over the planning period through the year 2025. All the facilities identified in the WSMP are located within the Mission Springs Water District (MSWD) Service Area. The MSWD Service Area includes the city of Desert Hot Springs, portions of the northerly portion of the city of Palm Springs, and unincorporated land in the County of Riverside.

The Riverside County Flood Control and Water Conservation District has no comments at this time.

Thank you for the opportunity to comment on the DPEIR. Please forward any subsequent environmental documents regarding the project to my attention at this office. Any further questions concerning this letter may be referred to Jason Swenson at 951.955.8082 or me at 951.955.1233.

Very truly yours,

[signature]

TERESA TUNG
Senior Civil Engineer

c: TLMA
Attn: David Mares

JDS:mcv
P8\118625

Responses to Comment Letter #2
Riverside County Flood Control and Water Conservation District

2-1 Your comment is noted.

CPV Sentinel, LLC

VIA EMAIL, FACSIMILE AND U.S. MAIL

April 15, 2008

Mission Springs Water District
Attention: Mr. Brent Gray
66575 Second Street
Desert Hot Springs, California 92240

Draft Program Environmental Impact Report for the Mission Springs Water District Water Master Plan (Draft PEIR)

Dear Mr. Gray:

3-1 CPV Sentinel LLC is pleased to have the opportunity to comment on the subject Draft PEIR. The Draft PEIR purports to evaluate the environmental impacts of proposed facilities to meet future water demands placed on the District's potable water supply system.

3-2 Section 5.0 of the PEIR addresses alternatives to the Water Master Plan project. The analysis is very limited in scope, and addresses only one alternative to the project in addition to the No Project Alternative. The Draft PEIR fails to analyze the importation of water as an alternative because, according to the Draft PEIR, Mission Springs Water District does not have the ability to control the importation of water. (Draft PEIR, p. 5-2) We do not believe that this is sufficient justification for failing to analyze this reasonable alternative to the Water Master Plan project. The Draft PEIR itself indicates that it is possible to determine "a reasonable projection of available water based on current and anticipated future conditions." (Draft PEIR, p. 5-2). The alternatives analysis in the Draft PEIR is inadequate and fails to satisfy the minimum requirements of the California Environmental Quality Act. The alternatives analysis should be enhanced, including specific analysis of the importation of water, and re-circulated for public review and comment.

CPV SENTINEL, LLC
55 SECOND STREET
SUITE 525
SAN FRANCISCO, CA 94105

Responses to Comment Letter #3
CPV Sentinel LLC

3-1 You comment is noted.

3-2 The California Environmental Quality Act (CEQA) and the State CEQA Guidelines require an evaluation of feasible/reasonable alternatives to the proposed action. Section 15126(d) indicates that the "discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of not significant..." In this case significant adverse impacts have been identified. The State Guidelines also state that "a range of reasonable alternatives to the project...which could feasibly attain the basic objectives of the project" and "The range of alternatives required in an EIR is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice."

As is the case in most desert regions, the source of available water is limited. The actual statement you paraphrased is "The WMP can only propose(s) use of what is considered a reasonable projection of available water based on current and anticipated future conditions." This is what the WMP and the PEIR did. It made reasonable projections of the maximum amount of water available based on current information and conditions.

The MSWD is a local water purveyor and has very limited options regarding how it obtains its water. At this time, the only source of imported water to the MSWD is State Water Project (SWP) Water. As discussed on page 4-54 of the PEIR, the MSWD is a member of the Desert Water Agency (DWA). The DWA is the State Water Contractor for State Water Project Water. Therefore, MSWD only has access to SWP water proportional share of the allotment to DWA. At this time, unlimited SWP water is not available to the DWA and is not anticipated to be available for some time. The only substantial source of imported water to the DWA is Colorado River Water owned by the Metropolitan Water District of Southern California (MWD). MWD's Colorado River Aqueduct traverses the MSWD service area. To acquire imported water, DWA has entered into an agreement with the Coachella Valley Water District (CVWD) and the MWD to exchange shares of DWA's entitlements to SWP water for Colorado River Water. Therefore, the amount of imported water available to the MSWD is limited to its share of the amount of water available through the water exchange. <u>This is an existing condition that MSWD cannot control</u>. Therefore, because no other reasonable or feasible source of imported water could be identified, the use of additional imported water as an alternative was not considered a reasonable or feasible alternative for evaluation in the PEIR (pgs.5-1 and 5-2).

The MSWD has and will continue to participate in all regional water programs. This is consistent with the statement you noted from Section 4.3-4 of the PEIR that the MSWD will "support and promote to the best of its abilities the continued possibility for maximum recharge." The MSWD will continue to review each proposed regional water supply program to determine the programs benefit to the MSWD and the regional water supply as a whole. The MSWD will support and promote all programs that it determines are in the best interest of MSWD and the region as a whole.

3-2 (cont.)

On page 5-1 of the PEIR, the range of reasonable alternatives to the proposed project's source of water that were considered for this PEIR is evaluated. Essentially, MSWD can use the water available in its area or the District can import water from another area. The Extract Groundwater From Additional Groundwater Sub basins (water available in the project area) was evaluated because it is a reasonable alternative that evaluated the potential to use water from other basins within in the project area. However, this is not imported water, it is water extracted from basins within the MSWD service area.

Based on the current conditions and the data contained in the PEIR, MSWD has determined that the whole range of alternatives that could feasibly attain the basic objectives of the project have been evaluated in the PEIR. No other feasible or reasonable alternative to secure additional sources of imported water can be identified. The MSWD has determined the alternative analysis satisfies the requirements of CEQA and no further evaluation is required.

CPV Sentinel, LLC

Thank you for the opportunity to comment on the Draft PEIR. We look forward to the opportunity to comment on a revised document which addresses these comments and the comments of others.

Sincerely,

Mark Turner
Director

MT/

cc: Mike Carroll, Esq.
Mr. Bob Hren
Mr. Kris Helm
Edward J. Casey, Esq.

COMMENT LETTER #4

DESERT WATER

Desert Water Agency
1200 Gene Autry Trail South
P.O. Box 1710
Palm Springs, CA 92263-1710
Telephone 760 323-4971
Fax 760 325-6505
www.dwa.org

April 15, 2008

Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Subject: **Draft Program Environmental Impact Report**
Mission Springs Water District
Water Master Plan Project
SCH#2006071105

Dear Mr. Gray:

We have reviewed subject report and have the following comments:

4-1 1. You may wish to correct Figure 3-1 (Existing MSWD Water System) with respect to capacity units for Wells 22, 24, 28, 29, and 30 (gpm rather than mg).

4-2 2. You may also wish to correct Table 4.3-2 (Groundwater Budget Summary in Acre-Feet) with respect to inflow to Spreading Basins. Historic measured quantities of water delivered and discharged to the Mission Creek Recharge Basins for groundwater replenishment are as follows:

Year	Quantity (Acre-Feet)
2002	4,733
2003	0
2004	5,564
2005	24,723
2006	19,901
2007	1,011
Total	55,932

Responses to Comment Letter #4
Desert Water Agency

4-1 Your comment is correct. The MSWD will correct this Figure in the Water Master Plan. This revision is clerical in nature and does not have an affect on the analysis contained in the PEIR or the Water Master Plan. The pumping capacity of the 5 wells identified should be stated in gpm, not mg. The analysis and data provided in the Water Master Plan and the PEIR utilized the appropriate volume of water where addressed in these documents.

4-2 Your comment is noted. The data reflect more groundwater recharge at the spreading basins than identified in the Psomas 2007 Report and the PEIR (Table 4.3-2). This table is more informational in nature and intended to show past recharge activity. The actual baseline groundwater elevations used to perform the study were determined by Psomas based on 96 groundwater elevation measurements from 27 wells in the Mission Creek Subbasin. Therefore, the baseline groundwater elevations are actual conditions and were not established using the recharge data shown in Table 4.3-2.

DESERT WATER

Groundwater recharge (unadjusted for Vadose Zone wetting and evaporation due to weather, particularly temperature and wind) has averaged 9,322 acre-feet per year during the six-year period indicated.

Currently, groundwater production within the Mission Creek Subbasin is about 7.5% of the combined groundwater production within the Mission Creek and Whitewater River Subbasins. Current maximum State Water Project water allocations available to the Coachella Valley are 171,100 acre-feet per year. Pursuant to the Settlement Agreement and Addendum thereto dated December 7, 2004 amongst CVWD, DWA, and MSWD, the proportionate share of the maximum annual water allocation allocable to the Mission
4-3 Creek Subbasin, based on proportionate groundwater production, is about 12,800 acre-feet per year. That quantity will increase to slightly more than 14,500 acre-feet per year in 2010 when the maximum annual water allocation of State Water Project water available to the Coachella Valley is increased to 194,100 acre-feet per year.

These maximum annual quantities available for groundwater recharge of the Mission Creek Subbasin are subject to reduced State Water Project deliveries, depending on hydrologic and legal conditions or constraints, among others. The inflow to the Spreading Basins set forth in Table 4.3-7 (Summary of Groundwater Budget) of 15,000 acre-feet per year average for the period 2007 through 2030 is overstated since long term State Water Project deliveries are expected to average about 75% of maximum annual allocations with 100,000 acre-feet thereof being susceptible to further reduction to 35%.

3. In the Impacts Analysis Section, Section 4.3.3.2, among others, the report clearly states that the implementation of the water production programs identified in the Water Master Plan will result in a significant impact on ground water and storage within the Mission Creek Groundwater Subbasin; further, it states that the only method of mitigating such impacts is to substantially increase groundwater replenishment. In the Mitigation Measures Section, Section 4.3.4, the report states that Mission Springs Water District will "support and promote to the best of its abilities the continued possibility for maximum recharge" to the Mission Creek Groundwater Subbasin. The report does not identify any other mitigation measure pertaining directly to the groundwater supply except the continued infiltration and percolation of treated wastewater into the
4-4 groundwater subbasin subject to future uses other than groundwater recharge. Said uses would further exacerbate the groundwater overdraft situation by reducing groundwater recharge.

The report clearly identifies a groundwater overdraft condition within the Mission Creek Subbasin that, with the implementation of the Water Master Plan, will result in further overdraft, causing a "significant adverse impact, both individually and cumulatively". To avoid further, significant overdraft, substantially more imported water will have to be secured and recharged to accommodate growth and attendant growth demands on the Mission Creek Groundwater Subbasin. In order to mitigate such impact, the Mission Springs Water District needs to participate with Desert Water Agency in raising funds to purchase more imported water.

Recently, Desert Water Agency established a Supplemental Imported Water Charge which is levied on new development within its water distribution system service area. The Coachella Valley Water District has established a similar program. These

4-3 Mitigation Measure 4.3-8 and the evaluation provided in Section 4.3 of the PEIR acknowledges that the annual delivery of imported water for recharge is subject to annual allocations based on the water available in a given year. The 15,000 afy of imported water for recharge is based on the historic availability of water to the basin. As noted in Mitigation Measure 4.3-8, the amount of water available for recharge has varied from 0 to about 25,000 afy. According to data provided in the table in your comment 2 above, the average amount of water recharged over the last 3 years has been slightly more than 15,000 afy with the 6-year average being slightly more than 9,000 afy.

As you have stated, it is forecast that the Mission Creek Subbasin allotment will be "slightly more than 14,500 afy in the year 2010". The Water Master Plan and the PEIR provide long term projections for the amount of imported water that will be available for the next 25years. The PEIR acknowledges that the amount of imported water available will vary from year to year but makes the assumption, based on past deliveries and forecast future deliveries, that an average of 15,000 afy will be available over the 25-year planning life of the Water Master Plan. The forecasts regarding the amount of overdraft of the basin and the decline in groundwater levels are not intended to be specific for any given year, but rather reflect an average annual condition over the planning life of the Water Master Plan.

DESERT WATER

programs were established specifically to fund imported water purchases. The charges are levied with other customer water system fees and charges, and they are collected as a condition of water service. As a mitigation measure, Mission Springs Water District could establish a similar program whereby it would levy and collect the Supplemental Imported Water Charge applicable to all development within its jurisdiction within Desert Water Agency and transfer the funds to Desert Water Agency for purchase of additional imported water for groundwater replenishment.

4-4 cont.

To effect such a mitigation measure, Mission Springs Water District and Desert Water Agency should enter into an agreement whereby the two parties arrange for the collection of the Supplemental Imported Water Charge from all development within Mission Springs Water District situated within Desert Water Agency so that all development within Mission Springs Water District pays its fair share of the costs of purchasing supplemental imported water just as development situated within the Desert Water Agency water distribution system service area pays its fair share of the costs of purchasing supplemental imported water. The Supplemental Imported Water Charge should be in force and identical within both the Mission Springs Water District and the Desert Water Agency.

Thank you for the opportunity to comment on subject report. We look forward to entering into an agreement with you for collection of the Supplemental Imported Water Charge from developers. Such collection will allow purchase of additional imported water supplies which in turn will allow continued development, and thus implementation of the Mission Springs Water District Water Master Plan.

Sincerely,

DESERT WATER AGENCY

David K. Luker

David K. Luker
General Manager-Chief Engineer

DKL/jlt

JJLT/CORRESP/LUKER

4-4 The MSWD has and will continue to participate in all regional water programs. This is consistent with the statement you noted from Section 4.3-4 of the PEIR that the MSWD will "support and promote to the best of its abilities the continued possibility for maximum recharge." The MSWD will continue to review each proposed regional water supply program to determine the programs benefit to the MSWD and the regional water supply as a whole. The MSWD will support and promote all programs that it determines are in the best interest of MSWD and the region as a whole.

As for the issue of possible future uses of treated wastewater, no specific uses other than groundwater recharge have been proposed. Certain potential uses have been identified, but such other uses are speculative at this time. However, should other uses be proposed, it is anticipated that the use of reclaimed water would replace the use of groundwater pumped from the basin and actually benefit the basin. Direct use of recycled water provides a one to one replacement of pumped water, while use for recharge results in some unquantifiable losses due to evaporation and saturation of soil above groundwater.

COMMENT LETTER #5

Wintec® Energy, LTD.

April 16, 2008

Mission Springs Water District
Attn: Mr. Brent Gray
66575 Second Street
Desert Hot Springs, California 92240

Re: Comments on Draft Program Environmental Impact Report for the Mission Springs Water District Water Master Plan Project

Dear Mr. Gray:

5-1 These comments on the Draft Program Environmental Impact Report for the Mission Springs Water District Water Master Plan Project are submitted by Wintec Energy, Ltd.; NW Acquisitions, LLC; SGP Company, LLC; Wintec-Edom Hill Development, LLC; San Gorgonio Wind Associates VII, LLC; Palm Energy Properties; a D&E Land Co., LLC; T&F Land Co., LLC; Windmill Tours, Inc.; NFT Parcel C LLC (collectively "Wintec"), which own real property within the boundaries of the Mission Springs Water District.

The EIR Is a Rationalization of a Decision MSWD Has Already Made

5-2 The Draft EIR shows that MSWD does not accept the fundamental purpose of the California Environmental Quality Act. Under CEQA, an agency is supposed to carefully review a final environmental impact report for a proposed project *before* the agency decides whether to approve the project. An agency cannot decide to proceed with a project first, then go through the motions of CEQA compliance. That is exactly what MSWD has done here, as the Draft EIR itself states: "MSWD intends to approve and implement the Water Master Plan." (Page 3-2.) Such predetermination is forbidden. The EIR is a post hoc rationalization of a decision MSWD has already made. Therefore, it violates CEQA.

The Draft EIR Is Outdated

5-3 The entire Draft EIR is seriously outdated. Although issued in 2008, it relies on information from 2004 (and earlier) and repeatedly refers to the year 2005 as the future. (See, for example, section 3.3.3.2, "Future Water Use.") Many events have occurred since 2004 that are crucial to a credible analysis of the Water Master Plan.

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Phone (760) 323-9490 • Fax (760) 323-0488

Responses to Comment Letter #5
WINTEC Energy, Ltd.

5-1 Your comment is noted.

5-2 The Water Master Plan evaluated in the PEIR is the plan the MSWD staff has reviewed and determined to be an appropriate plan to guide the District in planning future water system improvements over the defined planning horizon. It is the plan that District staff is recommending approval of to the MSWD Board of Directors. The District has not approved the project. It is only considering approval of the project. If MSWD was not considering approving the Water Master Plan, it would not have prepared the PEIR. Prior to the Board considering this Plan, MSWD is complying with the requirements of CEQA and evaluating the potential impacts to the environment from implementing the proposed Water Master Plan. After consideration of the whole of the environmental record, the MSWD Board of Directors may adopt the Master Plan and certify the PEIR. No decision on the project has been made and the PEIR is not an after-the-fact rationalization of an approval that has already been made.

5-3 Tables 3-16 and 3-17 of the PEIR identify a total system water demand of about 10,100 afy for the MSWD service area under both the high and baseline-growth scenarios. Actual MSWD water production data for 2005 shows that a systemwide total of about 10,717 af was produced. This includes about 226 af of water produced from the Cabazon Subbasin. The amount of water produced from the Mission Creek Groundwater Subbasin (MCGS) was 10,491 af in 2005 or about 400 af more than forecast in the Water Master Plan for 2005. Tables 3-16 and 3-17 project that in 2010, the MSWD will produce a systemwide total of about 13,800 af under the baseline-growth scenario and about 15,700 af under the high-growth scenario.

Actual water production data for the MSWD system for 2006 identifies a systemwide production of 11,167 of water. Of this, 11,136 af was produced from the MCGS. In 2007, MSWD produced a total of 10,867 af systemwide. Of this, 10,146 af was produced from the MCGS.

The Water Master Plan forecasts that in 2010, the MSWD will produce about 13,800 af districtwide. This would result in an annual average districtwide water production increase of about 740 afy. Using the Water Master Plan water demand forecast of 10,100 af in 2005, the water demand for 2006 would be 10,840 af and 11,580 af in 2007. As can be seen, the actual water production in 2006 of 11,167 exceeded the Water Master Plan forecast of 10,840 af by about 327 af. For 2007, the actual water production of 10,867 af was about 713 af less than the Water Master Plan forecast.

As previously stated, the projections in the Water Master Plan are based on the best available data to anticipate future water demand. Over the 2-year period that the actual data is available to compare with Water Master Plan projections, the total difference in actual water production to demand forecasts was about 386 af less water produced. This amounts to less than a 2% difference between the actual production and the forecast production. This is not considered a significant difference and the data provided in the Water Master Plan and PEIR is considered adequate to forecast the potential impacts of implementing the Water Master Plan.

5-4 The first of these is the collapse of the regional housing market. The effects of this collapse, which will be felt for years if not decades, undermine the population projections that are the stated reason for the very existence of the Water Master Plan. The Draft EIR's project description must be revised to address these facts.

5-5 The second change is the adoption of the Coachella Valley Multiple Species Habitat Conservation Plan. CVAG adopted the MSHCP on September 10, 2007, but the March 2008 Draft EIR repeatedly claims that the Plan has not yet been adopted. As the Draft EIR notes, the MSWD includes seven MSHCP Conservation Areas within its boundaries. The adoption of the MSHCP places much of the land within MSWD's boundaries off-limits to the development the Draft EIR assumes will occur.

