

# Section 4

## Physical Environment

---

This section summarizes analyses of the physical environment in Section 4 of the 2002 Program Environmental Impact Report (PEIR) and presents the discussions needed to update the 2002 analysis for the 2010 Water Master Plan Update (2010 WMP Update) Subsequent PEIR (SPEIR). The updated discussions focus on land subsidence, liquefaction and air quality, because there is additional information to be presented that has developed since 2002. Other aspects of the physical environment discussed in the PEIR were found not to have changed, or the impacts and mitigations measures were found not to have changed substantially, and so are discussed briefly in the SPEIR. These topics are topography, geologic faulting and structure, and soil characteristics other than subsidence and liquefaction. Greenhouse gas emissions (GHG) and climate change, new California Environmental Quality Act (CEQA) topics since 2002, are discussed in SPEIR **Section 9 – Related Projects and Cumulative Impacts**.

### 4.1 GEOLOGY, HAZARDS AND SOILS

The 2002 PEIR Sections 4.2 and 4.3 evaluated the environmental setting relative to topography, geology, geologic hazards and soil conditions. Impacts of specific project elements were found to be site-specific and to be evaluated once individual facilities sites were identified. Geological mitigation measures were presented in the 2002 PEIR and in the adopted Mitigation Monitoring and Reporting Plan (MMRP) for earthquake hazards, liquefaction hazards and land subsidence hazards. Soil mitigation measures addressed soil erosion by wind and water, expansive soils, and required foundation analyses for individual projects. These analyses and mitigation measures stand as written, since no changes in these analyses are required.

#### 4.1.1 Environmental Setting

This section of the SPEIR revisits and summarizes the previous elements, but focuses on subsidence, where additional information has become available since 2002, and on liquefaction, because of projected overlying land use changes in the East Valley since preparation of the 2002 PEIR.

##### 4.1.1.1 Topography

The Coachella Valley lies in the northwestern portion of the structural trough extending from the Gulf of California northwesterly to the Cabazon area. The Valley floor ranges in elevation from 1,600 feet above mean sea level (MSL) in the northwest to about 227 feet below MSL at the Salton Sea. Except for the Indio Hills, the study area is a broad, flat valley with sloping alluvial fans at the mouths of mountain canyons.

##### 4.1.1.2 Geologic Formations

The nomenclature and description of geologic formation are based primarily on the work of the California Department of Water Resources (DWR) (DWR, 1964). Thick deposits of Tertiary

## Section 4 – Physical Environment

---

and Quaternary continental and marine sediments overlie crystalline basement rock of several mountain ranges that extend beneath the Valley floor at depth. DWR grouped the sedimentary formations into three groups based on their groundwater storage and transmission characteristics and decreasing age: nonwater-bearing (crystalline rock and consolidated sediments), semiwater-bearing (semi-consolidated Pliocene and Pleistocene formation low in permeability and water-yielding capabilities) and water bearing (Upper Pleistocene to Recent age alluvial deposits). Water bearing units, the principal sources of Valley groundwater withdrawal and recharge, are (starting with the deepest): Ocotillo conglomerate, Cabezon conglomerate, Upper Pleistocene alluvium and terrace deposits, and recent alluvium and dune sand deposits. The last comprise active stream channel deposits, alluvial fan and streamwash deposits, alluvial plain and lake deposits and windblown sand deposits.

### 4.1.1.3 Soils

The Coachella Valley study area has two broad groups of soils: valley floor soils and valley border soils. The groups are made up of soil associations – landscapes with distinctive patterns of soils in defined portions, usually consisting of one or more major soils and at least one minor soil, and named for the major soil. Valley floor associations are Carsitas-Myoma-Carrizo, Gilman-Coachella-Indio, Salton Indio-Gilman, and Myoma-Indio-Gilman (SCS, 1980).

Valley floor soils are described as excessively drained, to somewhat poorly drained, nearly level to moderately steep soils on alluvial fans, valley fill and in dry lake beds. The soil associations range from sand to silty clays to cobbles and boulders, are highly stratified, with slopes that range from 0 to 30 percent. These soils comprise about 66 percent of the Coachella Valley floor in Riverside County. They are used for a wide variety of irrigated truck and field crops, dates, citrus and grapes. From an engineering point of view (see 2002 PEIR Table 4-3), the risk of corrosion they carry is high to uncoated steel and low to concrete. They can have severe limitations for shallow excavations, embankments, and foundations for buildings.

Valley border soils are coarse, excessively drained to well-drained soils on alluvial fans, terraces and mountains that rim the Coachella Valley. The soils are mostly in native vegetation and used as watershed, wildlife habitat and recreational land. The five associations in this group make up about 34 percent of the Coachella Valley in Riverside County.

### 4.1.1.4 Land Subsidence

Land subsidence is the lowering of the ground surface due to groundwater withdrawal or seismic activity. Groundwater withdrawal causes the sediments of an aquifer to compact. Fine-grained sediments such as clays that comprise the aquitard that separates the Upper and Lower aquifers in the East Valley are more susceptible to compaction and subsidence than coarse-grained sediments, such as sands, when groundwater is removed. Once compaction occurs, it is permanent because the soil particles rearrange. This results in a permanent loss of groundwater storage capacity and causes permanent land subsidence.