Third, the City of Desert Hot Springs has recently decided, contrary to the statements in the Draft EIR, to participate in the MSHCP. The addition of Desert Hot Springs to the MSHCP would be expected to further constrain future development within the City.

5-6 Fourth, MSWD has found uranium in some of its wells, at levels high enough to threaten the continued operation of those wells. This is not mentioned in the Draft EIR. The uranium issue must be addressed in a revised Draft EIR. The revised draft must also discuss whether groundwater depletion--which the Water Master Plan would accelerate--plays a role in the uranium problem.

5-7 The omission of all these facts makes the Draft EIR fundamentally inadequate as an informational document. MSWD must revise and recirculate the Draft EIR to include these and any other material facts that have arisen in the past several years but are not included in the current Draft EIR.

The Draft EIR Does Not Adequately Address the Project's Significant Unavoidable Environmental Impacts

5-8 The Draft EIR acknowledges that implementation of the Water Master Plan would increase the existing groundwater depletion problem, and that the worsening groundwater depletion would in turn significantly affect the survivability of water dependent habitats and the species that rely on that habitat. The Draft EIR concludes that these significant impacts are unavoidable. As others have commented, the Draft EIR does not adequately examine mitigation measures and project alternatives that might avoid or reduce these very serious impacts. It is not adequate to simply announce that MSWD does not have enough information regarding other basins; the EIR must be based on adequate investigation, including geological and hydrological studies of the other basins -- which are, in fact, readily available.

Population and Growth-Inducing Impacts

5-9 The Draft EIR claims that the Water Master Plan would not induce growth because it would simply accommodate growth that is already planned. Even if that were a valid argument under the outdated assumptions used in the Draft EIR, MSWD cannot make this argument under current conditions. Current housing conditions and approval of the MSHCP indicate that the

5-4 The MSWD is obligated to provide a safe, reliable water supply to its customers. The most efficient method of accomplishing this is to anticipate the type of system improvements that will be required to meet the anticipated demand. This is accomplished by utilizing past growth trends and forecast future growth trends in the MSWD service area. The Water Master Plan is a planning tool to be used by MSWD over the next 20+ years to anticipate the water system improvements that could be needed to meet the possible future demand for water in the MSWD service area. The accepted method of making population forecasts is to use past growth trends to forecast future growth in the service area. As stated on pg.3-5 of the PEIR, the Water Master Plan relied on population data from the U.S. Census Bureau and the Southern California Association of Governments to forecast the population growth based on the land uses allowed under the cities of Palm Springs, Desert Hot Springs and the County of Riverside General Plans (pgs. 4-202 and 4-203 of the PEIR).

The Water Master Plan (WMP) also utilized the most recent water usage rates to forecast the future demand for water over the life of the Water Master Plan. The Water Master Plan identified two growth scenarios based on past growth patterns. As with all master plans, it is considered better to over estimate the demand than to underestimate the facilities that may be required to achieve the District's mandate to provide an adequate supply of water to its customers. As stated on pg.4-196 of the PEIR, "Growth in service connections for the Districtwide total has been substantial and accelerating across the District over the past 15 years. It is forecast that the demand for additional service connections will increase dramatically over the next 15 years.

Rates of population growth and water demand increase are unpredictable as many variables contribute to both. The WMP uses the high growth projection scenario to make system recommendations. This is done to ensure that water infrastructure facilities are available to meet demand when needed if growth rates are high. However, as new water facilities are built in response to actual growth and rely on funds from new service connections, the rate of implementation of the WMP system improvements will be controlled by the actual future rate of development. Although the forecast results in a vision of the water system required to serve customers in the buildout year, infrastructure improvements will only be made if and when they are needed to meet actual demand."

Therefore, your comment regarding the effects of the current collapse of the regional housing market "which will be felt for years if not decades" is speculative. No one forecast the intensity of the last housing and population boom. As previously stated, the water system infrastructure proposed by the Water Master Plan will only be constructed when needed. The Water Master Plan allows the MSWD to anticipate and identify the future water system improvements that will be needed to accommodate the actual growth in water demand over the 20-year planning period of the Water Master Plan.

5-5 The CVMSHCP was approved by CVAG and the Coachella Valley Conservation Commission (CVCC) September 10,2008. It was then forwarded to the other participants for consideration. Once approved by all the other participants, the Plan was forwarded to the State and Federal Wildlife agencies to analyze and issue their permits. To date, those Wildlife agencies have not issued permits under the plan and the provisions of the CVMSHCP are not in effect. Additionally, the City of Desert Hot Springs has not joined the Plan at this time. If the City of Desert Hot Springs does decide to participate, a major amendment of the CVMSHCP will be required and the amendment will then be required to go through the same process as the Plan, including public hearings, and be reviewed and approved by every member of the CVCC.

5-5 (cont.)

Because of the uncertainties about the plan, the PEIR was written in a manner that evaluated the project whether or not the plan was in place and whether or not the MSWD became a participating special entity. To only assume the Plan will be in effect was speculative, therefore the PEIR evaluated both potential scenarios. The environmental effects of the project and the mitigation measures provided are applicable to either scenario. It is stated on pg.4-110, "Operation of the wells proposed by the WMP, including the 1400 Zone well, has the potential to substantially lower the depth to groundwater in the MCGS. Based on data provided in this PEIR, this overdraft condition is forecast to adversely affect riparian and wetlands habitat and the mesquite hummocks that rely on the higher groundwater elevations to survive and reproduce. These habitats provide habitat for listed species and control the dispersion of sand within the Coachella Valley. This sand transport also affects the habitat of other listed species. For projects covered by the MSHCP, if adopted, compliance with the terms and conditions of the MSHCP and receipt of authorization as a Covered Activity would be considered adequate to reduce the potential effects of basin overdraft to a less than significant level. For projects not covered by the MSHCP, the available mitigation for overdraft of the MCGS is adequate to reduce or delay the adverse effects of lowering the depth to groundwater on groundwater-sensitive habitats. However, the available mitigation is not adequate to eliminate these indirect, long-term impacts which are forecast to be <u>significant adverse impacts within the MCGS</u>. For biological resources within all other subbasins within the MSWD Service Area, potential impacts are considered <u>less than significant</u>."

Therefore, it is MSWD's opinion that the PEIR adequately evaluates the potential impacts associated with implementation of the Water Master Plan whether or not the CVMSHCP is in effect and whether or not the MSWD participates in the plan. The impact evaluation is valid for all the possible status scenarios of the CVMSHCP.

As for future development, the CVMSHCP does allow for development that is consistent with the plan. That is a determination that will be made on a case-by-case basis as projects are proposed. Therefore, it is not possible to identify the effects of the plan on future development until those projects are proposed. This is particularly true for projects within the City of Desert Hot Springs which is not included in the current Plan being considered for adoption. As previously stated, the projects proposed by the Water Master Plan will only be implemented when needed to meet the demand for water. Therefore, the Water Master Plan identified and the PEIR evaluated what is considered the worst-case scenario for water demand which is consistent with the requirements of CEQA.

5-6 On pg.4-22 of the PEIR, it is stated that natural occurring uranium has been detected in Well 26A and that a treatment unit has been installed at the well to reduce the uranium levels to levels that meet all water quality standards. MSWD samples and analyzes water it produces in compliance with all regulatory requirements. This how the District detected the high uranium levels in Well 26A. Uranium is a common, naturally occurring element in water produced near earthquake faults. It is also easily treatable using standard current treatment technology. The MSWD will continue to monitor the groundwater it produces and take appropriate actions to remediate any contaminants that exceed drinking water standards. This is a State requirement and compliance is mandatory.

5-6 (cont.)

On pg.4-31 of the PEIR, it is stated that "Analysis of water samples from District wells confirms that no substantial change in water quality has occurred over the period of analysis. Therefore, historic data indicate that, while overdraft of the MCGS has resulted in a substantial decline in groundwater elevations, no significant change in the quality of groundwater has occurred."

5-7 Section 15168 of the State CEQA Guidelines provides the following definition and allowed uses of a Program EIR:

"(a) General. A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:
 (1) Geographically,
 (2) As logical parts in the chain of contemplated actions,
 (3) In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
 (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

(b) Advantages. Use of a program EIR can provide the following advantages. The program EIR can:
 (1) Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action.
 (2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis.
 (3) Avoid duplicative reconsideration of basic policy considerations.
 (4) Allow the lead agency to consider broad policy alternatives and programwide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.
 (5) Allow reduction of paperwork.

(c) Use with Later Activities. Subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared.
 (1) If a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration.
 (2) If the agency finds that pursuant to Section 15162, no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, an no new environmental document would be required.
 (3) An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into subsequent actions in the program.
 (4) Where the subsequent activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were covered in the program EIR.
 (5) A program EIR will be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible. With a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required.

Responses to Comment Letter #5 (continued)

5-7 *(cont.)*

(d) Use with Subsequent EIRs and Negative Declarations. A program EIR can be used to simplify the task of preparing environmental documents on later parts of the program. The program EIR can:
  (1) Provide the basis in an initial study for determining whether the later activity may have any significant effects.
  (2) Be incorporated by reference to deal with regional influences, secondary effects, cumulative impacts, broad alternatives, and other factors that apply to the program as a whole.
  (3) Focus an EIR on a subsequent project to permit discussion solely on new effects which had not been considered before.

(e) Notice with Later Activities. When a law other than CEQA requires public notice when the agency later proposes to carry out or approve an activity within the program and to rely on the program EIR for CEQA compliance, the notice for the activity shall include a statement that:
  (1) This activity is within the scope of the program approved earlier, and
  (2) The program EIR adequately describes the activity for the purposes of CEQA."

It is the MSWD's opinion that the draft PEIR is adequate and meets the standards of Section 15168 of the State CEQA Guidelines and that recirculation of the PEIR is not required.

5-8 The California Environmental Quality Act (CEQA) and the State CEQA Guidelines require an evaluation of alternatives to the proposed action. Section 15126(d) indicates that the "discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of not significant..." In this case significant adverse impacts have been identified. The State Guidelines also state that "a range of reasonable alternatives to the project...which could feasibly attain the basic objectives of the project" and "The range of alternatives required in an EIR is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice."

As is the case in most desert regions, the source of available water is limited. The actual statement you paraphrased is "The WMP can only propose(s) use of what is considered a reasonable projection of available water based on current and anticipated future conditions." This is what the WMP and the PEIR did. It made reasonable projections of the amount of water available based on current information and conditions.

The MSWD is a local water purveyor and has very limited options regarding how it obtains its water. At this time, the only source of imported water to the MSWD is State Water Project SWP) Water. As discussed on page 4-54 of the PEIR, the MSWD is a member of the Desert Water Agency (DWA). The DWA is the State Water Contractor for State Water Project Water. Therefore, MSWD only has access to SWP water as its share of the allotment to DWA. At this time, SWP water is not available to the DWA and is not anticipated to be available for some time. The only substantial source of imported water currently available to the DWA is Colorado River Water owned by the Metropolitan Water District of Southern California (MWD). MWD's Colorado River Aqueduct traverses the MSWD service area. To acquire imported water, DWA has entered into an agreement with the Coachella Valley Water District (CVWD) and the MWD to exchange shares of DWA's entitlements to SWP water for Colorado River Water. Therefore, the amount of imported water available to the MSWD is limited to its share of the amount of water available through this water exchange.

Responses to Comment Letter #5 (continued)

5-8 (cont.)

This is an existing condition that MSWD can not control. Therefore, because no other reasonable or feasible source of imported water could be identified, the use of additional imported water was not considered a reasonable alternative for evaluation in the PEIR (pgs.5-1 and 5-2).

On page 5-1 of the PEIR, the range of reasonable alternatives to the proposed project's source of water that were considered for this PEIR is evaluated. Essentially, MSWD can use the water available in its area or it imports water from another area. The Extract Groundwater From Additional Groundwater Sub basins (water available in the project area) was evaluated because it is a reasonable alternative that evaluated the potential to use water from other basins within in the project area. However, this is not imported water, it is water extracted from basins within the MSWD service area.

Based on the current conditions and the data contained in the PEIR, MSWD has determined that all the range of alternatives that could feasibly attain the basic objectives of the project have been evaluated in the PEIR. No other feasible alternatives to secure additional sources of imported water can be identified. The MSWD has determined the alternative analysis satisfies the requirements of CEQA and no further evaluation is required.

Section 5.3 of the PEIR provides an evaluation of the use of other groundwater subbasins to meet the forecast water demand of the MSWD over the planning life of the Water Master Plan. The following evaluation is provided on page 5-13 of the PEIR.

"The extraction of groundwater from other subbasins will reduce the potential individual and cumulative impacts to groundwater associated with the proposed project's contribution to overdraft in MCGS and, possibly reduce its potential for impacts to biological resources along the Banning Fault. The extraction of water from another subbasin using similar facilities (well, reservoir, pump station, etc.) would result in less than significant impacts that are similar to the proposed project for the following issues evaluated: aesthetics; agricultural resources; cultural resources; geology/soils; hazards and hazardous materials; land use/planning; mineral resources; noise; public services; recreation, transportation/traffic and utilities and services systems except for its potential contribution to the forecast increase in demand for electricity within southern California over the planning period of the WMP. The use of other subbasins located at lower elevations and at greater distances from the areas of the District which are forecast to need additional water supplies is anticipated to require additional pumping of water and consequently, the use of additional amounts of electricity. It is, therefore, forecast that the use of other subbasins to provide the water needed to meet future demand would result in the greater usage of electricity and result in the generation of more air pollution, including greenhouse gases (GHG)."

Biological resources are generally similar throughout the MSWD Service Area. Onsite biological resources impacts are forecast to be similar to those which would occur under the WMP. These potential impacts are site specific but considered potentially similar under either alternative selected.

Potential impacts associated with air quality issues would likely be greater than the proposed project due to the need for larger and longer water transmission lines and more energy required to pump the water over greater distances and elevation changes and possibly, the need for a water treatment plant. These impacts, however, are anticipated to remain less than significant.

5-8 (cont.)

Utilizing other groundwater subbasins would reduce overdraft in MCGS but would increase extractions from the other subbasin; the significance of which would be dependent on the ability of the other subbasins to accommodate additional pumping.

The mitigation provided in the PEIR are those measures the MSWD is capable of implementing. The groundwater issues identified and evaluated in the PEIR for the MCGS are regional water supply issues. The MSWD is not the only water provider that utilizes groundwater from the MCGS. As discussed above and in the PEIR, a solution to the forecast overdraft of the MCGS is a regional issue and beyond the ability of the MSWD to resolve. MSWD can not control the amount of water extracted by others nor can it control the amount of water imported into the basin. Therefore, the mitigation provided in the PEIR are the measures the MSWD can implement or can contribute its resources, along with others, to resolve overdraft issues associated with the MCGS.

5-9 This issue was evaluated in depth in Section 4.9 of the PEIR. See comment from pg.4-196 provided in response to comment 5-4 above.

On pg. 4-200 of the PEIR, it is stated "Implementation of the WMP will result in a series of minor, direct physical changes in the environment over a 20 year period by adding pipelines (underground), new wells, reservoirs and pump stations. The WMP does not contain any policies or propose any activities that would directly induce growth; it simply provides infrastructure improvements to provide water for current and future water demand in the study area as a result of implementing the County of Riverside, City of Desert Hot Springs, and City of Palm Springs general plans within the MSWD Service Area." As such, the implementation of the WSMP is consistent with the Southern California Association of Governments (SCAG) and Regional Comprehensive Plan and Guide (RCPG) population forecast and has no potential to modify this forecast in any manner

On pgs. 4-201 and 4-202 of the PEIR, it is stated "To understand the potential effect of the WMP on future growth and growth inducement within the Study Area, it is necessary to understand the role that the WMP will play if it is implemented. The purpose of the WMP is to provide an overall water master plan, tied to specific facilities and management actions, that will provide the MSWD with the infrastructure to adequately serve its current and future customers. The WMP is intended to facilitate supplying water directly to customers and, in fact, MSWD has a legal obligation to supply water (if available) to protect public health and safety. Thus, the Program and its implementation seeks to provide adequate water supplies in support of building-out each underlying jurisdictions' general plan.

In this analysis of future growth and potential growth inducement, it is this document's contention that growth decisions have already been made by local agencies governing land use decisions, and further, that the WMP does not remove any existing constraint on future development. This concept is embodied in policy principles adopted by the Metropolitan Water District of Southern California (MWDSC) Board of Directors and restated as part of the RCPG's Water Resources evaluation for southern California. These policy principles state:

5-9 (cont.)

1. *Water supply is not a reason in and of itself to limit or control growth in California. There are sufficient water resources to accommodate continued population and economic growth through better management, including conservation, voluntary transfers and additional storage and conveyance facilities. Water supply for urban, agricultural and environmental uses will be adequate and reliable.*

2. *Growth management and the allocation and direction of development should be the responsibility of general purpose government. Utilities, including water purveyors, should provide adequate facilities to serve the project growth at the state, regional and local levels.*

3. *For planning and infrastructure purposes, water supply should be treated as a utility not required to be a general purpose government plan element. However, water purveyors at the state, regional and local levels should be members of any proposed infrastructure planning structure to ensure optimum coordination and infrastructure resources investment...*

The net effect of these principles is to define water infrastructure as following, not leading or causing development. The question still remains as to whether the implementation of the WMP causes or accommodates growth and the related environmental impacts caused by the increased population that can occupy the study area in the future. The answer to this question can be found in the land use planning process which now determines the future vision of the region at build-out as defined by general plans for the Study Area and the regional planning documentation which already indicates that adequate water supplies are available to meet this future demand. As noted above, the WMP does not provide an overall increase in availability of water, it provides a management plan to provide infrastructure to utilize the existing water resources available.

The ultimate vision of future growth and development within the project area was established in the governing Study Area general plans, and it is assumed in these general plans that the water supply required to support the population will be in place as growth occurs in the future. The net effect of these general plans is to create a set of expectations regarding future land use and growth that may or may not occur depending upon the actual carrying capacity of the various utility and service resources required to meet future growth. It also seems clear that the established planning process and the overall growth pressures in southern California are the primary causes of future growth, i.e. they induce the actual growth that occurs, and the various utilities, are effectively forced to create urban water management plans that can accommodate such growth, at least within the limits of current or future resources that may be available. As the RCPG analysis of water resources indicates, there are sufficient water resources to meet future demand for the foreseeable future."

5-9 cont. High Growth Scenario projected in the Draft EIR is unlikely to occur--at least absent other factors encouraging high growth. The revised Draft EIR must examine whether the availability of additional water under the Water Master Plan would be such a factor.

Conclusion

5-10 Wintec does not know how, under CEQA, MSWD could cure the fact that it has decided to proceed with the Water Master Plan before having prepared, much less considered, a final environmental impact report. But for the purposes of public information, MSWD must prepare and recirculate a draft EIR that properly describes the project, addresses material facts, and shows a real effort to mitigate or avoid the significant groundwater depletion impacts of the Water Master Plan.

Very Truly Yours,

FW Noble

Frederick W. Noble
President/CEO

5-9 (cont.)

As noted above, the position taken in this document is that the utility planning process is more appropriately playing a passive (accommodating) role, not an active (inducing) role, in future growth that is dictated by local land use plans and the continuing growth of population throughout southern California. If communities within the project area chose to restrict growth and maintain a certain vision of the future as a static or slowly growing entity, the land use planning agencies (cities and counties) had the opportunity during the general planning process to establish such plans. Under such circumstances, the utility providers would have designed their future service plans to accommodate a level of future growth consistent with available resources

In reality, however, responsible water planning agencies, must plan for a level of future growth that appears to match available water resources with forecast growth. Based on this analysis, implementation of the WMP is not considered to be a significant growth inducing action."

Not adopting and implementing the Water Master Plan does not eliminate the potential for growth. Individuals and other public agencies could implement water service facilities needed to accommodate growth. This would result in development of a water system in a piece meal fashion and result in duplications of facilities that are not interconnected or reliable. The master planning of a water system allows for the most efficient method of providing water service to growth allowed within a service area.

5-10 See responses to comments 5-1 and 5-8.

WORDEN WILLIAMS APC
Representing Public Agencies, Private Entities, and Individuals

April 16, 2008

Via Facsimile & U.S. Mail

Brent Gray, Director of Operations
Mission Springs Water District
66575 Second Street
Desert Hot Springs, California 92240

Re: EIR for the Comprehensive Water System Master Plan Project for the Mission Springs Water District

Dear Mr. Gray:

This office represents the Sierra Club and Center for Biological Diversity with regard to certain projects within the Desert Hot Springs area. We have reviewed the Draft Environmental Impact Report ("DEIR") for the above Project, and offer the following comments:

1. The Title And Executive Summary Are Misleading.

6-1 Both the Title and the Executive Summary indicate that the DEIR is a program Environmental Impact Report ("EIR"). (See Title Sheet and DEIR, page 1-1.) Neither disclose that the DEIR is actually project specific for some facilities, including the Vista and Terrace Reservoirs and the 1400 zone well, booster pump and pipeline projects. (DEIR, pages 3-42 to 3-43.) These facilities are considered "priorities" and the environmental effects of constructing and operating these facilities are being evaluated in the DEIR on a site-specific basis. Once the DEIR is certified, Mission Springs Water District ("MSWD") will begin construction of these facilities. (DEIR, page 3-43.) This information was not disclosed in either the Title, or the Executive Summary, and the public may have been misled by the description of the document as programmatic only. The Title and Executive Summary should be revised and the document should be recirculated.

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Responses to Comment Letter #6
Worden Williams

6-1 The projects you have identified are Water Master Plan projects. Evaluations contained in a PEIR are provided to the extent possible for projects identified in master plans. The more detail available for projects, the more detailed the evaluation. When planning for water system improvements over a 25-year period, facilities are identified based on the anticipated time they will be needed. Some of the water facilities identified in the Water Master Plan are not anticipated to be needed for many years. Other facilities are identified based on current or anticipated near term system deficiencies or needs. These are considered priority projects.

In the case of the Terrace and Vista Reservoirs and the 1400 zone well, pump station and pipeline, the District has selected locations for these facilities because the Water Master Plan forecasts a need for these improvements in the near future. Therefore, these projects were evaluated to a greater degree because detailed information on those facilities were available. Section 15168(b)(2) of the State CEQA Guidelines states that use of a PEIR can "ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis." This is applicable to the projects that you have identified. They are Water Master Plan facilities and the cumulative effect of these projects is best evaluated in the PEIR.

These projects are clearly identified and the CEQA process discussed for Water Master Plan projects on pg.3-43 (Project Description) of the PEIR. Each evaluation section of the PEIR clearly identifies and evaluates these specific projects. It is MSWD's determination that neither the Title nor the Executive Summary of the PEIR did not mislead the public nor deprive the public of a meaningful opportunity to comment upon a substantial adverse environmental effect or a feasible way to mitigate or avoid such an effect. Therefore, this issue does not meet the requirements of Section 15088.5 of the State CEQA Guidelines for recirculation of an EIR.

2. The Project Description Is Confusing.

The Project description is confusing to the average reader. For example, on page 3-21, recharge activities on a 60-acre facility are discussed, but on page 3-23, a 190-acre recharge facility is discussed. A reader may be confused into thinking there are two potential recharge programs, when in fact there is only one.

6-2 It is also confusing for the average reader to determine if recharge is or is not considered within the analysis. For each calculation, one wonders if it is with, or without recharge. This is especially true because the DEIR claims on page 3-24 that recharge is not a program proposed by the Water Master Plan ("WMP"). Nevertheless, the Psomas 2007 analysis, which forms the basis for the analysis within the DEIR, relies on 15,000 acre feet of recharge each year. (DEIR, pages 3-22; 4-54 and Psomas 2007 pages 5-6.) The DEIR should be revised to state more clearly what the recharge program is, and that all of the conclusions in the DEIR assume 15,000 acre feet per year of recharge. Finally, because the feasibility of recharge is uncertain, the DEIR must include an assessment of impacts with and without annual recharge.

3. The DEIR Is Missing Important Information.

According to the Project description, the 2005 WMP identified a series of water system improvements which should be implemented to meet future water demands in the service area based on regional and local growth projections, through the year 2025. (DEIR, page 1-2.) These improvements include the installation of new wells, booster pump stations, reservoirs, pipelines, etc. However, the Northwest Area Technical Memorandum prepared by URS in 2007 provides recommendations for adjustments to the current District and WMP's primary pressure zones and identifies system improvements that are forecast to be needed through buildout of the MSWD Service Area around the year 2050. The Northwest Technical Memorandum is to be an Addendum to the WMP. (DEIR, page 1-1.)

6-3 Neither the WMP nor the Northwest Technical Memorandum are provided as appendices to the DEIR. The specific conclusions of the Technical Memorandum are not summarized. This missing information leaves the reader wondering what and why certain improvements are proposed, and why certain improvements are a sudden priority. For example, the DEIR at page 3-35 indicates that there is no deficiency in the 1240 zone storage capacity, and yet the Terrace Reservoir is proposed as a priority for the 1240 zone. The 1400 zone has no supply problem, but a new well is proposed. (DEIR, pages 3-36 and 3-43.) Why are certain capital Improvement plan Improvements proposed for development at this time? Not all improvements scheduled to come on line in 2010 are proposed at this time. (DIER, pages 3-38 to 3-42.) The DEIR should be recirculated with the WMP and the Technical

Responses to Comment Letter #6 (continued)

6-2 The issue of the basin recharge programs relationship to the Water Master Plans is clearly discussed on pgs. 3-23, 3-24, 4-27 and 4-28. The statement on pg.4-54 is a summary of data on these pages. As discussed, the recharge program is an existing, separate program that is implemented by another agency. That agency, the Desert Water Agency (DWA) is a regional water agency and a State Water Project contractor. The recharge program benefits the groundwater basin and all the producers of water from the basin. This includes the MSWD, other agencies, and individuals. Because the water used for recharge is obtained by DWA from the Metropolitan Water District of District of Southern California (MWD) which exchanges State Water Project water for Colorado River water, it is not possible for the recharge program to be controlled by MSWD or included as a project of the Water Master Plan. Again this is clearly stated throughout the PEIR including pg.3-17.

The recharge program has and can continue to be implemented whether or not the Water Master Plan is adopted and implemented. Because basin recharge affects the water in storage in the basin and it is an existing program, it was considered when evaluating the potential effects of implementing the groundwater extraction projects in the Water Master Plan.

Since the recharge basins are existing and not a project in the Water Master Plan, information on the size and location were only provided for informational purposes only. The number, size or exact location are not relative to the Water Master Plan projects. It is only the water recharged that applies to the evaluation of the of the potential effects of implementing the Water Master Plan.

Mitigation Measure 4.3-8 and the evaluation provided in Section 4.3 of the PEIR acknowledges that the annual delivery of imported water for recharge is subject to annual allocations based on the water available in a given year. The 15,000 afy of imported water for recharge is based on the historic availability of water to the basin. As noted in Mitigation Measure 4.3-8, the amount of water available for recharge has varied from 0 to about 25,000 afy. As you have stated, it is forecast that the Mission Creek Subbasin allotment will be "slightly more than 14,500 afy in the year 2010". The Water Master Plan and the PEIR provide long term projections for the amount of imported water that will be available for the next 25 years. The PEIR acknowledges that the amount of imported water available will vary from year to year but makes the assumption, based on past deliveries, that an average of 15,000 afy will be available over the 25-year planning life of the Water Master Plan. The forecasts regarding the amount of overdraft of the basin and the decline in groundwater levels are not intended to be specific for any given year, but rather reflect an average annual condition over the planning life of the Water Master Plan.

This is evident from the recharge data provided by DWA for the MCGS. According to DWA, the MCGS received 24,723 af in 2005, 19,901 af in 2006, and 1,011 af in 2007. The total amount of water recharged for those 3 years was 45,635 af or slightly more than the 15,000 afy average utilized by the Water Master Plan. Over the 6-year history of the recharge basins beginning in 2002, the annual average has been 9,322 afy. These data actually indicate that the forecasts used and the actual delivery of imported water over the last 3 years are the same.

6-2 (cont.)

Again, the Water Master Plan is a long-range planning tool. It is not intended to forecast specific annual recharge quantities, but rather forecast the annual average recharge over the life of the Water Master Plan. Therefore, the evaluation in the PEIR is considered adequate to forecast the potential impacts associated with implementation of the proposed Water Master Plan.

6-3 The data from the documents was summarized and utilized throughout the PEIR and properly referenced. A reader interested in these reports could have requested copies from the District. Further discussion of this issue is provided in response to comment 6-4 below.

6-3 cont. Memorandum as appendices, so that the public can refer to them while reviewing the DEIR and understand the reason for the various improvements.

4. **The Use Of A Program EIR Without Project Specific Analysis Is Inappropriate In This Case.**

6-4 The California Environmental Quality Act ("CEQA") permits the use of Program EIRs for a series of actions that can be characterized as one large project, in order to provide a more exhaustive consideration of effects and alternatives, and to ensure consideration of cumulative impacts that might be slighted in a case by case basis. (CEQA Guideline § 15168.) A Program EIR can allow an agency to consider broad policy alternatives and programmatic mitigation measures. (Id.) Often the degree of specificity for each action in a Program EIR is less because the effects cannot be predicted with accuracy. (CEQA Guideline § 15146.) However, where project specific information is available, it must be included in the EIR. In this instance, Project specific information has been excluded from the DEIR. The DEIR does not analyze the site specific impacts of the various facilities proposed by the WMP, claiming that their location is uncertain. (DEIR, page 1-2.) However, the specific facilities are known with some level of certainty. Only the date in which they will be constructed is uncertain. (DEIR, page 3-37) For example, see page 3-36 which indicates that a 20 year improvement plan has been made, and Figures 3-2 to 3-6 which show the proposed facilities and their locations in 5 year increments. The DEIR should have provided more site specific analysis. Given that the DEIR is not conducting site specific analysis at this time, the DEIR should clearly address what level of analysis will be done in the future. Currently the DEIR does not commit to site specific analysis in the future for each and every proposed facility. (DEIR, page 3-43.) A Program EIR cannot be used as a shield to avoid site specific analysis, and in this case the it is unclear whether site specific analysis will be done at a later date.

5. **The DEIR Fails To Propose Or Commit To Adequate Mitigation For Impacts To Mesquite Dunes.**

6-5 The DEIR clearly indicates that implementation of the WMP will significantly impact the mesquite hummocks along the Banning Fault on an Project specific and cumulative basis. (DEIR, page 4-99; page 4-110.) According to the DEIR, this impact can be discussed more concretely than other impacts in the DEIR. (DEIR, page 4-98.) According to the DEIR, the Psomas model forecasts that, groundwater levels would drop below the depths needed for mesquite hummocks to remain healthy, and that the level will be so low it will severely stress or kill mesquite in all areas of the hummocks by 2016, without adequate mitigation. (DEIR, pages 4-98 to 4-99.) The loss of mesquite hummocks will result in significant impacts to species dependent on the dune habitat, such as southwestern willow flycatcher, least bell's vireo, Coachella Valley round-tailed ground squirrel, Coachella giant sand treader cricket

6-4 Data from the Water Master Plan is provided in the PEIR. This includes a detailed description of all facilities proposed by the Water Master Plan. The Northwest Area Technical Memorandum (NEATM) only recommends adjustments to the existing MSWD pressure zones to accommodate possible, future development should it occur and if the Water Master Plan facilities are constructed. These adjustments are intended to provide a more efficient method of distributing and serving water throughout the MSWD system. This would be accomplished through implementing Water Master Plan projects in a manner that allows for the more efficient transfer of water through the District's pressure zones. No new water facilities are proposed by the NWATM through the planning horizon of 2025 of the Water Master Plan. The NWATM does forecast that certain water system improvements maybe required by build out of the service area in the forecast year of 2050, but not prior to 2025. Any water system improvements proposed by the NWATM in subsequent years would be subject to follow-on project specific environmental evaluation when and if proposed.

The NWATM is considered an Addendum to the Water Master Plan for the purpose of identifying possible revisions to the existing District primary pressure zones. The only data available from the Water Master Plan that is not provided in the PEIR are the Financial Plan and identification of water quality standards in effect at this time. The NWATM contains forecasts of system demands that have resulted in that plan's recommendations relative to adjusting certain District pressure zones to allow for more efficient water service. Copies of these documents are available at the MSWD office. These documents were properly referenced and copies would have been obtained by request to the MSWD at any time. This is consistent with Sections 15150 which allows the incorporation of all or portions of other documents (Water Master Plan and NWATM) when such documents are made available for inspection at a public building or public place. It is MSWD's opinion that incorporating these documents as Appendices to the PEIR is not required by CEQA and have been made available for public review in the manner prescribed by CEQA.

Water systems typically rely on gravity to supply water. To meet the various flow requirements (daily demand, fire flow, etc.), adequate water storage is used to supply the water. This is accomplished by providing adequate storage capacity to meet system requirements. Water is pumped or floated within the system to maintain adequate water supply. In this way, a system does rely solely on its ability to pump water to meet the demand. Once the reservoirs are filled, pumping is only needed to maintain an acceptable amount of water in storage. By maintaining a storage reserve, the system can operate properly by pumping or transferring water within the system. Gravity flow is the most reliable method of supplying water because it does not rely on power or mechanical equipment. The pressure of water served by gravity flow is dependent on the elevation difference between the storage facility and the point at which the water is discharged from the pipes. Standard water supply practices generally attempt to provide water pressure in a municipal system that is between about 40 and 120 pounds per square inch (psi). To accomplish this, reservoirs are constructed in one pressure zone that are intended to serve lower pressure zones. A reservoir located in the 1240 zone would ideally serve water to elevations of about 970 to about 1140. See Table 3-28 of the PEIR. Other elevations can be served either by the use of pressure reducing valves in lower elevations or by pumping water to higher storage facilities. However, the storage facility is identified by the pressure zone within which it is located.

Responses to Comment Letter #6 (continued)

6-4 (cont.)

Your comment regarding the 1400 zone is not correct. On pg.3-35, Table 3-27 and the accompanying comments do identify a water supply deficiency in the 1400 zone. The purpose of the well and pump station is to supply water to the 1400 zone storage facilities.

Capital improvement projects are proposed based on the best planning available. As stated throughout the PEIR, the Water Master Plan is a planning tool for the District to anticipate the type and time future water system improvements will be needed. It is also stated throughout the PEIR that system improvements will only be constructed on an as needed basis. Therefore, certain facilities that were forecast to be needed by 2010 are not specifically proposed at this time. The PEIR requires that future projects that are not specifically identified and located in the PEIR will undergo subsequent site-specific environmental evaluation when and if proposed. Such reviews would be conducted in accordance with Sections 15162 and 15168 of the State CEQA Guidelines.

It is the determination of the MSWD that the PEIR is consistent with the Standards of Adequacy of an EIR described in Section 15151 of the State CEQA guidelines and that the conditions requiring recirculation of the PEIR described in Section 15088.5 do not occur.

On pg.3-43 of the Project Description section of the PEIR, it clearly states that projects for which project specific data is available, project and site specific evaluations are provided because the site and project specific effects can be predicted with accuracy. In this case, the Terrace and Vista reservoirs and the 1400 zone well and pipeline projects have been specifically evaluated. The exact location, type and size of the facilities are known and, the potential effects predicted with accuracy in the PEIR in compliance with Section 15146 of the State CEQA Guidelines. For other projects identified in the Water Master Plan for which specific data on the type, size and location of the facilities has not been determined at this time, these projects have been evaluated to the degree of specificity available at this time. This is also consistent with Section 15146. The degree of specificity of the evaluation is also identified in the individual evaluation sections for the topics evaluated in the PEIR.

The PEIR does commit to specific site analyses for future projects. It is also clearly stated on pg.3-43 that future projects would be evaluated in the context of the findings and mitigation contained in the PEIR. These potential future projects will be evaluated in compliance with Sections 15162 and 15168 of the State CEQA Guidelines. Under this review process, if a specific project is identified as causing a significant impact in one or more of the issue categories addressed in this document or as causing a significant conflict with the adopted plans and policies, then subsequent environmental evaluation must be performed.

The facilities shown on the Figures 3-2 and 3-6 are the possible locations and types of facilities that are considered necessary to implement the goals of the Water Master Plan. These are shown as "blob" locations which the District feels would best serve the goals of the Water Master Plan. These "blobs" cover a general area that includes more area than would necessarily be required for a specific facility. The District does not own the land under the blobs and does not know if the parcels will be available when the projects are considered for implementation. The areas selected are considered the best location to site a particular type of facility, but are not the only possible location. It is possible that a project could be located several hundred feet from the blob when or if it is actually proposed.

6-4 (cont.)

Without a specific site location, it is not possible to provide site-specific evaluations of potential impacts to onsite biological resources, cultural resources, noise effects, visual setting and character and the other topics evaluated in the PEIR. The PEIR does provide evaluations of the potential impacts based on analysis of the topic addressed using available data and the specificity of knowledge of the projects. As previously stated, mitigation is provided that addresses the impacts specifically identified in the evaluations and also provides mitigation that must be implemented when a specific project, including its location, is sufficiently defined to allow a meaningful CEQA evaluation.

It is therefore concluded that this document meets the CEQA criteria for a program EIR and does not shield or avoid site-specific evaluations of future projects.

6-5 Your comment regarding this issue is correct. The issue of artificial watering of the hummocks was considered in the PEIR (pg.4-98). The two sources of water available for artificial watering are imported water and water that is within the basin. As discussed on pg.4-98 of the PEIR, the CVMSHCP addresses the issue of watering the mesquite hummocks. Surface watering creates the potential for invasive weeds and non-native ants that are threats to the aeolian sand communities to become established. Also, due to the root system of the mesquite, surface irrigation is not generally considered an effective method of watering these plants. Therefore, it is the goal of the CVMSHCP to evaluate supplemental subsurface water through an adaptive management plan. However, the CVMSHCP is not in effect and the programs identified in that plan are not adopted at this time.