Damage caused by land subsidence can be visible cracks, fissures, or surface depression; damage to structures (canals, utilities, roads and buildings); damage to and loss in effectiveness of subsurface agricultural drainage systems, and loss of vertical elevation. The following text

updates the 2002 PEIR discussion of subsidence (Section 4.2.1.6.2) by presenting the results of the U.S. Geological Survey (USGS)-Coachella Valley Water District (CVWD) study of subsidence in the Coachella Valley (USGS, 2007). This study was underway at the time of publication of the 2002 PEIR.

In 1996, the District entered into a cooperative agreement with the USGS to establish a precise elevation network to monitor land subsidence in the East Valley and to develop baseline measurements for accurate determination of future land subsidence. The study also involved review of historical data to determine the location, existence, and magnitude of previous subsidence. The 2007 USGS study, reporting on subsidence monitoring at 14 sites from 1996-2005, found that subsidence was occurring in the Coachella Valley. The survey found significant land-surface changes in at least four areas: Indian Wells, La Quinta, Palm Desert and the Coachella-Indio area. Greatest subsidence was measured at the locations listed in **Table 4-1**.

**Table 4-1  
Locations of Greatest Subsidence Measured in the Coachella Valley**

Location	Measured Subsidence 1996-2005 (inches)
Bermuda Dunes Airport, Bermuda Dunes	>13.00
Rancho Las Palmas Golf Course, Rancho Mirage	12.96
Jackson Street and 54th Avenue, Coachella	12.28
Lake Cahuilla, La Quinta	11.30
Highway 86 and 62nd Avenue, Riverside County	10.20
El Dorado Drive and Osage Trail, Indian Wells	7.99
Highway 111 and 6th Street, Coachella	7.20

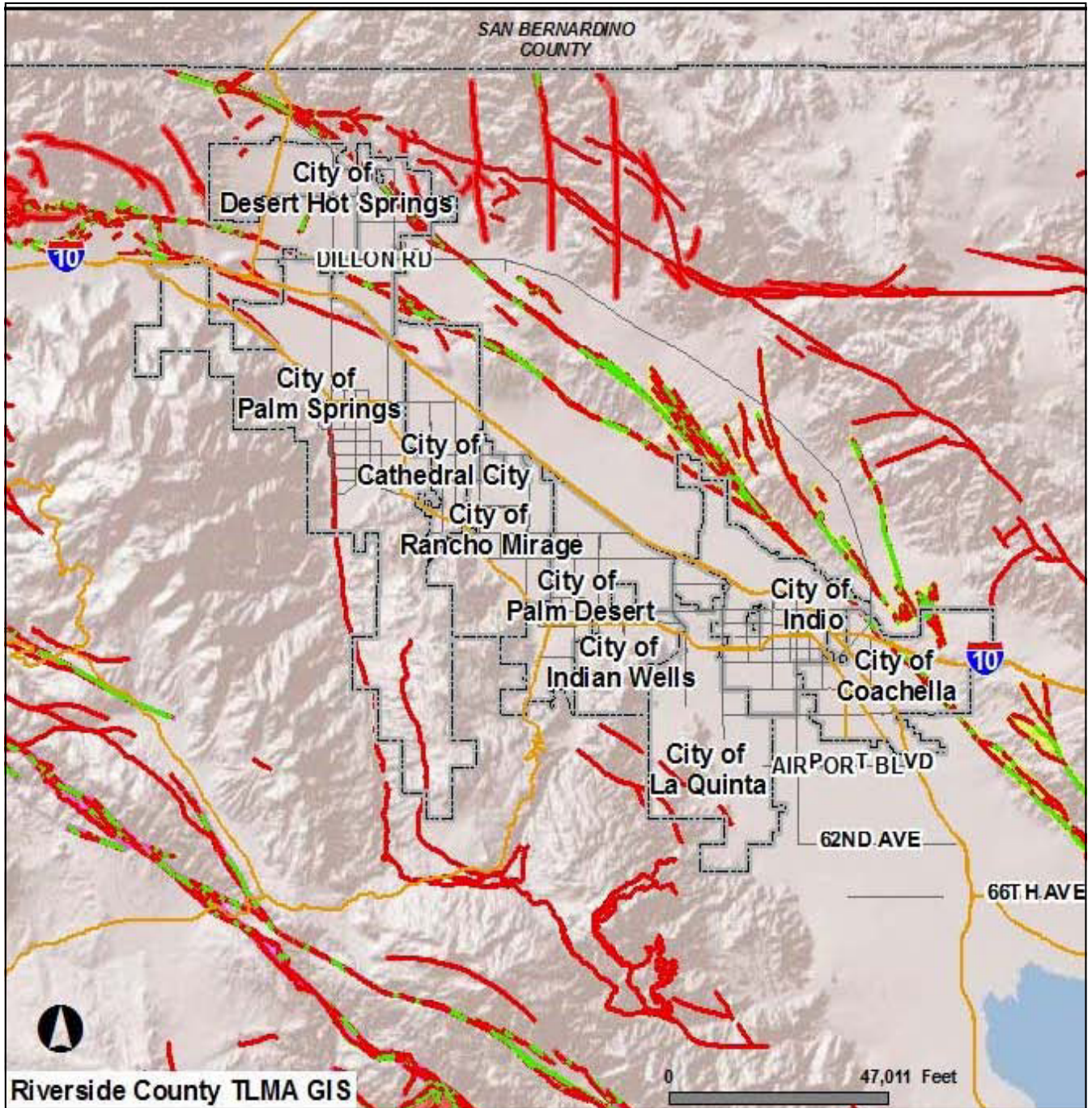
Source: USGS, 2007.