It should also be noted that the MSWD does not own the property on which the mesquite hummocks are located and that MSWD has no rights to trespass onto the property to surface irrigate the hummocks.

If water from the basin is used to surface irrigate the mesquite, it would divert water from current uses and require production of water to replace that lost to irrigation. This would most likely be in the form of additional pumping groundwater. Without adequate basin recharge, this would increase the amount of water extracted from the basin and potentially affect the depth to groundwater at the hummocks. As discussed in response to comment 6-2 above, water is imported into the Mission Creek Groundwater Sub basin by the DWA. The DWA controls the timing and amount of water recharged based on the availability of imported water. Therefore, the MSWD can not control the timing or amount of imported water that is delivered to the basin. This is a regional concern which is why the proposed CVMSHCP has proposed adaptive management plans for groundwater.

6-5 cont. and the Coachella Valley fringe-toed lizard. (DRI, Page 4-99.). The prediction of die-off in 2016 is based on recharge of 15,000 acre feet per year. If no recharge occurs, or if recharge occurs sporadically, the mesquite may die sooner. The amount of recharge necessary to reduce this impact is estimated to be 9,000 acre feet per year. However, artificial watering of the mesquite dunes, either at the surface or underground, could also mitigate this impact. (DEIR, page 4-98.)

6-6 The DEIR fails to provide adequate mitigation for impacts to mesquite hummocks along Banning Fault, and the species dependent on the habitat, as no commitment is made to provide 9,000 acre feet per year of recharge, or, in the alternative, no commitment is made to provide watering at the mesquite dunes. This is a fundamental flaw of the DEIR. CEQA provides a mandatory duty to mitigate the impacts of a project, if feasible. (*Public Resources Code* §§ 21000; 21002; 21002.1; CEQA Guideline § 15020; *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433; 243 Cal.Rptr. 727.) Even if the impact cannot be reduced to below significance, it must be minimized. (*Id.*) An agency cannot discharge its duties under CEQA. (*City of Marina v. Board of Trustees of California State University* (2006) 39 Cal.4th 341; 46 Cal.Rptr.3d. 355) None of the mitigation measures on pages 4-104 to 4-109 will avoid, minimize or rectify the impact to mesquite dunes from the WMP, as required under CEQA.[1]

The DEIR goes into great detail to explain what the Multiple Species Habitat Conservation Plan ("MSHCP") is proposing with regard to mesquite. (DEIR page 4-98.) However, as disclosed within the DEIR, MSWD has not decided whether it will become a Participating Entity within the MSHCP. (DEIR, page 4-87.) The mitigation measures from the MSHCP are not binding on the MSWD unless it specifically adopts them, and the DEIR does not indicate that they have been adopted. (DEIR, page 104.) The DEIR indicates that the Water Management Plan identifies impacts that can reduce the effects of basin overdraft, but fails to state what these mitigation measures are, and whether they are feasible. (DEIR, page 4-104.) The DEIR fails to identify or make a commitment to any specific mitigation measures that the MSWD will undertake to mitigate the implementation of the WMP, but indicates that the implementable measures are not enough to reduce the impacts to water

[1] The CEQA Guidelines define mitigation in Section 15370 as follows:

> *"Mitigation" includes:*
> *(a) Avoiding the impact altogether by not taking a certain action or parts of an action.*
> *(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.*
> *(c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.*
> *(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action*
> (e) Compensating for the impact by replacing or providing substitute resources or environments.

6-6 The District's inability to provide 9,000 afy or any amount of imported water is clearly described in response to comments 6-2 and 6-5 above. The only feasible source of imported water is that provided by the DWA in its regional water importing program. See response to comment 6-4 and pg.4-98 of the PEIR for further discussion of this and the potential for watering the mesquite hummocks.

On page 4-104 of the PEIR, it is stated that " The following mitigation measures are specific to the MSHCP, however, they are also the mitigation measures which should be implemented if the MSWD does not become a PSE, the Plan is not adopted or the project is not located within the Plan. These measures are written in a manner that is applicable to activities covered by the Plan or those for which individual permits must be obtained from regulatory agencies."

The mitigation measures identified, while identified in the proposed CVMSHCP, are the measures that a project must comply with whether or not it is associated with the proposed CVMSHCP. The CVMSHCP provides complying projects the ability to obtain a streamlined "take permit" or authorization. The CVMSHCP does not reduce the studies and impact evaluations necessary to obtain a permit, it only eliminates the need to negotiate individual permits with the resource agencies. Therefore, the mitigation identified is applicable to all projects whether or not the CVMSHCP is adopted or a project proponent is a participating entity. Mitigation Measures 4.4-1 through 4.4-12 are applicable to all projects regardless of the status of the CVMSHCP. See above statement from pg.4-104 of the PEIR.

Because of the uncertainties of adoption and implementation of the CVMSHCP, the PEIR evaluated the Water Master Plan and identified mitigation measures under two potential scenarios. These are: the CVMSHCP is adopted and the MSWD is a participant; or the MSWD is not a participant in the CVMSHCP. The second scenario would result if the CVMSHCP is not adopted and implemented or if the CVMSHCP is adopted and the MSWD does not participate. Under either of the alternatives, applicable Mitigation Measures 4.4-1 through 4.4-12 must be implemented to obtain a permit under the proposed CVMSHCP. Mitigation Measures 4.4-12 through 4.4-14 would be implemented in addition to Mitigation Measures 4.4-1 through 4.4-11 if the CVMSHCP is not implemented or, if implemented, the MSWD is not a participant in the Plan.

The potential impacts to groundwater resources are evaluated in Section 4.3, Hydrology and Water Quality of the PEIR. As discussed in the PEIR and response to comments 6-2 and 6-4 above, the MSWD does not have the ability to control the timing and amount of water imported into the MCGS. The only feasible measures available to the MSWD are implementation of water conservation measures, the percolation of reclaimed water and support and promotion of groundwater recharge programs. These are provided as Mitigation Measures 4.3-6 through 4.3-8 of the PEIR. The PEIR determined that these measures were not adequate to reduce the potential impacts to the quantity of groundwater in the MCGS to a less than significant level. The PEIR determined that implementation of the Water Master Plan would result in the continued overdraft of the MCGS and that these impacts are unavoidable and both individually and cumulatively significant (pgs.4-60 through 4-63 of the PEIR).

6-6 (cont.)

The evaluations on pages 4-110 and 4-111 of the PEIR clearly state that implementation of the Water Master Plan will result in significant, unavoidable individual and cumulative significant adverse impacts to overdraft of the Mission Creek Groundwater Sub basin. That although mitigation is provided, it is not adequate to reduce this impact to a less than significant level. The PEIR clearly states that the overdraft condition adversely affects riparian and wetland habitats and the mesquite hummocks. which provide habitat for listed species and control the dispersion of sand within the Coachella Valley. This sand transport also affects the habitat of other listed species and these impacts are unavoidable individually and cumulatively significant adverse impacts to biological resources.

The PEIR states that the only potential to reduce these impacts to a less than significant level is that the CVMSHCP be implemented and that the proposed water production projects be identified as a Covered Activity. However, the CVMSHCP is not in effect and there are still questions over whether or not groundwater production projects will be considered Covered Activities.

Based on the above and data provided in the PEIR, it is concluded that the PEIR adequately evaluated the potential impacts to biological resources, including endangered species, associated with implementation of the Water Master Plan and that all feasible mitigation was provided.

dependent habitats to a less than significance. As indicated above, the MSWD has a duty under CEQA to minimize the impact to the maximum extent feasible.

6-6 cont. The MSHCP depends on the mesquite dune habitat as a critical element in providing for the endangered and threatened species mentioned above. If the WMP will result in the destruction of the mesquite dunes, the entire MSHCP may be at jeopardy. The DEIR has failed to address this impact, stating only that the lowering of the groundwater table "would conflict with the goals of the MSHCP if it results in impacts to water dependent habitats." (DEIR, page 4-104.)

The DEIR needs to be revised to identify all feasible mitigation measures to reduce the impact to mesquite dune habitat.

Finally, the DEIR must recognize that the potential impacts resulting from destruction of mesquite will result in harm to endangered species in violation of the State and Federal Endangered Species Acts, particularly if MSWD does not elect to participate in the MHSCP.

6. The DEIR Fails To Adequately Address Global Climate Change Issues.

6-7 The DEIR briefly addressed whether the Project will affect global climate change, and claims that it is impossible to make a definitive determination on the significance of the Project's greenhouse gas emissions on page 4-146. The DEIR then proceeds to do the impossible, and concludes that the impact is not significant on an individual basis, but avoids a conclusion on a cumulative basis. (DEIR, page 4-156 and pages 4-158-159.) Given the stated uncertainty about the significance of the Project's incremental contribution, the DEIR should have concluded that the impacts are, at minimum, cumulatively significant, and imposed mitigation measures to reduce the impact. The DEIR claims that except for the use of more energy efficient equipment, the mitigation measures proposed by the Attorney General are not feasible. (DEIR, page 4-158.) The DEIR claims that mitigation in the form of planting trees is not feasible because the project is in the desert. (Id.) This conclusory statement is not supported by substantial evidence. Given the global nature of the impacts, carbon sequestration that includes the planting of trees need not occur within the desert in order to help mitigate the impact of the project.

In addition, the DEIR failed to address whether global climate change will impact the WMP. Although the science of climate change is still developing, some impacts can be predicted. For example, the snowpack in the Sierra's is disappearing, which will affect the amount of water available through the State Water Project. (See attached from **http://www.climatechoices.org/impacts_water**.) The Intergovernmental Panel on Climate Change projected with "high confidence" that water supplies stored in mountain snowpacks

6-7 California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. The Governor's Office of Planning and Research is in the process of development CEQA significance thresholds for GHG emissions but thresholds have yet to be established. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented.

Statewide, the framework for developing the implementing regulations for AB 32 is underway. Additionally, through the California Climate Registry (CCAR), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e., company or agency owned) and indirect sources (i.e., not agency owned). Direct sources include combustion emissions from on- and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation, manufacturing, and non-company owned mobile sources.

The PEIR states on pg.4-146 under Cumulative Impact that "it is not possible to determine the significance of this project's contribution to GHG emissions and climate change when viewed in the context of CEQA." The South Coast Air Quality Management District (SCAQMD) provides the following definition of significant under CEQA. Significant effect on the environment means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the lead agency involved, based on the extent possible on scientific and factual data. The lead agency shall consider direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment, which may be caused by the project.

This definition relies on subjective determinations without specific guidelines or thresholds of significance. For that reason, standards have been established to identify thresholds of significance under CEQA for measurable effects. Noise standards have been established that provide criteria for determining the significance of a project's contribution to noise. These thresholds are based on studies of noise and its effects on humans and have been established to identify noise levels that are considered potentially health threatening and significant. Standards or thresholds have also been established to determine the significance of new traffic on roads and its contribution to traffic congestion based on roadway level of service. Similar standards or thresholds have been established for most topics evaluated under CEQA.

6-7 (cont.)

As stated on pgs. 4-146,4-158 and 4-159, no guidance has been provided on methods of determining the significance of a project's GHG emissions. At this time, the SCAQMD is working with other agencies to establish thresholds of significance for a project's GHG emissions. Several methods are under evaluation but no definitive method has been recommended or adopted. These thresholds vary and include establishing specific emission level thresholds and unit based thresholds. However, several methods of calculating or determining the thresholds have been identified and none selected. As can be seen, the development of a definitive threshold of significance is in the preliminary planning stages and a final adopted threshold is not expected in the near future.

At this time, the most commonly used method of identifying the significance potential for a project's GHG emissions its carbon emissions to the total statewide carbon emissions. According to the California Greenhouse Gas Inventory issued by the California Energy Commission, gross carbon dioxide emissions for the State were 492.1 million metric tons in 2004. The estimated annual total carbon dioxide emissions (direct and indirect) from construction of Water Master Plan facilities is 5,645 metric tons. Of this 5,645 metric tons, approximately 520 tons are direct emissions and approximately 5,125 metric tons are indirect emissions produced at other locations (cement and steel manufacturing). Carbon Dioxide emissions (direct and indirect) from the Mission Springs Water District project would account for about 0.001% of California's carbon emissions.

As stated above, without specific criteria for determining the significance of an impact, it becomes a subjective determination. It is MSWD's conclusion that without specific guidance on this issue, it was not possible to determine the significance of this project's cumulative contribution to GHG emissions and global warming. However, while a contribution of about 0.001% to the carbon emissions occurring in California is a contribution to the cumulative statewide emissions, the District's subjective view would be that it is not a significant cumulative contribution.

It should also be noted that the above indirect emissions forecast may overstate the actual emissions in that they appear to result in a "double counting" of certain emissions. The indirect emissions for this project are the direct emissions of the plants producing the materials and like wise, their indirect emissions are this project's direct emissions. When summed to provide a total emissions forecast, the actual emissions are counted twice, once for each activity. Therefore, the emissions identified for this project may be considered substantially less than the 0.001% of statewide carbon emissions identified above.

The only real property owned or controlled by the MSWD is that located within its service area. It does not have the ability or the legal right to plant and maintain trees on property it does not own without the permission of the land owner. Absent the present of a carbon sequestration bank or other conservation plan type of mitigation, it is not feasible for MSWD to implement a tree-planting or other mitigation programs beyond those provided in the PEIR.

Again, the maintaining of trees within the MSWD or other areas of southern California would require a substantial amount of water which would require the use of a substantial amount of electricity to pump groundwater to the trees thus increasing the generation of GHG from the production of electricity to supply the irrigation water. Water used for irrigation would be in addition to the water forecast to be needed by the District to serve its customers thus further placing a burden on the available supply of water.

6-7 (cont.)

Your comment that the "science of climate change is still developing" is correct. The actual effects of climate change are not known at this time. The varying forecasts make it speculative as to the actual effects that may occur as a result of the various potential climate change scenarios that are forecast. The Water Master Plan and the PEIR relied on historic data and forecasts by the agencies responsible for providing imported water to establish the data used to forecast the amount of water that will be available for recharge of the MCGS. The Desert Water Agency (DWA) is the contractor for State Water Project water in the MSWD service area. In its comment letter on the PEIR (comment letter #4), DWA states that the quantity of imported water available for recharge will increase to "slightly more than 14,500 afy in 2010 when the maximum annual water allocation of State Water project water is available to the Coachella Valley". The actual amount of water delivered will be based on the actual amount of water that is available. Historically, the amount of water available has fluctuated. In the past 3 years, 45,653 af of water has been delivered for recharge. This equates to an annual average of slightly more than 15,000 afy. However, for the 6-year history of the recharge program, the average has been over 9,000 afy. As can be seen, substantially more water has been delivered in the last 3 years than was delivered in the previous 3 years.

For this reason, the PEIR has stated that the 15,000 afy of imported water used to forecast recharge of the MCGS is an annual average over the life of the Water Master Plan. In some years the amount will be less and in others more water will be available. Since 2002, the first year of deliveries of Colorado River water to the MCGS, the amount of water recharged into the basin has varied from no water in 2003 to 24,723 af in 2005. The forecasts provided in the Water Master Plan and the PEIR are considered long range forecasts which reflect the anticipated average annual delivery of imported water over the life of the Water Master Plan.

As for the testimony of the MSWD Board at the Sentinel Energy Project Hearing on October 7, 2007 regarding a 30% reduction in State Water Project deliveries, the testimony was discussing anticipated water deliveries for a specific year, 2008. It was not representative of the anticipated long-range water deliveries to the MCGS. As can be seen from the historic deliveries identified above, the actual amount of water delivered for recharge can and most likely will vary substantially from year to year depending on the amount of water available. It is MSWD's opinion that the 15,000 afy average deliveries are representative of the amount of water that can be imported into the basin over the life of the Water Master Plan.

such as the Sierra Nevada will decline around the world, reducing water availability in regions supplied by meltwater.[2] Most montane ice fields are predicted to disappear during this century, further exacerbating water shortages in many areas of the world.[3] The IPCC specifically identified the American West as vulnerable, warning, "Projected warming in the western mountains by the mid-21st century is very likely to cause large decreases in snowpack, earlier snow melt, more winter rain events, increased peak winter flows and flooding, and reduced summer flows."[4] These changes would shift available water supplies from summer - when they are most needed by people, agriculture, and ecosystems - to earlier in the year.[5] The IPCC also warned that the results would include "a projected increase in the chance of summer drying in the mid-latitudes," which includes the American West, "with associated increased risk of drought."[6] All in all, the IPCC concluded that in North America, including the fast-growing western United States, "[r]educed water supplies coupled with increases in demand are likely to exacerbate competition for over-allocated water resources."[7]

The U.S. National Assessment water sector report also summarizes similar concerns:

6-7 cont.

> "More than 20 years of research and more than 1,000 peer-reviewed scientific papers have firmly established that a greenhouse warming will alter the supply and demand for water, the quality of water, and the health and functioning of aquatic ecosystems."[8]

In California the Legislature has recognized that greenhouse gas emissions and global warming pose a serious threats to natural resources and the environment of California from the potential adverse reduction in the quality and supply of water to the state from the Sierra snowpack.[9] A dry climate caused by global warming would impose large costs and challenges on California severely affecting the economies of some rural and agricultural

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[2] IPCC 2007, "Summary for Policy Makers," N. Adger et al, in Impacts, Adaptation and Vulnerability.
[3] Epstein, P.R. and E. Mills (eds.). 2005. "Climate change futures health, ecological, and economic dimensions." The Center for Health and the Global Environment, Harvard Medical School. Cambridge, Massachusetts, USA.
[4] IPCC 2007, "Technical Summary," M. Parry et al, in Impacts, Adaptation and Vulnerability, 62.
[5] The Rocky Mountain Climate Organization, NRDC 2008, "Hotter and Drier: The West's Changed Water Supply" S. Saunders et al.
[6] IPCC 2007, "Global Climate Projections," G. Meehl et al, in The Physical Science Basis.
[7] IPCC 2007, "Technical Summary," M. Parry et al, in Impacts, Adaptation and Vulnerability.
[8] Gleick, Peter H., 2000. Water: The Potential Consequences of Climate Variability and Change for the Water Resources of the United States. Report of the Water Sector Assessment Team of the National Assessment of the Potential Consequences of Climate Variability and Change, U.S. Global Change Research Program. Pacific Institute for Studies in Development, Environment, and Security.
[9] Health and Safety Code § 38501(a).

regions of California.[10] There is strong evidence that wildfires, precipitation patterns, and snowmelt are already being influenced by anthropogenic climate change.[11] The recognized environmental impacts in the local and regional vicinity of the Project must be accounted for in the EIR.

The impacts of climate change that must be addressed in water resources planning are varied and far reaching. The most significant impacts of global warming on water management are rising temperatures, increasing proportions of annual precipitation in the form of rainfall, disrupted streamflow timing, altered snowpack conditions, increased evaporation and transpiration, greater risk of fires, and sea level rise.[12] Climate change and variability will affect the timing, amounts, and form of precipitation, in turn, affecting all elements of water systems from watershed catchment areas to reservoirs, conveyance systems, and wastewater treatment plants.[13] These systems are already stressed today due to a multitude of factors including limitations on supply from the Sacramento San Joaquin Delta.[14] Overdraft and contamination of groundwater sources have reduced the availability of groundwater supplies in many areas.[15] Saltwater intrusion in coastal aquifers is a problem in many areas.[16] Climate change has the potential to exacerbate these situations, requiring increased attention from water managers and municipal planners. These factors must be accounted for in the EIR for this Project because the Project relies upon water resources that will be in greater scarcity in the future.

6-7 cont.

The combined threats of Climate Change and population growth pose serious threats to the water supply of the Sierra Nevada.[17] Evidence of warming trends is already being seen in winter temperatures in the Sierra Nevada, which rose by almost 2 degrees Celsius (4 degrees Fahrenheit) during the second half of the 20th century.[18] Trends toward earlier snowmelt and runoff to the San Francisco Bay-Delta over the same period have also been

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[10] California Climate Change Center 2006, "Climate Warming and Water Supply Management in California", J. Medellin et al. University of California, Davis

[11] Westerling, et al. "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity." Sciencexpress, July 6, 2006, p.1, 10.1126, Science, 1128834.

[12] NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

[13] Miller, Kathleen and David Yates, 2005. "Climate Change and Water Resources: A Primer for Municipal Water Providers." AWWA Research Foundation and the University Corporation for Atmospheric Research.

[14] Los Angeles Lawyer 2008, "Delta Blues", Bruce Tepper.

[15] NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

[16] NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

[17] Sierra Nevada Alliance 2003, "Troubled Water of the Sierra", K. Timmer.

[18] NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

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detected.[19] Future changes in snowpack are a great concern because snow levels have been predicted to retreat 500 feet in elevation in California for every rise of one degree Celsius.[20] Under a low emissions scenario Sierra snowpack is reduced 30-70%.[21] Under a higher emissions scenario snowpack would decline 74-90%, with impacts on runoff and streamflow that, combined with projected declines in winter precipitation, could fundamentally disrupt California's water rights system.[22]

A significant body of analysis suggests that total streamflows in the future will be reduced in comparison with historical levels.[23] Analysis by the California Climate Change Center in 2006 found that climate change could lead to significant reductions in total reservoir inflows and total Delta inflows.[24] Approximately two-thirds of model runs revealed likely reductions in total inflows for major northern California reservoirs, with maximum projected reductions of approximately 12 percent.[25]

Sea level rise also creates potentially severe impacts on water supply.[26] For example, for the San Francisco Bay and the Sacramento-San Joaquin River Delta, global warming impacts will compromise ecosystem health, water supply, and water quality.[27]

6–7 cont.

Scientists indicate that climate change will also exacerbate the problem of flooding by increasing the frequency and magnitude of large storms, which in turn will cause an increase in the size and frequency of flood events.[28] The increasing cost of flood damages and potential loss of life will put more pressure on water managers to provide greater flood

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19 Dettinger, Michael D. and Dan R. Cayan, 1994. "Large-scale Atmospheric Forcing of Recent Trends Toward Early Snowmelt Runoff in California." Journal of Climate, 8:606-23.

20 Roos, Maurice, 2005. "Accounting for Climate Change" in California Water Plan Update 2005, Vol. 4, Reference Guide, Public Review Draft, California Department of Water Resources, p.5.

21 Hayhoe, K et al,. 2004. "Emissions pathways, climate change, and impacts on California." *PNAS* 101 no. 34:12422-12427.

22 Hayhoe, K. et al 2004. Emissions pathways, climate change, and impacts on California. *PNAS* 101 no. 34:12422-12427.

23 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

24 California Climate Change Center 2006, "Estimated Impacts of Climate Warming on California Water Availability Under Twelve Future Climate Scenarios" Tingju Zhu et al, University of California, Davis http://www.climatechange.ca.gov/research/impacts/pdfs/CEC-500-2006-040.pdf

25 California Climate Change Center 2006, "Estimated Impacts of Climate Warming on California Water Availability Under Twelve Future Climate Scenarios" Tingju Zhu et al, University of California, Davis http://www.climatechange.ca.gov/research/impacts/pdfs/CEC-500-2006-040.pdf

26 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et al.

27 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

28 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

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protection.[29] At the same time, changing climate conditions (decreased snowpack, earlier runoff, larger peak events, etc.) will make predicting and maximizing water supply more difficult.[30] These changes in hazard risk and water supply availability must be considered during environmental review.

Water quality, in addition to water quantity and timing, will also be impacted. Changes in precipitation, flow, and temperature associated with climate change will likely exacerbate water quality problems.[31] Changes in precipitation affect water quantity, flow rates, and flow timing.[32] Shifting weather patterns are also jeopardizing water quality and quantity in many countries, where groundwater systems are overdrawn.[33] Decreased flows can exacerbate the effect of temperature increases, raise the concentration of pollutants, increase residence time of pollutants, and heighten salinity levels in arid regions.[34]

6-7 cont.

Given the reduction in water available through the Colorado River Aqueduct, it seems likely that there may be no water available for recharge from either the Colorado River or the State Water Project. In fact, the Board of the MSWD testified recently at the Sentinel Energy Project Hearing on October 5, 2007 that a 30% reduction in water is expected. (See attached excerpt of transcript.) A 2007 National Research Council report on Colorado River basin hydrology concluded, over the next 10-40 years, there is a tendency in the results of climate models to forecast slightly decreased annual precipitation in the Southwestern United States by less than ten percent below current values, with relatively

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29 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

30 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

31 NRDC 2007, "In Hot Water: Water Management Strategies to Weather the Effects of Global Warming" Nelson et. al.

32 The following examples are cited in: Gleick, Peter H. et al., 2000. Water: "The Potential Consequences of Climate Variability and Change for the Water Resources of the United States." The report of the Water Sector Assessment Team of the National Assessment of the Potential Consequences of Climate Variability and Change," U.S. Global Change Research Program, Pacific Institute for Studies in Development, Environment, and Security.

33 Epstein, P.R. and E. Mills (eds.). 2005. "Climate change futures health, ecological, and economic dimensions." The Center for Health and the Global Environment, Harvard Medical School. Cambridge, Massachusets, USA.

34 Schindler, D.W., 1997. "Widespread Effects of Climatic Warming on Freshwater Ecosystems in North America." Hydrological Processes, Vol. 11, No. 8, pp.1043-1067. Mulholland et al., 1997. "Effects of Climate Change on Freshwater Ecosystems of the South-eastern United States and the Gulf Coast of Mexico." Hydrological Processes, Vol. 11, pp.949-970.

little change in annual precipitation amounts forecast for the headwaters regions of the Colorado River.[35]

A seminal study by Gleick and Nash of the Colorado River basin demonstrated the crucial role evapotranspiration plays in water availability. The authors concluded that if temperature rose by 4 degree Celsius, precipitation would need to jump by nearly 20 percent to maintain historical runoff levels.[36] In 2007, the National Research Council reached similar conclusions in a review of the science regarding hydrologic variability in the Colorado River basin. The investigation included analyses of historical hydrology and likely future variability, as a result of climate change. The report projects that future reductions in total Colorado River streamflow are likely:

> "This body of research collectively points to a future in which warmer conditions across the Colorado River region are likely to contribute to reductions in snowpack, an earlier peak in spring snowmelt, higher rates of evapotranspiration, reduced late spring and summer flows and a reduction in annual runoff and streamflow."[37]

6-7 cont. The DEIR has failed to address this issue. Currently the analysis in the DEIR is highly dependent on recharge. Psomas assumes at least 15,000 of groundwater recharge per year and found that the amount of future storage capacity was very dependent on the amount of recharge. (Psomas 2007, page 6-1 to 6-2.) No recharge at all would drastically alter the assumptions, and yet the DEIR failed to include a no-recharge scenario, and to analyze the impacts from such a scenario. CEQA's informational purposes are not satisfied by an EIR that simply assumes a solution to the problem of supplying water to a proposed project without presenting sufficient facts to evaluate the pros and cons of supplying the amount of water the project will need. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 430-431.) How much drawdown would occur,

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35 Committee on the Scientific Bases of Colorado River Basin Water Management, February 2007. Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability. National Research Council, p.63.

36 Miller, Kathleen and David Yates, 2005. Climate Change and Water Resources: A Primer for Municipal Water Providers. AWWA Research Foundation and the University Corporation for Atmospheric Research, American Water Works Association, pp.40-41, based on Nash, L. L. and P. H.Gleick,1993. The Colorado River Basin and Climatic Change: The Sensitivity of Streamflow and Water Supply to Variations in Temperature and Precipitation. Report, U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation, Climate Change Division, EPA 230-R-93-009.Oakland,CA: Pacific Institute for Studies in Development, Environment, and Security See also Nash, L.L. and P.H.Gleick, 1991. "The Sensitivity of Streamflow in the Colorado Basin to Climatic Changes." Journal of Hydrology, 125:221-241.

37. Committee on the Scientific Bases of Colorado River Basin Water Management, February 2007. Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability. National Research Council, p.67.

and how low would the water table go? How much energy will be expended to drill deeper, and bring the water to the surface? How will this affect sensitive species? This is precisely the kind of analysis that should be done in a Program EIR.

Conclusion

6-7 cont. The Water System Master Plan Project represents another step down the path leading to the depletion of regional water supplies and loss of fragile ecosystems dependent upon underground aquifers for survival. The continuing harm to mesquite hummocks is dramatic, and without appropriate mitigation measures and alternatives, the end result is likely to be the complete loss of mesquite hummocks and plant and animal species dependent upon the unique and fragile desert ecosystem. The DEIR must recognize this potential impact and include all appropriate analysis, mitigation measures and alternatives to properly mitigate and avoid impacts to mesquite hummocks to the extent feasible. Simply concluding that mesquite hummocks will be lost is not enough. Further, the DEIR must be revised to adequately describe the Project being considered and adequately assess all of its environmental effects, including its contribution to climate change.

6-8 The DEIR should be revised and recirculated for public review. Mitigation measures should be included to reduce impacts to mesquite dunes.

6-9 Thank you for the opportunity to comment on the DEIR for this Project. Please place this office on the mailing list to receive a copy of the Final EIR and any public notices regarding the Project.

Very truly yours,

WORDEN WILLIAMS, APC

D. Wayne Brechtel

D. Wayne Brechtel
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DWB:lg

Enclosures

Responses to Comment Letter #6 (continued)

6-8 Your comment is noted. It is MSWD's opinion that the PEIR does adequately describe and evaluate the projects proposed by the Water Master Plan. The PEIR also contains all the feasible and reasonable mitigation available to the MSWD to reduce potential impacts to biological resources to the greatest extent available to the MSWD. The PEIR has determined that even with implementation of the mitigation available, the impacts to biological resources that are dependent on groundwater in the MCGS will be both individually and cumulatively significant adverse impacts.

6-9 A copy of the Final PEIR will be provided per your request.

California . Northeast

Climate Choices

GLOBAL WARMING IMPACTS

Water managers, hydrologists, and civil engineers warn that global warming could lead to serious water shortages in California. Hear what they have to say in the video, Water Matters.

Video credits

SOLUTIONS
Top Priorities
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- Limiting Offsets
- California Clean Car Discount
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- Tell a Friend
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Resources & Links

IMPACTS · Water

Water shortages—already a problem for California—will likely get much worse if global warming continues unchecked, with consequences for city-dwellers, agriculture, and taxpayers. The chief reason is that much of the state's water supply during the dry spring and summer months comes from snowpack in the Sierra Nevada mountains, which could virtually disappear by the end of the century due to global warming. Meanwhile, demand for water is expected to increase—both because of the hotter climate and population growth.

Shrinking Snowpack

By the end of the century, if global warming emissions continue unabated, statewide annual average temperatures are expected to rise into the higher warming range (8 to 10.5°F). This temperature rise will lead to more precipitation falling as rain instead of snow, and the snow that does fall will melt earlier, thus decreasing the spring snowpack in the Sierra Nevada by as much as 90 percent. This would pose extreme challenges to water managers, hamper hydropower generation, and nearly eliminate skiing and other snow-related recreational activities. However, if global warming emissions are significantly curbed and temperature increases are kept in the lower warming range, the losses in snowpack are expected to be only half as great.

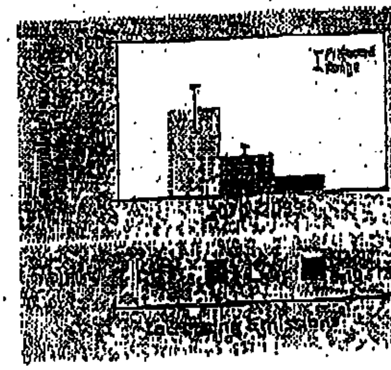
Costly Challenges

As global warming continues, decreasing snowmelt and spring stream flows, coupled with increasing demand for water resulting from a growing population and a hotter climate, will likely lead to more water shortages. By the end of the century, if temperature increases reaches the medium warming range (5.5 to 8°F) and precipitation decreases, spring streamflow could decline up to 20 percent. Agricultural areas are expected to be hard hit, with southern California farmers able to access about 25 percent less water than they need. As a result of increasing temperature and population, residential

GLOBAL WARMING PROJECTIONS

*To learn more about the effects of global warming on California under different emissions scenarios, see the **Impacts Overview**.*

DECREASE IN SIERRA NEVADA SNOWPACK, 2070-2099



*projected range highlights the dual role of precipitation and temperature.
Chart data source: Cayan et al. 2006.

RESOURCES & LINKS

ucsusa.org: Global Warming and California's Water Supply fact sheet. (PDF)

energy.ca.gov: "Climate Change Impacts on Water for Agriculture in California: A Case Study in the Sacramento Valley," California Climate Change Center, 2006. (PDF)

energy.ca.gov: "Climate Warming and

ratepayers and agricultural water customers are also expected to pay more than $600 million more per year for water toward the end of the century than they otherwise would have paid due to normal cost increases.

water supply management in California," California Climate Change Center, 2006. (PDF)

energy.ca.gov: "Predictions of Climate Change Impacts on California Water Resources CALSIM II: A technical note" California Climate Change Center, 2006. (PDF)

Sources

Cayan, D., A. Luers, M. Hanemann, G. Franco, and B. Croes. 2006. *Climate change scenarios for California: An overview.* Sacramento, CA: California Climate Change Center. Online at www.energy.ca.gov/2005publications /CEC-500-2005-186/CEC-500-2005-186-SF.pdf.

Hayhoe, K., D. Cayan, C.B. Field, P.C. Frumhoff, E.P. Maurer, S.C. Moser, S.H. Schneider, K.N. Cahill, E.E. Cleland, L.L. Dale, R. Drapek, W.M. Hanemann, L.S. Kalkstein, J. Lenihan, C.K. Lunch, R.P. Neilson, S.C. Sheridan, and J.H. Verville. 2004. Emissions pathways, climate change, and impacts on California. *Proceedings of the National Academy of Sciences* 101:12422-12427.

Medellin, J., J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, and T. Zhu, 2006. *Climate warming and water supply management in California.* Draft report. Sacramento, CA: California Climate Change Center. Online at www.energy.ca.gov/2005publications /CEC-500-2005-195/CEC-500-2005-195-SD.pdf.

COMMENT LETTER #7

Bill Gatlin

From: Brent Gray [bgray@mswd.org]
Sent: Thursday, April 10, 2008 7:45 AM
To: Bill Gatlin (E-mail)
Subject: FW: PEIR for Mission Springs Water District

-----Original Message-----
From: Greg_Hill@ca.blm.gov [mailto:Greg_Hill@ca.blm.gov]
Sent: Wednesday, April 09, 2008 12:46 PM
To: Brent Gray
Subject: PEIR for Mission Springs Water District

Dear Mr. Gray,
The Bureau of Land Management received the Draft Program Environmental Impact Report (PEIR) for the Mission Springs Water District Water Master Plan. The BLM Palm Springs-South Coast Field Office administers public lands within the boundary of the Mission Springs Water District and the area covered by the Draft PEIR. Most of these public lands are also within the Big Morongo Canyon Area of Critical Environmental Concern (ACEC). During our review of the PEIR, we noticed that these public lands and the ACEC were not shown or described in the document.

7-1 We would like to suggest that these public lands be described under Chapter 4-Environmental Impact Analysis, Section 4.8, Land Use/Planning and under Chapter 6- Cumulative Impacts, Section 6.2.7, Land Use and Planning. We can provide the necessary GIS shape files as needed, and any description of the resources on these public lands and in the ACEC.

Thank you for the opportunity to comment on this environmental document. If you have any questions please give me a call.

Greg Hill
Planning & Environmental Coordinator
BLM Palm Springs-South Coast Field Office
690 West Garnet Ave., PO Box 581260
North Palm Springs, CA 92258
(760) 251-4840

Responses to Comment Letter #7
U.S. Bureau of Land Management

7-1 Thank you for your comment. In reviewing the mapping provided, MSWD has determined that the potential facilities identified in the Water Master Plan which could be located on BLM land are possible future water system improvements that would only be implemented to serve specific developments if they are ever proposed. These developments would occur in the higher elevations of the District and would not be required until specific development is proposed. The location of these improvements is graphic and only intended to show where improvements could be located should development be proposed. These sites were selected based on elevation to show that service to these developments could be provided. Other sites at similar elevations, not located on BLM land are available and will be considered if development requiring such services are proposed. Water system improvements needed for these developments would be the responsibility of the developers and the location of these facilities determined by them, in consultation with the MSWD. These water facilities are not proposed by the Master Plan and only shown to indicate that water service to certain areas of the District is possible.

This figure will be added to the Water Master Plan but not included in the PEIR. It is strictly informational data that can be used in the future to guide development of water facilities should they ever be required. If these system improvement are needed, it will be the developers responsibility to secure the property and construct the facilities. Because these facilities are not proposed by the Water Master Plan, they have no effect on the evaluation provided in the PEIR and do not require specific evaluation.

The figure is attached to this response to your comment and becomes part of the Final PEIR. It is MSWD's determination that no further evaluation of these possible sites and facilities is required in the PEIR.

MISSION SPRINGS WATER DISTRICT
WATER MASTER PLAN PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
The following mitigation measures were taken from the Draft Program Environmental Impact Report.						
Geology and Soils						
4.2-1	A site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Special Publication 117, Guidelines for Evaluation and Mitigating Seismic Hazards in California.	Draft PEIR	As part of the site evaluation for WMP facilities projects.	MSWD	Site evaluations shall be incorporated into the facilities design and construction. Copies of the site evaluations and the design criteria shall be kept in the project file at the District	
4.2-2	If evidence of faulting is identified, a site-specific evaluation shall be conducted in conformance with the California Department of Conservation, Division of Mines and Geology Note 49, Guidelines for Evaluating the Hazard of Surface Fault Rupture. Facility location and design will be adjusted as necessary to provide structural setbacks. Additional measures may include strengthened foundations, other engineering design, and flexible utility connections.	Draft PEIR	As part of the site evaluation for WMP facilities projects. Data contained in the evaluation shall be incorporated into the design and construction of the WMP facilities	MSWD	The engineering design drawings for WMP shall incorporate the recommendations of the site evaluations, including the recommendations of the engineering geologist, the geotechnical reports and the structural engineer. Copies of the drawings and the reports shall be kept in the project file at the District. Verification of compliance shall be provided by construction inspectors. Copies of inspection reports shall be kept in the project file at the District office.	