**4.1.1.5 Faults**

Valley faults significantly affect groundwater flow and were an important consideration in the development of the Coachella Valley groundwater model. Principal faults are the San Andreas Fault, the Mission Creek fault, Banning fault, Garnet Hill fault, Indio Hills fault, Mecca Hills fault and buried faults with no surface exposure that may also affect groundwater flow (**Figure 4-1**).

**4.1.1.6 Seismic Ground Shaking and Fault Rupture**

The study area is heavily faulted and seismically active, and therefore subject to seismic groundshaking. The San Andreas Fault Zone is the most significant fault system in the study area and is capable of producing large earthquakes having Richter Scale magnitudes in the range of 6.8 to 8.0 (SCEC, 1999). Maximum intensity on the Modified Mercalli scale would be XI. Alquist-Priolo designated Earthquake Fault Zones (formerly Special Studies Zones, identified by the Alquist-Priolo Special Studies Zone Act of 1972) are found on the following USGS quadrangles in the study area along the San Andreas Fault Zone: Indio, Thermal Canyon, Mecca, Salton and Mortmar (2002 PEIR Figure 4-3).



**FAULT ZONES**

INTERSTATES

COUNTY FAULT ZONE

HIGHWAYS

SAN ANDREAS FAULT ZONE

ALQUIST-PRIOLO

SAN JACINTO FAULT ZONE

RIVERSIDE COUNTY

CITY

**Fault Zones in the Coachella Valley**

Figure 4-1



#### 4.1.1.7 Liquefaction

Liquefaction is a condition in which sediments below the water table temporarily lose strength and behave as a liquid rather than a solid. In the liquefied condition, soil may deform enough to cause damage to buildings and other structures. Seismic shaking is the most common cause of liquefaction.

Liquefaction occurs in unconsolidated sands and silts in areas with high groundwater levels. Liquefaction has been most abundant in areas where groundwater occurs within 30 feet of the ground surface; few instances of liquefaction have occurred in areas with groundwater deeper than 60 feet (EERI, 1994). As presented in **Figure 4-2**, Riverside County identifies high liquefaction hazards for the Eastern Coachella Valley from Indio and Coachella southeast to the Salton Sea; the rest of the Coachella Valley floor is shown as having a moderate liquefaction hazard rating (Riverside County, 2008). DWR also indicated that a liquefaction hazard exists for the majority of the East Valley floor because of Semi-perched groundwater and the presence of appropriate soil types.

#### 4.1.2 Significance Criteria

##### 4.1.2.1 Geology and Soils

Based on State CEQA Guidelines, Appendix G, significant impacts related to geology and soils would occur if the Proposed Project:

- results in substantial soil erosion or loss of topsoil,
- would 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 on- or off-site landslide, lateral spreading, or collapse,
- would be located on expansive soils, creating substantial risks to life or property, or
- has soils incapable of adequately supporting the use of septic systems or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