MISSION SPRINGS WATER DISTRICT
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Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-3	Apply appropriate design and construction criteria to all structures subject to significant seismic groundshaking.	Draft PEIR	The design and construction of WMP facilities shall comply with the recommendations of the engineering geologist, structural engineer and geotechnical studies performed for the site.	MSWD	The engineering design drawings for WMP shall incorporate the recommendations of the site evaluations, including the recommendations of the engineering geologist, the geotechnical reports and the structural engineer. Copies of the drawings and the reports shall be kept in the project file at the District. Verification of compliance shall be provided by construction inspectors. Copies of inspection reports shall be kept in the project file at the District office.	
4.2-4	If evidence of liquefaction is identified, project design mitigation may include: • In-situ densification of susceptible soil. • Ground improvements such as removal and replacement of susceptible soils or dewatering. • Deep foundations designed to accommodate liquefaction. • Shallow foundation design to accommodate vertical and lateral ground displacement.					

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Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-5	Comprehensive geotechnical investigations shall be required prior to engineering and design development or structural and/or substantial rehabilitation of structures identified under Risk Class I & II, e.g., public facilities, as identified below: Risk Class I & II, Structures Critically Needed after Disaster: Structures that are critically needed after a disaster include important utility centers, fire stations, police stations, emergency communication facilities, hospitals, and critical transportation elements such as bridges and overpasses and smaller dams. <u>Acceptable Damage</u>: Minor non-structural; facility should remain operational and safe, or be suitable for quick restoration of service. Risk Class III: High occupancy structures; uses are required after disasters (i.e., places of assembly such as schools and churches). <u>Acceptable Damage</u>: Some impairment of function acceptable; structure needs to remain operational. Risk Class IV, Ordinary Risk Tolerance: The vast majority of structures in urban areas; most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	Draft PEIR	This measure shall be implemented as part of the initial investigation of proposed WMP facilities. The results of the investigation shall be incorporated into the final design and construction of WMP projects.	MSWD	Copies of all investigations, reports, recommendations and construction drawings shall be kept in the project file at the District. The design and construction of the facilities shall include identification of the criteria used based on the project specific technical studies prepared. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-5 (cont.)	Acceptable Damage: An "ordinary" degree of risk should be acceptable. The criteria envisioned by the Structural Engineers Association of California provide the best definition of the "ordinary" level of acceptable risk. These criteria require that buildings be able to: a. Resist minor earthquakes without damage; b. Resist moderate earthquakes without structural damage, but with some non-structural damage; or c. Resist major earthquakes, of the intensity or severity of the strongest experienced in California, without collapse, but with some structural, as well as non-structural damage. Risk Class V, Moderate to High Risk Tolerance: Open space uses, such as farms, ranches and parks without high occupancy structures; warehouses with low intensity employment; and the storing of non-hazardous materials. Acceptable Damage: Not applicable.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-6	All structures previously identified in categories III through V shall be designed in accordance with the applicable multiplier factor seismic design provisions of the Seismic Safety Report to promote safety in the event of an earthquake.	Draft PEIR	This measure shall be implemented as part of the initial investigation of proposed WMP facilities. The results of the investigation shall be incorporated into the final design and construction of WMP projects.	MSWD	Copies of all investigations, reports, recommendations and construction drawings shall be kept in the project file at the District. The design and construction of the facilities shall include identification of the criteria used based on the project specific technical studies prepared. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports shall be kept in the project file at the District.	
4.2-7	The direct impacts of faults upon proposed projects shall be considered during preliminary planning processes, and the engineering design phases.					
4.2-8	All rehabilitation and new development projects implemented as a result of the proposed Project shall be built in accordance with current and applicable Uniform Building Code (UBC) standards and all other applicable laws, regulations and guidelines.					
4.2-9	Utilize silt-fencing, protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).	Draft PEIR	Where applicable, this measure shall be incorporated into the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project and implemented ongoing through construction activities.	MSWD	The District shall review and approve a SWPPP for WMP projects. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports and remediation measures taken shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-10	Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After pipeline installation, soil shall be compacted to a level similar to pre-construction conditions.	Draft PEIR	Where applicable, this measure shall be incorporated into the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project and implemented ongoing through construction activities.	MSWD	The District shall review and approve a SWPPP for WMP projects. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports and remediation measures taken shall be kept in the project file at the District.	
4.2-11	Construct diversion dikes and interceptor ditches to divert water away from construction areas.					
4.2-12	Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.					
4.2-13	Construction of facilities and structures areas with high liquefaction potential shall be limited without further geologic and hazard-related studies conducted by a qualified geologist or geotechnical firm. Such studies will provide guidelines to minimize the risks to humans and to capital-intensive facilities.	Draft PEIR	This measure shall be implemented as part of the initial investigation of proposed WMP facilities. The results of the investigation shall be incorporated into the final design and construction of WMP projects.	MSWD	Copies of all investigations, reports, recommendations and construction drawings shall be kept in the project file at the District. The design and construction of the facilities shall include identification of the criteria used based on the project specific technical studies prepared. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports shall be kept in the project file at the District	

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Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Geology and Soils (continued)						
4.2-14	<u>This mitigation measure was erroneously added to the Draft PEIR and it not applicable to this project.</u>					
4.2-15	Continue to identify and study subsidence hazards and susceptible areas, and propose mitigation technology that is appropriate to the findings of the monitoring study. The implementation of WMP facilities shall not contribute to subsidence conditions in pre-existing subsidence zones. Implementation of the WMP will not cause or contribute to any new, significant subsidence impacts greater than a total of 6 inches in magnitude over the planning period. Impacts less than 6 inches in new areas are considered to be less than significant.	Draft PEIR	This measure shall be implemented on a case by case basis for WMP projects and included in the preliminary evaluation of WMP projects.	MSWD	The District shall continue to monitor subsidence in its service area to determine the location of and extent of subsidence. The results of these monitoring activities including actions taken shall be kept at the District office.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Hydrology and Water Quality						
4.3-1	For each Water Master Plan project construction site, regardless of size, a SWPPP will be prepared and implemented. Each plan shall identify the BMPs that will be used for that site to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality, including solid waste and require that any spills be cleaned up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. At a minimum, BMPs shall achieve a 60 percent removal of sediment and other pollutants.	Draft PEIR	Where applicable, this measure shall be incorporated into the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project and implemented ongoing through construction activities.	MSWD	The District shall review and approve a SWPPP for WMP projects. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports and remediation measures taken shall be kept in the project file at the District.	
4.3-2	Prior to authorizing contracts for drilling wells under the WMP, MSWD will require the well driller to identify all chemicals that will be used at the drilling site and require the submittal of a SWPPP for review and approval before allowing the drilling to commence. The SWPPP shall also address the proper use and disposal of water obtained from well test pumping. A performance bond shall be provided by the driller to ensure that any residual contamination from will drilling can be corrected.	Draft PEIR	This measure shall be incorporated into the Storm Water Pollution Prevention Plan (SWPPP) prepared for the project and implemented ongoing through construction activities.	MSWD	The District shall review and approve a SWPPP for WMP projects. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports and remediation measures taken shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Hydrology and Water Quality (continued)						
4.3-3	If the facilities are constructed in a flood-zone, the facility will be brought to a level above flood hazards, or hardened against flood related impacts. Additionally, if facilities must be located within flood plains or hazard areas, a flood management program to minimize impacts to people and surrounding property shall be created and implemented for each facility that may occur within these hazards areas.	Draft PEIR	This measure shall be implemented as part of the initial investigation of proposed WMP facilities. The results of the investigation shall be incorporated into the final design and construction of WMP projects.	MSWD	Copies of all investigations, reports, recommendations and construction drawings shall be kept in the project file at the District. The design and construction of the facilities shall include identification of the criteria used based on the project specific technical studies prepared. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports shall be kept in the project file at the District	
4.3-4	Prior to implementation of a WMP facility at a specific site, MSWD shall evaluate the potential for the site to contain hazardous substances or wastes.	Draft PEIR	This measure shall be implemented as part of the initial investigation of proposed WMP facilities. The results of the investigation shall be used to determine the acceptability of the site and any measures that must be incorporated into the final design and construction of WMP projects.	MSWD	Copies of all investigations, reports, recommendations and the determinations made relative to the acceptability of the site shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Hydrology and Water Quality (continued)						
	***<u>The following are the mitigation measures contained in the Initial Study</u>*.**					
VII-1	If petroleum products are accidentally released to the environment during any phase of construction, MSWD shall require the area of contamination to be defined; shall require the removal of any contaminated soil or material from the contaminated area; and ensure that any area exposed to accidentally released contaminants are remediated to a threshold that meets regulatory requirements established by law or agencies overseeing the remediation.	Initial Study	Ongoing during construction.	MSWD	Verification shall be provided by District inspectors. Copies of inspection reports including reports detailing any spills and the remediation taken shall be kept in the project file at the District office.	
VII-2	Prior to initiating construction on any future District facility, the District will ensure that the various computer data bases are checked to determine whether any contaminated locations are known to occur within the construction footprint of the facility. If a known location with contamination is identified, the District shall proceed with construction only after conferring with a licensed professional (such as an industrial hygienist) and identifying any specific construction and employee protection measures that will be observed if the contamination is encountered during construction activities. The performance standard shall be the protection of all employees involved in construction from health hazards associated with the type of contamination that may be encountered.	Initial Study	Prior to the start of construction and ongoing during construction.	MSWD	Copies of all investigations, reports, recommendations and construction drawings shall be kept in the project file at the District. The design and construction of the facilities shall include identification of the criteria used based on the project specific technical studies prepared. Verification of compliance shall be provided by construction inspectors. Copies of the inspection reports including any remediation activities taken shall be kept in the project file at the District.	

MISSION SPRINGS WATER DISTRICT
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Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Hydrology and Water Quality (continued)						
4.3-5	Design and construction of WMP facilities shall include the methods of reducing the amount of surface water discharged from the developed sites to as near pre-project conditions as possible. This shall include minimizing hard surfacing and the use of infiltration basin where feasible. This will also serve to improve the quality of water discharged from the developed site.	Draft PEIR	This measure shall be incorporated into the design drawings prepared for WMP projects.	MSWD	The District shall review and approve all construction drawings prepared for WMP projects to verify this measure is implemented to the greatest extent feasible.	
4.3-6	MSWD shall continue to implement water conservation plans provided in the WMP, including public education.	Draft PEIR	Ongoing throughout the life of the WMP.	MSWD	The District shall maintain a record of the water conservation measures under taken and the success of these measures in reducing the amount of water used within the District.	
4.3-7	MSWD shall continue to percolate treated wastewater into the groundwater basin subject to future water reclamation plans and/or projects for the beneficial use of tertiary treated wastewater.	Draft PEIR	Ongoing throughout the life of the WMP.	MSWD	The District shall maintain a record of its investigations into the most efficient and effective use of reclaimed water and the uses implemented.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Hydrology and Water Quality (continued)						
4.3-8	Delivery of recharge water to the MCGS via the recharge basins is subject to annual allocations from the California Department of Water Resources (DWR) administered through Desert Water Agency (DWA) our state contractor and according to an agreement between DWA, Coachella Valley Water District (CVWD), and Metropolitan Water District (MET) for exchange of State Water Project water for Colorado River water. Historically the range of recharge has varied from 0-to 25,000 AFY, with an average close to 15,000 AFY. Based on the historical record, future deliveries are anticipated to be on average 15,000 AFY subject to the availability of actual allocations. MSWD will support and promote to the best of its abilities the continued possibility for maximum recharge to the MCGS available.	Draft PEIR	Ongoing throughout the life of the WMP.	MSWD	The District shall maintain a record of its efforts to support and promote the acquisition and use of imported water to supplement the amount of water available to the MSGS and the District as a whole.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources						
4.4-1	Breeding Habitat in the Whitewater Canyon Conservation Area – Activities will be conducted outside of the March 1 - June 30 reproductive season unless otherwise authorized through a Minor Amendment to the Plan or through authorization by the permitting agency. Activities and projects involving water diversions in arroyo toad habitat are not Covered Activities. Take Authorization for Listed Species requires a Minor Amendment with Wildlife Agency concurrence or permitting agency concurrence if not covered by the Plan. Under the Plan, Wildlife Agencies nonconcurrence with Minor Amendments must occur within 60 days of receipt of a written proposed amendment. If the Wildlife Agencies concur, or if they fail to respond within the 60-day period, the Minor Amendment may be approved.	Draft PEIR	This measure shall be implemented prior to the development of any WMP projects that will be located within the proposed Whitewater Canyon Conservation area.	MSWD	Copies of all investigation, studies and reports including the measures taken to mitigate potential impacts to the breeding habitat shall be kept in the project file at the District.	
4.4-2	Riparian Habitat – Covered Activities, including operation and maintenance (O&M) of facilities and construction of permitted new projects, in riparian Habitat will be conducted to the maximum extent feasible outside of the March 15 - September 15 nesting season for least Bell's vireo, and the May 1 – September 15 nesting season for southwestern willow flycatcher, summer tanager, yellow warbler, and yellow-breasted chat. If Covered Activities must occur during the nesting season,	Draft PEIR	This measure shall be implemented prior to the development of any WMP projects that will be located within riparian habitat.	MSWD	Copies of all investigation, studies and reports including the measures taken to mitigate potential impacts to the riparian habitat shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-2 (cont.)	surveys shall be conducted to determine if any active nests are present. If active nests are identified, the Covered Activity shall not be conducted within 200 feet of an active nest. If surveys conducted during the nesting season document that Covered nesting riparian bird Species are not present, the Covered Activity may proceed.					
4.4-3	<u>Desert Tortoise</u> – Inactive Season Protocol. This protocol is applicable to pre-construction and construction phases of utility Covered Activity projects occurring between November 1 and February 14. These protocols apply only to the site preparation and construction phases of projects. The project proponent must follow the eight pre-construction protocol requirements listed below. These protocol are adequate for projects not covered by the MSHCP which have been determined to have a potential to impact desert tortoise 1. A person from the entity contracting the construction shall act as the contact person with the representative of the appropriate Reserve Management Unit Committee (RMUC.) or the permitting agency. He/she will be responsible for overseeing compliance with the protective stipulations as stated in this protocol.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to desert tortoise shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	2. Prior to any construction activity within the Conservation Areas, the contact person will meet with the representative of the appropriate RMUC or the permitting agency to review the plans for the project. The representative of the appropriate RMUC or the permitting agency shall review the plans and recommend plan modifications to the contact person to further avoid or minimize potential impacts to desert tortoise. 3. The construction area shall be clearly fenced, marked, or flagged at the outer boundaries to define the limits of construction activities. The construction right-of-way shall normally not exceed 50 feet in width for standard pipeline corridors, access roads and transmission corridors, and should be minimized to the maximum extent feasible. Existing access roads should be used to the maximum extent feasible, and rights-of-way for new and existing access roads should normally not exceed 20 feet in width. Other construction areas including well sites, storage tank sites and laydown/ staging sites which require larger areas will be determined in the pre-construction phase. All construction workers shall be instructed that their activities shall be confined to locations within the fenced, flagged, or marked areas.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	4. An Acceptable Biologist shall conduct pre-construction clearance surveys of all areas potentially disturbed by the proposed project. Any winter burrows discovered in the Conservation Areas or on the project site during the pre-construction survey shall be avoided or mitigated. The survey shall be submitted to the representative of the appropriate RMUC or the permitting agency as part of plan review. 5. All site mitigation criteria shall be determined in the pre-construction phase, including but not limited to seeding, barrier fences, leveling, and laydown/ staging areas, and will be reviewed by the representative of the appropriate RMUC or permitting agency prior to the start of construction. 6. A worker education program shall be implemented prior to the onset of each construction project. All construction employees shall be required to read an educational brochure prepared or approved by the representative of the appropriate RMUC and/or the RMOC or the permitting agency and attend a tortoise education class prior to the onset of construction or site entry. The class will describe the sensitive species which maybe found in the area, the purpose of					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	6. (cont.) the MSHCP Reserve System, if applicable, and the appropriate measures to take upon discovery of a sensitive species. It will also cover construction techniques to minimize potential adverse impacts. 7. All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the supervision of an Acceptable Biologist. 8. If there are unresolvable conflicts between the representative of the appropriate RMUC and the contact person, then the matter will be arbitrated by the RMOC and, if necessary, by CVCC or the permitting agency if the project is not covered by the MSHCP. The following terms are established in the MSHCP to protect the desert tortoise during utility-related construction activities in the Conservation Areas and are to be conducted by an Acceptable Biologist. These measures are also applicable to projects not covered by the Plan. 9. An Acceptable Biologist shall oversee construction activities to ensure compliance with the protective stipulations for the desert tortoise.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	10. Desert tortoises found above ground inside the project area during construction shall be moved by an Acceptable Biologist out of harm's way and placed in a winter den (at a distance no greater than 250 feet). If a winter den cannot be located, the USFWS or CDFG shall determine appropriate action with respect to the tortoise. Tortoises found above ground shall be turned over to the Acceptable Biologist. 11. No handling of tortoises will occur when the air temperature at 15 centimeters above ground exceeds 90°F. 12. Desert tortoise burrows shall be avoided to the maximum extent feasible. An Acceptable Biologist shall excavate any burrows which cannot be avoided and will be disturbed by construction. Burrow excavation shall be conducted with the use of hand tools only, unless the Acceptable Biologist determines that the burrow is not occupied. Active Season Protocol. This protocol is applicable to pre-construction and construction phases of utility development projects occurring between February 15 and November 1. It is identical to the Inactive Season Protocol with the following additions:					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	13. Work areas shall be inspected for desert tortoises within 24 hours of the onset of construction. To facilitate implementation of this condition, burrow inspection and excavation may begin no more than 7 days in advance of construction activities, as long as a final check for desert tortoises is conducted at the time of construction. 14. All pre-construction activities which could Take tortoises in any manner (e.g., driving off an established road, clearing vegetation, etc.) shall occur under the overall supervision of an Acceptable Biologist. Any hazards to tortoises created by this activity, such as drill holes, open trenches, pits, other excavations, or any steep-sided depressions, shall be checked three times a day for desert tortoises. These hazards shall be eliminated each day prior to the work crew leaving the site, which may include installing a barrier that will preclude entry by tortoises. Open trenches, pits or other excavations will be backfilled within 72 hours, whenever possible. A 3:1 slope shall be left at the end of every open trench to allow trapped desert tortoises to escape. Trenches not backfilled within 72 hours shall have a barrier installed around them to preclude					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	14. (cont.) entry by desert tortoises. All trenches, pits, or other excavations shall be inspected for tortoises by a biological monitor trained and approved by the Acceptable Biologist prior to filling. 15. If a desert tortoise is found, the biological monitor shall notify the Acceptable Biologist who will remove the animal as soon as possible. 16. Only burrows within the limits of clearing and surface disturbance shall be excavated. Burrows outside these limits, but at risk from accidental crushing, shall be protected by the placement of deterrent barrier fencing between the burrow and the construction area. The barrier fence shall be at least 20 feet long and shall be installed to direct the tortoise leaving the burrow away from the construction area. Installation and removal of such barrier fencing shall be under the direction and supervision of the biological monitor. 17. If blasting is necessary for construction, all tortoises shall be removed from burrows within 100 feet of the blast area.					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-3 (cont.)	Disposition of Sick, Injured, or Dead Specimens. Upon locating dead, injured, or sick desert tortoises under any utility or road project, initial notification by the contact representative or Acceptable Biologist must be made to the USFWS or CDFG within 3 working days of its finding. Written notification must be made within 5 calendar days with the following information: date; time; location of the carcass; photograph of the carcass; and any other pertinent information. Care must be taken in handling sick or injured animals to ensure effective treatment and care. Injured animals shall be taken care of by the Acceptable Biologist or an appropriately trained veterinarian. Should any treated tortoises survive, USFWS or CDFG should be contacted regarding the final disposition of the animals.					
4.4-4	Burrowing Owl – Prior to construction, the project area and adjacent areas within 500 feet of the site, or to the edge of the property if less than 500 feet, will be surveyed by an Acceptable Biologist for burrows that could be used by burrowing owl. If a burrow is located, the biologist will determine if it is occupied and if so a 160 foot buffer during the non-breeding season, 250 feet during the breeding season, or a buffer to the edge of the property boundary if less than 500 feet will be established around the burrow. The buffer will be staked and flagged. No construction or O&M activities will be permitted within the buffer	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to burrowing owl shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-4 (cont.)	until the young are no longer dependent on the burrow. If the burrow is unoccupied, it will be made inaccessible to owls, and the project may proceed. If the biologist determines that a burrowing owl is in the burrow, but the burrow is not an active nest site, owls shall be relocated pursuant to accepted Wildlife Agency protocols. A burrow is assumed occupied if records indicate that, based on protocol surveys, at least one burrowing owl has been observed occupying a burrow on site during the past three years. If there are no records for the site, surveys must be conducted to determine, prior to construction, if burrowing owls are present.					
4.4-5	<u>Le Conte's Thrasher</u> – In modeled Le Conte's thrasher Habitat in all the Conservation Areas, during the nesting season, January 15 - June 15, prior to the start of construction activities, surveys will be conducted by an Acceptable Biologist on the construction site and within 500 feet of the construction site, or to the property boundary if less than 500 feet. If nesting Le Conte's thrashers are found, a 500 foot buffer, or to the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to Le Conte's Thrasher shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-6	<u>Crissal Thrasher</u> – In modeled Crissal Thrasher Habitat in the Willow Hole Conservation Area, surveys will be conducted by an Acceptable Biologist prior to the start of construction activities during the nesting season, January 15 - June 15, to determine if active nest sites for this species occur on the construction site and/or within 500 feet of the construction site, or to the edge of the property boundary if less than 500 feet. If nesting Crissal Thrashers are found, a 500-foot buffer, or a buffer to the edge of the property boundary if less than 500 feet, will be established around the nest site. The buffer will be staked and flagged. No construction activities will be permitted within the buffer during the breeding season of January 15 - June 15 or until the young have fledged. The MSHCP also calls for evaluating the impacts of groundwater management on mesquite areas, which are important habitat for crissal thrasher, to determine if the water sources for this habitat are adequately protected or if additional water sources may be needed.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to Crissal Thrasher shall be kept in the project file at the District.	
4.4-7	<u>Triple-ribbed milkvetch</u> – For Covered Activities within modeled triple-ribbed milkvetch habitat in the Whitewater Canyon, Whitewater Floodplain and Upper Mission Creek/Big Morongo Canyon Conservation Areas, surveys by an Acceptable Biologist will be required for activities during the growing and flowering period from February 1 - May 15.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to Triple-ribbed milkvetch shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-7 (cont.	Any occurrences of the species will be flagged and public infrastructure projects shall avoid impacts to the plants to the maximum extent feasible. In particular, known occurrences shown on a map maintained by CVCC shall not be disturbed.					
4.4-8	Essential Ecological Process Fluvial Sand Transport Areas – Development in Essential Ecological Process fluvial sand transport areas shall not obstruct natural watercourses, and the rate of flow and sediment transport shall not be impeded. Salvage of top soil and/or seeds conducted by or in cooperation with the CVCC should occur prior to ground disturbance. To ensure maintenance of the habitat for the Little San Bernardino Mountains linanthus, the potential for periodic and unpredictable flooding to rework stream channels and channel sediments, and create shallow terraces along the wash bottom must be maintained.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to fluvial sand transport areas shall be kept in the project file at the District.	
4.4-9	Palm Springs pocket mouse – Clearing: For construction that would involve disturbance to Palm Springs pocket mouse habitat, activity should be phased to the extent feasible and practicable so that suitable habitat islands are no farther than 300 feet apart at any given time to allow pocket mice to disperse between habitat patches across nonsuitable habitat (i.e., unvegetated and/or compacted soils).	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies, reports and permits including the measures taken to mitigate potential impacts to Palm Springs pocket mouse shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-9 (cont.)	Prior to project construction, a biological monitor familiar with this species should assist construction crews in planning access routes to avoid impacts to occupied habitat as much as feasible (i.e., placement of preferred routes on project plans and incorporation of methods to avoid as much suitable habitat/soil disturbance as possible). Furthermore, during construction activities, the biological monitor will ensure that connected, naturally vegetated areas with sandy soils and typical native vegetation remain intact to the extent feasible and practicable. Finally, construction that involves clearing of habitat should be avoided during the peak breeding season (approximately March to May), and activity should be limited as much as possible during the rest of the breeding season (January to February and June to August). Revegetation: Clearing of vegetation (e.g., creosote, rabbitbrush, burrobush, cheesebush) should include revegetation resulting in habitat types of equal or superior biological value for Palm Springs pocket mouse. Trapping/Holding: All trapping activity should be conducted in accordance with accepted protocols and by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California.					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-9 (cont.)	Translocation: Should translocation between distinct population groups be necessary, as determined through the Adaptive Management and Monitoring Program, activity should be conducted by a qualified biologist who possesses a Memorandum of Understanding with CDFG for live-trapping of heteromyid species in Southern California. Trapping and subsequent translocation activity should be conducted in accordance with accepted protocols. Translocation programs should be coordinated by or conducted by the CVCC and/or RMOC to determine the appropriate trapping, holding, marking, and handling methods and potential translocation sites.					
4.4-10	<u>Sand Transport</u> – Activities within designated sand transport areas will be conducted in a manner to maintain the sand transport capacity of the system. The permit requires that natural flows onto parcels in the fluvial sand transport areas shall be conveyed offsite in the natural pre-disturbance direction of flow and floodwaters shall not be artificially retained onsite. Concentration of flows and increase in flow velocity offsite shall be minimized to avoid downstream erosion and scour. Alternatively, a flood control structure for the area that is designed to ensure no net reduction of sediment transport from the sand source area to the sand deposition area where aeolian sand transport processes are active may be used to achieve the Conservation Objective of fluvial sand transport.	Draft PEIR	This measure shall be implemented prior to the development of WMP projects.	MSWD	Copies of all investigation, studies and reports including the measures taken to mitigate potential impacts to sand transport shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-11	The CVCC will require monitoring programs to detect and address substantial lowering of the water table. Should monitoring detect a substantial lowering or a decline in mesquite health, the following actions are required by the Plan Implementing Agreement. • Evaluate the results of the monitoring. • Prepare a damage assessment report. • Develop Feasible measures to ameliorate the effects of substantial lowering of the water table on mesquite hummocks and associated Covered Species. • Implement measures through Adaptive Management. This measure is specific to the MSHCP and the participants in the Plan. However, this measure is intended to provided mitigation, to the greatest extent achievable , for potential impacts associated with the lowering of groundwater. Therefore, this measure should be considered and implemented to the greatest extent feasible by projects not included in the MSHCP.	Draft PEIR	This measure shall be implemented on an ongoing basis throughout the life of the WMP should the CVMSHCP be implemented.	MSWD in cooperation with the CVCC.	Copies of all investigation, studies and reports including the measures taken to mitigate potential impacts associated with the lowering of groundwater and its effects on mesquite hummocks shall be kept in the project file at the District.	
4.4-12	State Fish and Game Code Section 3503 prohibits the take, possession or destruction of any bird nests. All construction activities should be limited to the non-nesting seasons or the site surveyed for the presence of nests prior to the start of activities that would disturb the nests. If nests are encountered during the survey, appropriate measures shall be	Draft PEIR	Prior to the start of construction or other land disturbance activities.	MSWD	Copies of all investigation, studies and reports including the measures taken to mitigate potential impacts to bird nests and comply with state law shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-12 (cont.)	identified and implemented to prevent the disturbance of any nests or the occupants during construction activities.					
4.4-13	When necessary, the MSWD shall negotiate and secure Streambed Alteration Agreements and/or a Section 2081 Take permits from the California Department of Fish and Game (CDFG) for activities associate with the WMP that are under the jurisdiction of the CDFG and not covered by the proposed MSHCP, if adopted. The MSWD shall provide replacement habitat for disturbances to native habitat and species under the jurisdiction of the CDFG at a 3:1 ratio. This is deemed adequate mitigation for potential impacts to riparian habitat and potential impacts to listed species. If negotiations with the CDFG results in greater compensatory mitigation, MSWD shall accept the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as with the U.S. Army Corps of Engineers.	Draft PEIR	Prior to the start of any land disturbance activities within CDFG jurisdictional streambeds or activities that require permitting under Section 2081 of the State Fish and Game Code that are not covered by the CVMSHCP if adopted and implemented.	MSWD	Copies of the Agreements and permits secured for implementation of WMP projects shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Biological Resources (continued)						
4.4-14	When necessary, the MSWD shall negotiate and secure a Section 404 permit from the U.S. Army Corps of Engineers (COE) for potential impacts to "waters of the United States". If federally listed species are involved, the COE must consult with the U.S. Fish and Wildlife Service (USFWS) and obtain an incidental take permit from USFWS. This measure is applicable to projects not covered by the proposed MSHCP if adopted. The MSWD shall provide replacement habitat at a ratio of 3:1 . This is deemed adequate mitigation for potential impacts to "waters of the United States" and potential impacts to listed species. If the negotiations with COE results in greater compensatory mitigation, MSWD shall accept the negotiated mitigation. This mitigation ratio may include areas designated as replacement habitat under other negotiations such as those with the CDFG.	Draft PEIR	Prior to the start of any land disturbance activities within COE jurisdictional " waters" or wetlands including activities that require an incidental take permit from the US Fish and Wildlife Service that are not covered by the CVMSHCP if adopted and implemented.	MSWD	Copies of the permits secured for implementation of WMP projects shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources						
4.5-1	Inventory: A required basic archaeological inventory should encompass the following guidelines: a. Literature and Records Search - Existing maps, site reports, site records, and previous EIRs in the region of the subject area should be researched to identify known archaeological sites and works completed in the region. All maps, EIRs, historical maps and documents, and site records should be cited in text and references. Local historical societies and Native American tribes should also be contacted and referenced. State Information Centers will provide the bulk of this information. The Eastern Information Center at UC Riverside should be contacted. b. Field Reconnaissance - Conduct a surface survey to obtain comprehensive examination of current status of the area and gather general understanding of the kinds of cultural and related phenomena present. At a minimum, all ground surfaces chosen for survey should be walked over in such a way that every foot of ground can be visually scanned. All previously recorded cultural resources should be revisited to determine their current status, and all newly discovered sites should be recorded on either State	Draft PEIR	Prior to the start of land disturbance activities on land not previously evaluated for cultural resources.	MSWD	A report detailing the results of the literature and records search including recommendations for additional investigations shall be kept in the project file at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-1 (cont.)	b. (cont.) Form 422 or 523 and supplements, as appropriate. Trinomial designations will be obtained from the Eastern Information Center. For the inventory process, a compilation of all historical resources, including archaeological and historic resources older than 50 years, using appropriate State record forms, following guidelines in the California Office of Historic Preservation's handbook should be completed for all new discoveries. Two copies of the report shall be submitted to the Eastern Information Center for the assignment of trinomials. c. Report - A technical report should be prepared which fully describes both the methods and results of all efforts. Research sources should be listed, and the information summarized. The field work should be presented in detail, with all appropriate maps and graphics. Any areas not inspected with full intensity should be specified, preferably using clear, easily understood maps, and the reasons for the deficiency presented. Site records should be prepared for all new discoveries, and amendments prepared to update old records where necessary; since locational data are shielded from public access, the actual forms should be provided in the separable appendix, but the sites should be described in the main text. Each resource description should					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-1 (cont.)	c. (cont.) include a professional opinion of significance, with reference to the qualities or research potential which make it worthy of further consideration. Archaeological sites which need test excavation to confirm significance, integrity, and boundaries should be identified, and a sampling program recommended. For each potentially significant cultural resource, possible impacts should be listed and mitigating measures developed. All standards for compliance with the CEQA requirements and those of the lead agencies should be addressed					
4.5-2	Assessment: Properties shall be evaluated using a well-understood cultural context that describes the cultural development of an area and identifies the significant patterns that properties represent. This same historic context is used to organize all identification, registration, and preservation decisions within the planning framework. To be useful in subsequent stages of the planning process, evaluation decisions must make clear the significance of the property with the historic context. Potential preservation treatments should not influence the evaluation of significance (National Park Service n.d.:35).	Draft PEIR	Prior to the start of land disturbance activities.	MSWD	Copies of the cultural resources investigations reports which detail the results of the surveys and the mitigation required shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-2 (cont.)	The nature and type of assessment will depend on the particular resource(s) and level of information for a particular region. Consequently, it is not possible to prescribe specific methods to be utilized. However, there are certain basic elements that should be included and are as follows: a. Preparation of a Research Design - Archaeological documentation can be carried out only after defining explicit goals and a methodology for reaching them. The goals of the documentation effort directly reflect the goals of the preservation plan and the specific needs identified for the relevant historic contexts. b. Field Studies - The implementation of the research design in the field must be flexible enough to accommodate the discovery of new or unexpected data classes or properties, or changing field conditions. An important consideration in choosing methods to be used in the field studies should be assuring full, clear, and accurate description of all field operations and observations, including excavation and recording techniques and stratigraphic or inter-site relationships.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-2 (cont.)	c. Report - The assessment report should evaluate the significance and integrity of all historical resources within the project area, using criteria established in Appendix K of the CEQA Guidelines for important archaeological resources and/or CFR 60.4 for eligibility for listing on the National Register of Historic Places. The report should contain the following information and should be submitted to the San Bernardino county Archaeological Information Center or to the Eastern Information Center at UC Riverside for permanent archiving: (1) Description of the study area; (2) Relevant historical documentation/background research; (3) The research design; (4) The field studies as actually implemented, including any deviation from the research design and the reason for the changes; (5) All field observations; (6) Analysis and results, illustrated as appropriate with tables, maps, and graphs; (7) Evaluation of the study in terms of the goals and objectives of the investigation, including discussion of how well the needs dictated by the planning process were served;					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-2 (cont.)	c. (cont.) (8) Information on where recovered materials are curated and the satisfactory condition of those facilities to protect and to preserve the artifacts and supporting data. The Eastern Information Center requests that historical resource data and artifacts collected within this project area be permanently curated at an appropriate repository. d. In the event that a prehistoric or historic artifact over 50 years in age is encountered within the project area, especially during construction activities, all land modification activities in the immediate area of the finds should be halted and an onsite inspection should be performed immediately by a qualified archaeologist. This professional will be able to assess the find, determine its significance, and make recommendations for appropriate mitigation measures. Further, if human remains of any kind are encountered on the property, the Riverside County Sheriff's and Coroner's Office must be contacted within 24 hours of the find, and all work should be halted until a clearance is given by that office and any other involved agencies.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-3	Monitoring: In situations where resources are potentially subject to direct or indirect impact and testing or data recovery is not proposed, an archaeological monitor and Native American observer/consultant should be present during subsurface work. One circumstance under which this might occur would be if a known resource was close to a area of impact and the site boundaries were ambiguous. Monitors help insure that exposed data or materials are collected and that if potentially significant cultural materials or features are encountered, they will be preserved either by realignment of the proposed facilities or by prompt evaluation and recommendations for any necessary mitigative measures.	Draft PEIR	When required during land disturbance activities.	MSWD	Reports detailing the results of the monitoring activities including the measures taken to mitigate impacts to cultural resources shall be kept in the project files at the District.	
4.5-4	Data Recovery: If an archaeological resource is found to be significant and no other preservation option is possible, mitigation of adverse effects by scientific data recovery, including analysis and reporting is the method of last resort. Such a mitigation program is usually only developed after an assessment test has been completed to identify physical parameters and cultural complexity, and formulate a research design. Each specific program would have to be developed in response to the site and potential impact, with the concurrence of the appropriate agencies and in consultation with Native American representatives.	Draft PEIR	Ongoing during monitoring activities.	MSWD	Reports detailing the data collection, recovery and disposition of resources encountered shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-5	Future Project Siting: Future project shall be located, whenever possible or feasible, outside of known highly sensitive cultural resource areas. Before any projects are located, and before any construction activities begin, any proposed project that will result in ground disturbance to any area that does not have a complete cultural resource survey on record with the EIC office will conduct a site specific cultural resource evaluation and report prior to any ground breaking activity. Further, if cultural resources have been identified on the site, a qualified archeologist or paleontologist will be retained to devise an excavation and/or curation plan for the resources, and a qualified cultural resource monitor will be present onsite during all construction-related activities that could potentially uncover previously undiscovered resources. This monitor will examine excavated soils and have the authority to cease construction activities if resources are un-earthed.	Draft PEIR	Prior to the selection of a site for future WMP facilities. Ongoing during land disturbances on a site which has been identified as containing cultural resources.	MSWD	Reports detailing the site evaluation and the reasons for selecting a site containing cultural resources shall be kept in the project files at the District. Reports detailing the data collection, recovery and disposition of resources encountered shall be kept in the project files at the District.	
4.5-6	Based solely upon this level of investigation and at this stage of project planning, it would be premature to propose specific mitigation measures. However, certain options can be presented presupposing a general level of knowledge regarding impacts. These options can be utilized to avoid impacts upon the cultural resources - the preferred result - or to lessen adverse effects. It should be emphasized that these options are not the only ones that may be applied. As such,	Draft PEIR	Prior to the start of land disturbance activities and ongoing during land disturbance activities.	MSWD	Reports detailing the site evaluation and the reasons for selecting a site containing cultural resources shall be kept in the project files at the District. Reports detailing the data collection, recovery and disposition of resources encountered shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-6 (cont.)	these measures are not recommended as conditions of Project approval but are included for the Authority's consideration and implementation as appropriate. a. Conduct a comprehensive historic building survey which is integrated with economic development programs; b. Adopt a preservation ordinance and create a preservation board; c. Ensure other planning programs, plans, and ordinances are compatible to the historic preservation goals and policies; d. Direct existing funding sources and loan programs to historic neighborhoods in need of revitalization; e. Provide incentives and direction encou-raging preservation and revitalization; f. Develop ongoing programs for enhancing public appreciation of historic resources; and g. Project Redesign – A proposed project may be redesigned in either of two ways: (1) Outside of site boundaries, thus avoiding impact to the site; or					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Cultural Resources (continued)						
4.5-6 (cont.)	(2) Restricting impacts to those areas of a site where previous impacts have already destroyed the integrity and research potential. Other options may also apply and may include capping of the site, relocation of structures, and integration of extant buildings into project design.					
4.5-7	Generally, the igneous and metamorphic rocks and those with Recent (Holocene) alluvium will not require any monitoring, although some of the Recent alluvium will need periodic monitoring for excavations deeper than five feet in case older alluvium is encountered beneath the younger alluvium. The areas with outcroping Ocotillo and/or Cabazon Ganglomerate will require periodic monitoring from the start of excavations to determine if any fossil-bearing soils are present. Outcrops of tertiary-age sedimentary rocks (Tcs, Tcf, Ti, Tpf and Tps) will require monitoring on a continuous basis during ground disturbance activities.	Draft PEIR	Prior to the start of land disturbance activities. Ongoing during land disturbance activities.	MSWD	Reports detailing the site evaluation and the reasons for selecting a site containing or potentially containing paleon-tological resources shall be kept in the project files at the District. Reports detailing the data collection, recovery and disposition of resources encountered shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Air Quality						
4.6-1	The following mitigation measures shall be implemented throughout construction activities in order to reduce project impacts. • Use appropriate emission control devices on gasoline and diesel construction equipment and maintain construction equipment engines by keeping them tuned. This shall include the use of aqueous diesel fuel and particulate filters where feasible. • Prohibit idling and other unnecessary operation of equipment. • Utilize existing power sources (i.e., temporary power poles) and avoid onsite power generation where feasible. • Have sufficient equipment at the site to carry out dust-control measures in all areas covered by the contract work (not just the immediate area of construction). This includes watering of the site three times per day or when dust is observed migrating from the site. The goal is to keep all disturbed areas continuously damp during construction. • Maintain all work and access areas free from dust.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	Applicable measures shall be made a part of the contract with the construction contractors. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Air Quality (continued)						
4.6-1 (cont.)	• Cover loaded trucks used in construction operations with tarpaulins or maintain at least 2 feet of freeboard and wash off trucks leaving the site. • Sweep streets if silt is carried over to adjacent public thoroughfares. • Construction operations affecting offsite roadways shall be scheduled for offpeak traffic hours and shall minimize obstruction of through-traffic lanes. • Develop a traffic plan to minimize traffic flow interference from construction activities including advance public notice of routing. • Use low VOC asphalt and coatings when applicable.					
4.6-2	The proposed project shall comply with the provisions of the 2003 Coachella Valley PM_{10} SIP and the 2007 AQMP which establishes minimum requirements for construction activities to reduce fugitive dust and PM_{10} emissions.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	Applicable measures shall be made a part of the contract with the construction contractors. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Air Quality (continued)						
4.6-3	The project proponent shall comply with all applicable SCAQMD Rules and Regulations. In particular, SCAQMD Rule 403 shall be adhered to, insuring the clean up of construction related dirt on approach routes to the site. Rule 403 prohibits the release of fugitive dust emissions from any active operation, open storage pile, or disturbed surface area beyond the property line of the emission source. Particulate matter deposits on public roadways are also prohibited.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	Applicable measures shall be made a part of the contract with the construction contractors. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	
4.6-4	Any vegetative ground cover to be utilized onsite shall be planted as soon as possible to reduce the disturbed area subject to wind erosion. Irrigation systems needed to water these plants shall be installed as soon as possible to maintain the ground cover and minimize wind erosion of the soil.					
4.6-5	The maximum vehicle speed limit on unpaved roads shall be 15 mph.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	
4.6-6	Grading operations shall be suspended during first and second stage ozone episodes or when winds exceed 25 mph.					