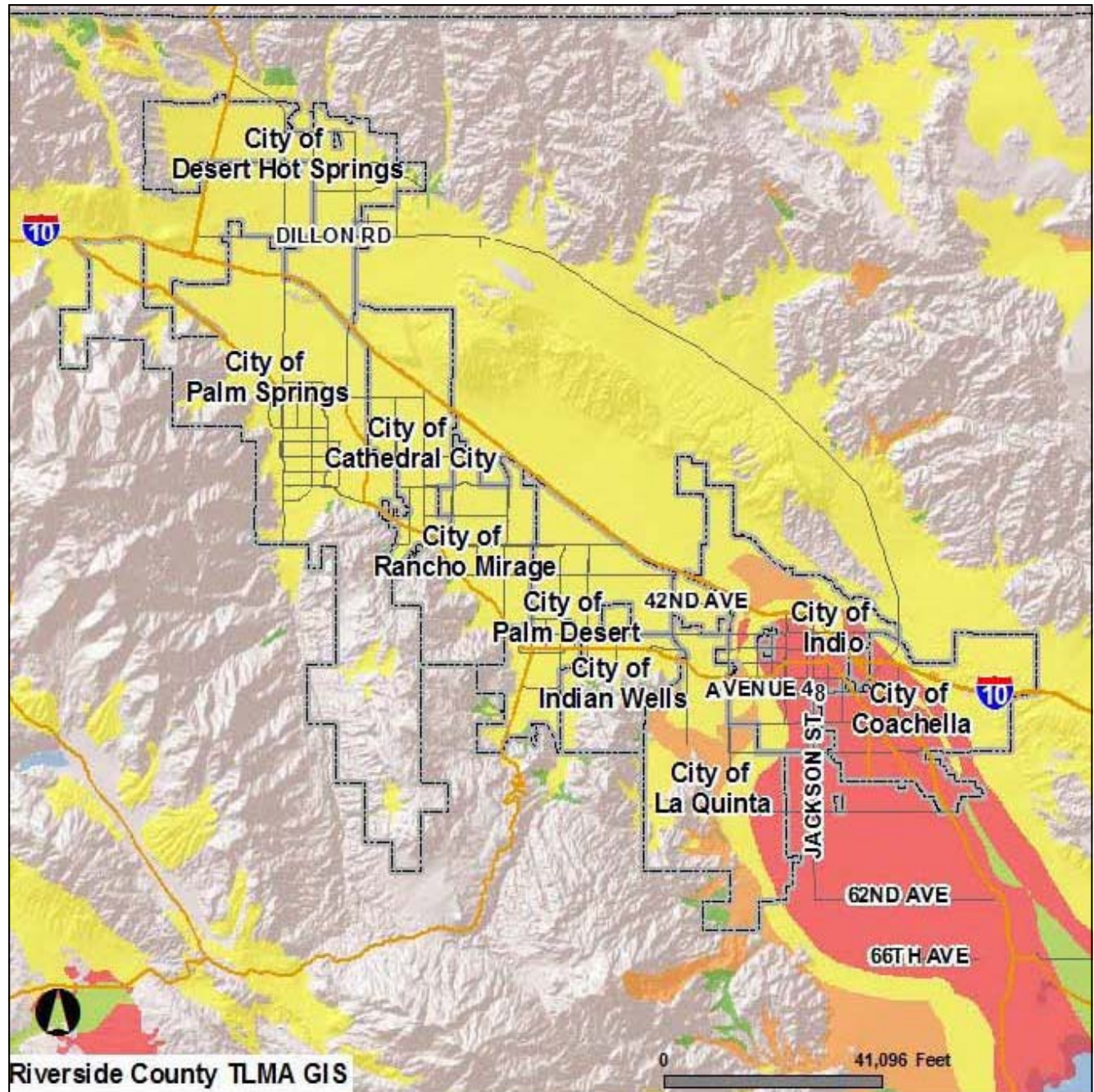
Significance criteria for seismicity are presented in **Section 4.1.2.3** below.

##### 4.1.2.2 Land Subsidence

CVWD considers impacts related to land subsidence as significant if the Proposed Project:

- creates conditions that substantially increase the existing threat of subsidence by increasing the rate of water level decline in the Coachella Valley, or
- results in lower groundwater levels in the areas where the geologic conditions are suitable for subsidence or where subsidence has occurred in the past, which are lower than without the Project, or





**LIQUEFACTION**

INTERSTATES  
Low

HIGHWAYS  
Moderate

CITY  
Very High

High  
Very low

**Seismic Hazard Areas in the Coachella Valley**

Figure 4-2



- would 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 on- or off-site subsidence.

### 4.1.2.3 Earthquake Hazards

Based on State CEQA Guidelines, Appendix G, Proposed Project impacts related to earthquake hazards are significant if the project exposes 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, or
- landslides.

### 4.1.3 Programmatic Impact Assessment

Proposed Project elements with potential impacts related to soils, geology and geologic hazards are those that involve construction and operation of new Proposed Project facilities. There are more facilities proposed to implement the 2010 WMP Update than in the 2002 WMP, so overall impacts with respect to risks to life and property from soils and geologic hazards would occur in more locations, but the types of impacts are the same. Relevant 2010 WMP Update elements are:

- water quality management elements that involve new water treatment plants or desalination plants to treat Colorado River water,
- tertiary treatment facilities at CVWD Water Reclamation Plant No. 4 (WRP-4), Coachella Sanitary District (CSD) and Valley Sanitary District (VSD) wastewater treatment plants,
- pumping stations and tank reservoirs as part of treated or untreated water distribution systems,
- groundwater recharge facilities at Martinez Canyon and Indio, and
- buried pipelines to implement source substitution and other water supply elements. Pipelines would convey potable water, non-potable water (such as untreated Colorado River water), recycled water and other treated water (desalinated water, or desalination brine or other waste streams), or connect water supply to groundwater recharge facilities.

Water conservation, while an essential element of the WMP, is considered not to have construction impacts that would involve soil or geology issues. Water transfers and leases to CVWD and the Desert Water Agency (DWA) would have no construction impacts at the receiving end because the water would be conveyed to existing recharge areas in existing

## Section 4 – Physical Environment

---

facilities within their present capacities. Conversions from groundwater to other water supplies for agriculture and some landscape irrigators similarly could be accomplished with existing connections and involve no earth-disturbing construction.

### 4.1.3.1 Soils

This section examines erosion and foundation characteristics.

#### *Erosion*

Construction of proposed structures that implement the 2010 WMP Update – pipelines, pumping stations, tanks, recharge basins, water treatment plants, wastewater treatment plants and desalination plants – will require measures to control soil erosion by wind and water to protect air quality and runoff quality during storms. Water erosion is controlled by preparation and implementation of Best Management Practices (BMPs) defined in a construction Storm Water Pollution Prevention Plan (SWPPP), required by the State Water Resources Control Board (SWRCB) Construction General Permit. Wind erosion of soil is addressed by adherence to South Coast Air Quality Management District (SCAQMD) requirements for dust mitigation (see the air quality analysis in this section). As discussed below, “active operations within the SCAB shall utilize one or more of the BACM to minimize fugitive dust emissions.” Therefore, with incorporation of these required best available control measures (BACM), soil erosion or loss of topsoil will be less than significant.

#### *Soil Foundation Characteristics*

Soil characteristics of concern for foundations are instability, landslide potential, and expansiveness. Of the proposed structures that implement the 2010 WMP Update, pipelines, aboveground storage tanks, and recharge basins do not involve habitable structures, but their failure due to foundation conditions could potentially create down gradient risks to property. Pumping stations, water treatment, and desalination plants involve habitable structures (occupiable by employees) the failure of which would carry a potential risk to life. Tertiary wastewater treatment would be provided at existing facilities—the new treatment units are not habitable structures.

Coachella Valley facilities may be located on soil that is unstable, since Valley alluvial soils are unconsolidated (SCS, 1980). The proposed facilities’ construction and operation would not increase soil instability, but would need to comply with special measures in their foundation analyses and design to address these conditions. Typical measures to treat unstable soils involve removal and replacement with properly compacted fill, compaction grouting, or deep dynamic compaction. The impact of risk to life and property is therefore less than significant.

Proposed structures that implement the 2010 WMP Update may be located on soil that is expansive (has high clay content), particularly in the East Valley. Expansive soils expand when water is added and shrink when they dry out causing a continuous change in soil volume. Without mitigation, this continuous change in volume causes cracking and possibly structural damage to foundations and infrastructure.



Incorporation of special but standard measures in foundation analysis and design will prevent soil expansiveness from causing damage to facilities or their foundations. One way to avoid damage from expansive soils is to extend building foundations on piers beneath the zone of water content fluctuation. Additional measures could include removal of the clayey soils and replacement with more stable foundation materials. These measures would be effective and sufficient to address expansive soil conditions, based on standard engineering practice to mitigate foundation impacts. The impact of risk to life and property is therefore less than significant with mitigation incorporated.

The Proposed Project does not include new septic systems or alternative wastewater disposal systems. Therefore, the suitability of study area soils for these systems does not apply to the Proposed Project and there would be no impact. The Proposed Project includes connecting rural areas on septic systems to the CVWD sewer system, a beneficial effect.

### **4.1.3.2 Geologic Hazards – Groundshaking and Fault Rupture**

Proposed structures that implement the 2010 WMP Update – pipelines, pumping stations, tanks, recharge basins, water treatment plants, wastewater treatment plants and desalination plants – will not impact geologic conditions at their specific sites, but could be damaged by ground shaking.

Pipelines, tanks and recharge basins are not considered to be habitable structures, but their failure due to seismic groundshaking (and if full) could potentially cause downgradient impacts to life and property from flooding. Pumping stations, water treatment plants, and desalination plants are considered to have occupiable structures, where seismic groundshaking could cause risk to the life of employees.

The designs for proposed facilities that involve earthwork will incorporate the recommendations of site-specific geotechnical and engineering geologic investigations for site-specific lateral spreading, expansive soil and liquefaction potential in accordance with Special Publication 117 [California Geological Survey (CGS), 1997] and the 2010 California Building Code (CBC, 2010a and 2010b) or the California Building Code current as of the date of the facilities (the California Building Standards Code is published in its entirety every three years by order of the California Legislature).

For the Coachella Valley, applicable CBC design criteria are for construction within Seismic Design Category E or F. Seismic Design Category E corresponds to buildings of Occupancy Groups I, II and III in areas near major active faults. Groupings are based on degree of hazard to human life from low (I) to substantial (III) in the event of failure. Potable water treatment plants, wastewater treatment plants and other public facilities are in Group III. Seismic Design Category F corresponds to buildings of Occupancy Group IV in areas near major active faults (essential facilities — hospitals, fire and police stations, emergency control centers, power stations, and water treatment facilities required to maintain water pressure for fire suppression) (CBC, 2007).

Compliance with required seismic design standards in the CBC and CGS publications for all structures will reduce risk of loss, injury or death from facility failure to a level of less than

## Section 4 – Physical Environment

---

significant. Seismic design elements may include flexible couplings for pipelines, construction on piered foundations, extra reinforcement for building walls and roofs, excavation and recompaction or replacement of foundation materials if necessary, extra measures for securing stored chemicals, and the like. Because these measures are required, they are not mitigation measures. The impact is less than significant.

### 4.1.3.3 Landslides and Mud Flows

The proposed facilities' sites, anticipated to be on the Valley floor rather than in the adjacent mountains, are flat, or gently sloped and graded (as is the Martinez Canyon Recharge area). Landslides and lateral spreading are not known for the study area. Therefore, on- or off-site landslides and lateral spreading impacts would not occur.

### 4.1.3.4 Land Subsidence

Subsidence has been occurring in the Coachella Valley (USGS, 2007) and may be caused by groundwater overdraft. As discussed above, the USGS and CVWD will continue ongoing studies of subsidence in the Coachella Valley for verification and monitoring. As discussed above, subsidence that has already occurred cannot be reversed. By reducing overdraft, implementation of the 2010 WMP Update would halt or reduce subsidence currently taking place in the Coachella Valley groundwater basins. Subsidence will continue until overdraft is halted by Proposed Project implementation, but this is not an impact of the Proposed Project, rather of the no project condition. Therefore, the long-term effect of the Proposed Project would be beneficial.