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Air Quality (continued)						
4.6-7	Any construction equipment using diesel drive internal combustion engines shall use a diesel fuel with a maximum of 0.05 percent sulfur and a four degree retard when feasible.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	
4.6-8	Construction personnel shall be informed of ride sharing opportunities.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable.	
4.6-9	MSWD shall utilize the most energy efficient mechanical equipment feasibly available to reduce the demand for electricity by new equipment proposed by the WMP.	Draft PEIR	Ongoing through out the life of the WMP.	MSWD	A report detailing the analysis used to the select the equipment for WMP projects shall be kept in the project files at the District.	
4.6-10	When feasible, MSWD shall utilize electricity generated by non or reduced GHG producing sources such as solar or wind generated electricity.					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Noise						
4.7-1	All non-well drilling construction shall be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday, and between 9 a.m. to 6 p.m. on Saturday, and shall be prohibited on Sundays and federal holidays.	Draft PEIR	Ongoing during construction	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	
4.7-2	To the extent feasible, MSWD will require utilization of construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.					
4.7-3	The MSWD shall respond to any noise complaints received for this project by measuring noise levels at the affected receptor. If the noise level exceeds an Ldn of 65 dBA exterior or an Ldn of 45 dBA interior at the receptor, the MSWD shall implement adequate measures such as the use of noise attenuating curtains or enclosing equipment within structures to reduce noise levels to the greatest extent feasible.	Draft PEIR	Ongoing during construction and the life of WMP facilities.	MSWD	A report of all noise complaints received, the actions taken and the results of those actions shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Noise (continued)						
4.7-4	All construction vehicles and fixed or mobile equipment shall be equipped with properly operating and maintained mufflers.	Draft PEIR	Ongoing during construction and the life of WMP facilities.	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District. A report of all noise complaints received, the actions taken and the results of those actions shall be kept in the project files at the District.	
4.7-5	Construction shall be scheduled such that the absolute minimum number of equipment would be operating at the same time.	Draft PEIR	Ongoing during construction.	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Noise (continued)						
4.7-6	Maintain good relations with the school and community such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and the expected temporary and intermittent noise increases during the construction period.	Draft PEIR	Ongoing during construction and the life of WMP facilities	MSWD	The District shall maintain a record of all out reach efforts by the District to maintain good relationships with relations with the community	
4.7-7	All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided with adequate hearing protection devices to ensure no hearing damage will result from construction activities.	Draft PEIR	Ongoing during construction and the life of WMP facilities	MSWD and the contractor	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District. A record of all hearing protection programs for District personnel including the success of these programs shall be maintained at the District office.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Noise (continued)						
4.7-8	If equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account), portable noise barriers shall be installed that are demonstrated to be adequate to reduce noise levels at receptor locations below hearing damage thresholds.	Draft PEIR	Ongoing during construction and the life of the WMP.	MSWD and the contractors	This measure shall be made a part of the contract with the construction contractors when applicable. Verification of compliance shall be made by District inspectors. Copies of the inspection reports including measures taken to comply with the requirements shall be kept in the project files at the District. A record of all noise protection programs for District personnel and the public, including the success of these programs, shall be maintained at the District office.	
4.7-9	All production wells or booster pumps shall have their noise levels attenuated to 50 dBA CNEL at 50 feet from the noise source.	Draft PEIR	Ongoing during the life of the WMP.	MSWD	A report of all noise complaints received, the actions taken and the results of those actions shall be kept in the project files at the District.	
4.7-10	Project facilities shall be constructed and operated so that noise levels from operations do not exceed 50 dB during night hours and 65 dB averaged over the 12 hours of day time when located adjacent to existing or future sensitive land uses. This can be achieved by siting relatively noisy operations a sufficient distance from sensitive noise receptors; by incorporating attenuation features in the facility or designing attenuation features at the boundary of the property.					

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Land Use / Planning						
4.8-1	Following selection of alternative sites for construction of water infrastructure facilities, each site shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or a technical report shall be prepared that identifies the specific measures that will be utilized to reduce potential incompatible activities or effects to below thresholds established in the general plan for the jurisdiction where the facility will be located.	Draft PEIR	During site selection and ongoing throughout the life of the WMP.	MSWD	A report detailing the analysis used in site selection and the reasons why specific sites were selected shall be kept in the project files at the District. Project specific measures to reduce potential impacts associated specific projects shall be provided in the follow on environmental evaluation and made conditions of project approval.	
The following mitigation measures are included in the Initial Study as Mitigation Measures I-1 through I-7.						
4.8-2	All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is completed, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.	Draft PEIR and Initial Study	During site plan preparation and site development.	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Land Use / Planning (continued)						
4.8-3	Where facilities are proposed to be located adjacent to scenic highways, corridors or other scenic features identified in local agency planning documents, project implementation will conform with design requirements established in the applicable planning documents.	Draft PEIR and Initial Study	During site plan preparation and site development.	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	
4.8-4	Where facilities will disrupt views from occupied areas with significant scenic vistas, a visual simulation analysis shall be performed of the facility's impact on the important view. If the analysis identifies a significant impact on a scenic vista, the facility shall be relocated, if feasible, redesigned to reduce the impact to a non-significant level, or a subsequent environmental evaluation shall be prepared.	Draft PEIR and Initial Study	During site selection, site plan preparation and site development.	MSWD	This requirement shall be incorporated into the site selection process by the District when selecting a new site for development. The design drawings for WMP projects shall include measures that provide compliance with this requirement. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	
4.8-5	When above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility.	Draft PEIR and Initial Study	During site plan and engineering design development.	MSWD	The District shall review and approve the site development plans for WMP projects. The reasons for deviations from local agency design guidelines shall be documented by the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Land Use / Planning (continued)						
4.8-6	All utilities for project facilities shall be placed underground unless such undergrounding is not technically feasible.	Draft PEIR and Initial Study	During design and construction.	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	
4.8-7	Future project review and implementation shall implement the following: • Use of low pressure sodium lights where security needs require such lighting to minimize impacts of glare. • Height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination. • Directing light and shielding shall be used to minimize off-site illumination. • No light shall be allowed to intrude into sensitive light receptor areas.	Draft PEIR and Initial Study	During design and construction of WMP projects.	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	
4.8-8	All permanent lighting associated with the project will be directed towards the ground (shielded from the sky) and comply with the Mt. Palomar Lighting Policy so that light or glare does not fall off the property boundary.	Draft PEIR and Initial Study	During design and construction of WMP projects.	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Utilities and Service Systems						
4.11-1	When pipelines must cross natural stream channels or stormwater drainages, the District will implement the following measures to minimize adverse environmental impacts from installing such facilities: a) first, the District will jack and bore such pipelines when feasible and avoid any surface disturbance; b) second, if jack and bore construction cannot be implemented, the District will install the channel crossing with the minimum area of above ground disturbance and shall return the channel bed to the same condition as before initiating construction. If above ground disturbance is required, the District will obtain all regulatory permits for discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.	Draft PEIR	During design and construction of WMP projects.	MSWD	Where applicable, this requirement shall be incorporated into the engineering and construction plans prepared for WMP projects. Verification of compliance shall be provided by District inspectors. Copies of inspection reports shall be kept in the project file at the District.	
4.11-2	The District will avoid installing any new above ground facilities within stormwater drainages or natural channels, unless such a site cannot be avoided. If future facilities must be installed within a stormwater drainage or natural channel, the District shall document the reasons which this is required and shall prepare a drainage system study to demonstrate the hazards to the proposed facility from locating it at such a location and shall identify the measures required to harden or elevate the facility to a point that the facility is protected from the 100-year flood hazard. If above ground disturbance is required, the District will obtain all regulatory permits for	Draft PEIR	During site selection, design and construction of WMP projects.	MSWD	This requirement shall be incorporated into the site selection process by the District when selecting a WMP project site for development. The design drawings for WMP projects shall include measures that provide compliance with this requirement when applicable. Implementation shall be verified by District inspectors and copies of inspection reports shall be kept in the project file at the District.	

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Utilities and Service Systems (continued)						
4.11-2 (cont.)	discharge of fill or streambed alteration in accordance with regulations in place at the time of the construction.					
The following mitigation measures were taken from the Initial Study.						
Aesthetics						
I-1	All surface areas disturbed by construction activities, except those area covered by structures or hardscapes, shall be revegetated either with native vegetation in natural landscapes or in accordance with a landscape plan in man-made landscape areas (note that native vegetation is also eminently suited to man-made landscapes and requires less maintenance). Once construction is completed, revegetation shall begin immediately and, where a formal landscape plan is being implemented, it shall be coordinated with the local agency and the local design guidelines for consistency.	Initial Study	During construction	MSWD	This requirement shall be incorporated into the design drawings for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	
Hazards and Hazardous Materials						
VII-3	During construction activities within existing road rights-of-way or other easements where continuous access is required, a road operation management plan shall be prepared and implemented. Continuous access shall be provided to all sites that may require emergency access and potential safety hazards on roadways shall be controlled to the maximum extent feasible.	Initial study	During construction	MSWD and the contractor	Verification shall be provided by District inspectors. Copies of inspection reports verifying compliance including identification of measures taken to correct potential traffic hazards or access problems shall be kept in the project file at the District.	

MISSION SPRINGS WATER DISTRICT
WATER MASTER PLAN PROJECT
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure		Source	Implementation Schedule	Responsible Party	Verification	Status / Date / Initials
Transportation / Traffic						
XV-1	MSWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Desert Hot Springs/ Palm Springs and/or County of Riverside standards.	Initial Study	Ongoing through the life of the WMP.	MSWD and the contractors	Where applicable, this requirement shall be incorporated into the design drawings and construction contracts for WMP projects. Implementation shall be verified by the District before accepting projects as being complete and making final tor payment to the contractor.	

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

April 17, 2008

Project #:	05-001-W
File Location:	ENVIRONMENTAL/COMMENTS
Date:	B-L 4/22/08

Brent Gray
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Subject: Comprehensive Water System Master Plan Project (Water Master Plan)
SCH#: 2006071105

Dear Brent Gray:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on April 16, 2008, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2006071105
Project Title Comprehensive Water System Master Plan Project (Water Master Plan)
Lead Agency Mission Springs Water District

Type EIR Draft EIR

Description The proposed project is the adoption of a Comprehensive Water Master Plan by MSWD. The Master Plan identifies the water system improvements that are forecast to be needed by MSWD to meet the anticipated demand for water over the planning period through the year 2025. The Master Plan identifies the type, location, and timing of water system improvements that are forecast to be needed over the Master Plan planning period. The Master Plan identifies the wells, reservoirs, booster pump stations, pipelines, and other appurtenant facilities that will be needed based on projected growth and growth patterns within the MSWD service area.

The purpose of the Master Plan is to provide a comprehensive planning tool to allow MSWD to more logically and efficiently provided water service to its customers over both the short and long terms. The beneficiaries of this more efficient method of planning for and implementing the needed water system improvements will be the customers of MSWD in that this method of planning will provide a more reliable and efficient water supply.

Lead Agency Contact

Name Brent Gray
Agency Mission Springs Water District
Phone (760) 329-6448 ***Fax***
email
Address 66575 Second Street
City Desert Hot Springs ***State*** CA ***Zip*** 92240

Project Location

County Riverside
City Desert Hot Springs, Palm Springs
Region
Cross Streets
Parcel No.
Township 2S, 3S ***Range*** 3-6E ***Section*** ***Base*** SBB&M

Proximity to:

Highways Hwy 62, I-10
Airports
Railways Union Pacific
Waterways
Schools
Land Use

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Cumulative Effects; Economics/Jobs; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Growth Inducing; Landuse; Minerals; Noise; Public Services; Schools/Universities; Social; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 7; Department of Parks and Recreation; Native American Heritage Commission; Public Utilities Commission; Office of Historic Preservation; Department of Fish and Game, Region 6; Department of Water Resources; Department of Conservation; Colorado River Board; California Highway Patrol; Caltrans, District 8; State Water Resources Control Board, Division of Water Rights; State Water Resources Control Board, Clean Water Program

Document Details Report
State Clearinghouse Data Base

Date Received 03/03/2008 ***Start of Review*** 03/03/2008 ***End of Review*** 04/16/2008

Errata Sheet
For
Mission Springs Water District (District)
Comprehensive Water System Master Plan 2005 (WMP)
and the Final Program Environmental Impact Report (Final PEIR)

This errata sheet logs minor corrections that have been identified since release of the WMP and during the comment period of the Draft PEIR for the WMP. Corrections (this errata sheet) will be included in the current WMP Edition and incorporated into the edits of the WMP at the time of the next WMP update in 2010 and corrections (this errata sheet) will be included in the public record with the Final PEIR as well.

#	Description of Correction	Location	Rationale	Date error was published
1.	DPEIR Figure 3-1, Existing MSWD Water System, and WMP Figure 7-1, Wells 22, 24, 28 & 29, the well capacity units are incorrectly noted as mg and should instead be gpm	DPEIR Fig. 3-1 WMP- Fig. 7-1	4-15-08 Letter from DWA (Luker) pointed out this mistake and District in response to comment agreed to note. This errata sheet provides for correction and will be included in the Final PEIR and will also be included with the current WMP and provide a basis for future edition edits of the WMP	October 17, 2005 in the WMP and February 2008 in the DPEIR
2.	Table 4.3-2 of the DPEIR should be as follows: Year- Quantity AF 2002 4733 2003 0 2004 5564 2005 24723 2006 19901 2007 1011 WMP Table 5-3, MSWD Water Balance for year 2005, the value should be 24,723 AF	DPEIR Table 4.3-2 WMP-Table 5-3	4-15-08 Letter from DWA (Luker) pointed out this mistake and District in response to comment agreed to note. This errata sheet provides for correction and will be included in the Final PEIR and will also be included with the current WMP and provide a basis for future edition edits of the WMP	October 17, 2005 in the WMP and February 2008 in the DPEIR

#	Description of Correction	Location	Rationale	Date error was published
3.	Include descriptions and depictions of Public Lands (BLM) and Areas of Critical Environmental Concern (ACEC) in figures and discussions in the DPEIR, specifically Chap. 4, Sec. 4.8 Environmental Impact Analysis, Land Use/Planning and Chap. 6, Cumulative Impacts, Sec. 6.27 Land Use and Planning. WMP include depictions of Public Lands and ACEC areas on appropriate planning figures (area planning maps).	DPEIR, specifically Chap. 4, Sec. 4.8 Environmental Impact Analysis, Land Use/Planning and Chap. 6 Cumulative Impacts, Sec. 6.27 Land Use and Planning WMP, Figure 9-2 Future Proposed System Years 2005-2025	Letter via Email from Greg Hill of BLM dated April 9, 2008 to Brent Gray, Mission Springs Water District , requested this information be included in the Final PEIR. In response to comment the District adequately addressed the concerns and figures noted and will be incorporated into the current editions of the WMP and Final PEIR via this errata sheet and provide a basis for future edition edits of the WMP	October 17, 2005 in the WMP and February 2008 in the DPEIR