### 4.1.3.5 Liquefaction

The County of Riverside seismic hazard maps (Riverside County, 2008) show a high risk for liquefaction in the East Valley and moderate risk in the balance of the Valley floor (**Figure 4-2**). This figure reflects that semi-perched groundwater conditions are present and the depth to water is relatively shallow (about 10 feet) in a large portion of the East Valley. To aid in drainage, agricultural drains were installed throughout the East Valley at a depth of about 10 feet. The drains maintain a relatively constant water level in the East Valley Semi-perched aquifer, even if groundwater levels rise in the Lower and Upper aquifers. The liquefaction hazard is still present, however.

The Proposed Project would stabilize or raise groundwater levels throughout the Valley (see also **Section 6 – Groundwater Resources**), by reducing overdraft and its consequences. The 2002 PEIR also recognized that overcoming overdraft would raise water levels in the East Valley aquifers, with the result that agricultural drain water flows would increase and direct drainage water to the CVSC or Salton Sea. The Proposed Project would not change the potential for liquefaction in the study area.

The East Valley is projected to convert to large scale urban development during the planning period, so high groundwater with the possibility of seismically-induced liquefaction and subsidence must be addressed by developers. It will be the responsibility of the County and the cities' building and safety departments to evaluate foundation analyses for proposed

developments to ensure that existing liquefaction hazard and high groundwater conditions are taken into account and mitigated as part of project design. Subsurface drains will continue to be required to control shallow groundwater levels and to ensure the exportation of salt from the basin. Possible measures to address liquefaction potential are maintenance or replacement of existing subsurface drains, installation of drains in areas where they do not yet exist, and/or ongoing shallow groundwater pumping. CVWD and developers are required to implement CGS Special Publication 117, CBC and UBC requirements, as applicable to all facilities design.

### **4.1.4 Future Analyses to be Conducted for Specific WMP Elements**

#### **4.1.4.1 Geotechnical and Foundation Analysis**

The designs for proposed facilities that involve earthwork will incorporate the recommendations of site-specific geotechnical and engineering geologic investigations for site-specific lateral spreading, expansive soil and liquefaction potential in accordance with Special Publication 117 [California Geological Survey (CGS), 1997] and the 2007 CBC (CBC, 2007). For the Coachella Valley, applicable CBC design criteria are for construction within Seismic Design Category E or F. Seismic Design Category E corresponds to buildings of Occupancy Groups I, II and III in areas near major active faults. Groupings are based on degree of hazard to human life from low (I) to substantial (III) in the event of failure. Potable water treatment plants, wastewater treatment plants and other public facilities are in Group III. Seismic Design Category F corresponds to buildings of Occupancy Group IV in areas near major active faults (essential facilities- — hospitals, fire and police stations, emergency control centers, power stations, and water treatment facilities required to maintain water pressure for fire suppression) (CBC, 2007).

#### **4.1.4.2 Desalination Plants, Wastewater Plant Units and Water Treatment Plants**

Specifications for proposed facilities will require that during the project conceptual design phase, site-specific geotechnical and engineering geologic investigations will analyze site-specific lateral spread, expansive soil and liquefaction potential, as applicable, in accordance with CGS Special Publication 117 [California Geological Survey (CGS, 1997) and the 2007 CBC (CBC, 2007) and incorporate provisions for appropriate construction techniques. Soil analyses will also address soil corrosivity, depth to groundwater, limitations for embankments, building foundations and roads, as applicable. For example, CVWD's construction of arsenic treatment facilities for three wells in the East Valley required extensive overexcavation, recompaction and soil strengthening, including the use of geotextiles to address soil and foundation conditions.

#### **4.1.4.3 Reservoirs and Pumping Stations**

In accordance with CGS Special Publication 117 (CGS, 1997) and the 2007 California Building Code (CBC, 2007) design for proposed tank reservoirs and pumping stations would incorporate provisions for appropriate construction techniques. It is anticipated that site-specific geotechnical and engineering geologic investigations would analyze site-specific lateral spread, expansive soil and liquefaction potential. Analyses for tanks and pumping stations would also evaluate flood routing in case of tank failure or pumping station failure due to seismic activity. Soil analysis would also address soil corrosivity, depth to groundwater, limitations for embankments, building foundations and roads.

## Section 4 – Physical Environment

---

### 4.1.4.4 Pipelines

Specifications for proposed pipelines would require that during the project conceptual design phase, site-specific geotechnical and engineering geologic investigations analyze site-specific lateral spread, expansive soil and liquefaction potential in accordance with Special Publication 117 (CGS, 1997) and the 2007 California Building Code (CBC, 2007) and incorporate provisions for appropriate construction techniques. Where large pipelines cross active faults, consideration will be given to installation of flexible couplings between pipeline segments to minimize breakage. Geotechnical foundation analyses would determine the need for pipeline coating (to address corrosivity), pipeline trench configuration, types and amount of bedding, compaction of overburden, and repaving, if required.

Where the activities are on Tribal lands, such as constructing pipelines to connect reservation land to the CVWD water or sewer systems, implementation of the measures on Tribal lands would require consideration and approval by the affected Tribe.

### 4.1.5 Programmatic Impact Determination

Because CVWD will be implementing CGS Special Publication 117, CBC and UBC requirements, as applicable, the impacts of existing and projected soil and seismic conditions on risk to life and property would be less than significant.

### 4.1.6 Mitigation Measures

Measures to reduce soil and geologic hazards to acceptable levels are required by the CBC and California Geological Survey (CGS) Special Publication 117 in the design and specifications of facilities in seismically active areas and or areas with soil limitations for foundations, as described above. CVWD repairs facilities damaged by seismic activity as soon as feasible as part of its existing operations. Therefore, no mitigation is required.

## 4.2 AIR QUALITY

The 2002 PEIR Section 4.4 presented detailed information on the meteorology and climate of the Coachella Valley, the air quality regulatory environment, existing air quality, significance criteria, impacts, and mitigation measures. An additional section in the air quality chapter described the consistency of the Proposed Project with regional air quality-related plans. The 2002 information is summarized in this document.

The following discussion is presented in this SPEIR to update the 2002 information. Additional air quality monitoring data are now available. National and state ambient air quality standards (AAQS) have changed since 2002, and several air quality plans specifically relevant to the Coachella Valley have been published since that time. In addition, CEQA air quality analyses for projects since 2002 have frequently found that calculated construction emissions for even relatively modest projects can exceed applicable significance thresholds for nitrogen oxide.



#### 4.2.1 Environmental Setting and Regulatory Framework

The Project area is located within the Salton Sea Air Basin (SSAB) portion of the South Coast Air Basin (SCAB), which includes Imperial County and most of the low desert areas of central Riverside County. The Riverside County portion of the SSAB and is regulated by the South Coast Air Quality Management District (SCAQMD). The southern portion of the SSAB is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD).

##### 4.2.1.1 Meteorology and Climate

The study area is arid continental, with hot, dry summers, moderate to cool winters, occasional thunderstorms, low humidity, low rainfall, and large variations in daily temperature. Gusty high winds with sandstorms occur, primarily during the spring and early summer months.

Monthly average minimum temperatures (December-January) range from 37.7 °F at Mecca to 40.8 °F at Palm Springs; monthly average maximum temperatures (July) range from 106.1 °F at Mecca to 109.1 °F at Palm Springs (NOAA, 2003).

The average annual precipitation in the study area varies from a low of 3 inches in the Imperial and Coachella Valleys to over 40 inches in the western bordering mountains. Most precipitation is produced by winter storms (November through March) from the north Pacific, but tropical air masses from the south can bring summer rainfall. Within the Valley, average annual rainfall varies from 2.66 inches at Mecca to 5.20 inches at Palm Springs (NOAA, 2003).

Evaporation rates are high because of warm year-round temperatures, abundant sunshine and wind. DWR has estimated that average annual evaporation ranges from 80 inches near Mecca to 62 inches near Whitewater. Evaporation at the Salton Sea ranges from 67 to 72 inches per year (DWR, 1964).

Arid soil, soil erosion and runoff in the West Valley create huge deposits of sand. High wind conditions, especially in the spring, carry this “blowsand” down the Valley. Sand migration and man-made secondary effects create the main air quality problem in the region, fugitive dust (also called particulate matter). A Coachella Valley blowsand zone has been identified as a corridor of land extending two miles to either side of the centerline of the Interstate 10 Freeway (I-10), beginning at the State Route (SR) 111-I-10 junction and continuing southeast to the I-10-Jefferson Street interchange in Indio (Riverside County, 2003).

With respect to wind patterns, the Coachella Valley to the northwest and the Imperial Valley to the southeast, as well as the Salton Sea itself, influence winds in the area. In the absence of strong frontal systems or strong gradients between high and low pressure areas, which would generate a regionally dominant wind direction, winds from the Coachella Valley and Imperial Valley are likely to converge in the vicinity of the Salton Sea, creating complex airflow patterns. Prevailing winds in the Coachella Valley are strongly from the northwest.

As a consequence, winds over the southeastern part of Salton Sea tend to differ from those over the northern part of the Salton Sea. Because of the influence of mountains, valleys, and the sea

## Section 4 – Physical Environment

water surface, and in response to intense summer time heating, wind conditions vary widely over short distances at the Salton Sea.

### 4.2.1.2 Air Quality Regulatory Environment

Air quality is described in terms of compliance with state and national ambient air quality standards under the Clean Air Act (CAA), the levels of air pollutants considered safe to protect public health and welfare. **Table 4-2** below presents current air quality standards.

**Table 4-2  
National and California Ambient Air Quality Standards**

Air Pollutant	National Standard	California Standard
Ozone (O <sub>3</sub> )	0.12 ppm (1-hr avg) 0.08 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide (CO)	9 ppm (8-hr avg) 35 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20 ppm (1-hr avg)
Nitrogen Dioxide (NO <sub>2</sub> )	0.10 ppm ((1-hr avg) 0.053 ppm (AAM)	0.18 ppm (1-hr avg) 0.03 ppm AAM
Sulfur Dioxide (SO <sub>2</sub> )	0.5 ppm (1300 µg/m <sup>3</sup> ) (3-hr avg) 75 ppb (196 µg/m <sup>3</sup> ) (1-hr avg)	0.04 ppm (24-hr avg) 0.25 ppm (1-hr avg)
Particulate Matter less than 10 microns in diameter (PM10)	150 µg/m <sup>3</sup> (24-hr avg)	50 µg/m <sup>3</sup> (24-hr avg) 20 µg/m <sup>3</sup> (AGM)
Particulate Matter less than 2.5 microns in diameter (PM2.5)	15 µg/m <sup>3</sup> (AAM) 35 µg/m <sup>3</sup> (24-hr avg)	12 µg/m <sup>3</sup> (AAM)
Sulfates (SO <sub>x</sub> )	None	25 µg/m <sup>3</sup> (24-hr avg)
Lead (Pb)	1.5 µg/m <sup>3</sup> (quarterly avg)	1.5 µg/m <sup>3</sup> (30-day avg)
Sulfates	No federal standard	25 µg/m <sup>3</sup> (24-hr avg)
Hydrogen sulfide	No federal standard	42 µg/m <sup>3</sup> (1-hr avg)
Vinyl chloride	No federal standard	0.01 ppm (26 µg/m <sup>3</sup> (24-hr avg)

Source: California Air Resources Board (CARB), 2010.

AAM – annual arithmetic mean; AGM – annual geometric mean; avg = average; µg/m<sup>3</sup> = microgram(s) per cubic meter; hr = hour; ppm = parts per million

### 4.2.1.3 Air Quality Planning Documents

The applicable air quality plans for the Proposed Project area are:

- Coachella Valley PM10 Attainment Redesignation Request and Maintenance Plan (SCAQMD, 1996),
- 2002 Coachella Valley PM10 State Implementation Plan (SIP) (SCAQMD, 2002); Final 2003 Coachella Valley PM10 SIP (SCAQMD, 2003b), a revision to the 2002 Coachella Valley PM10 SIP,

- Coachella Valley/San Jacinto region portion of the 2004 Southeast Desert Modified Ozone State Implementation Plan (2004 SED SIP), which falls within SCAQMD jurisdiction,
- 2007 Air Quality Management Plan (AQMP) (SCAQMD, 2007), and
- 2007 Ozone and PM 2.5 Plan.

### *Coachella Valley PM10 Attainment Redesignation Request and Maintenance Plan*

In 1996, Coachella Valley was designated as a serious nonattainment area for PM10 (particulate matter with an aerodynamic diameter of 10 microns or less). Under the federal CAA, an area can be redesignated as attainment if, among other requirements, the U.S. Environmental Protection Agency (USEPA) determines that the national ambient air quality standards (NAAQS) have been attained. USEPA guidance further states that a determination of compliance with the NAAQS must be based on three complete, consecutive calendar years of quality-assured air quality monitoring data. In applying USEPA approved Natural Events Policy (NEP), the Coachella Valley had not violated either the 24-hour or annual average PM10 standards during three calendar years (1993 through 1995). Accordingly, the purpose of this plan was to request a redesignation of the Coachella Valley to attainment for PM10 and to submit the attendant maintenance plan and other required actions to qualify for such redesignation by the USEPA.

### *SCAQMD 1990 Coachella Valley SIP and 1994 Best Available Control Measures SIP; the 2002 SIP*

The Coachella Valley and the SCAQMD have adopted and implemented PM10 dust controls for 20 years (the 1990 Coachella Valley SIP and 1994 BACM SIP, SCAQMD Rules 403 and 403.1 [Fugitive Dust], local dust control ordinances and clean streets management program). **Tables 4-3, 4-4 and 4-5** present SCAQMD Rule 403 BACM.

USEPA SIP-approved the Coachella Valley's local dust control ordinances and AQMD's fugitive dust rules in 1999. The attainment date for serious non-attainment areas to achieve the PM10 NAAQS was 2001. After years of demonstrating attainment of the PM10 standards, PM10 levels in 1999 through 2001 did not demonstrate attainment of the annual average PM10 NAAQS. For reference, Coachella Valley has attained the 24-hour PM10 standard since 1993.

When it became apparent that the Coachella Valley would not be able to continue to demonstrate attainment of the PM10 NAAQS by 2001, SCAQMD staff, in conjunction with local Coachella Valley jurisdictions, agencies, and stakeholders prepared the 2002 CVSIP. The 2002 CVSIP included control program enhancements that met the Most Stringent Measure (MSM) requirements and CAA requirements for an extension of the PM10 attainment date to 2006. The SCAQMD adopted the 2002 CVSIP Addendum on September 12, 2002, which detailed the 2003 milestone year target and emission budgets. USEPA final approval occurred on April 18, 2003 (67 FR 77206-77211).

**Table 4-3  
SCAQMD Rule 403 Table 1 Best Available Control Measures  
for High Wind Conditions**

Fugitive Dust Source Category	Control Measures	
<b>Earth-moving</b>	(1A) (2A)	Cease all active operations; OR Apply water to soil not more than 15 minutes prior to moving such soil.
<b>Disturbed surface areas</b>	(0B)  (1B) (2B)  (3B) (4B)	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR Apply chemical stabilizers prior to wind event; OR Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR Take the actions specified in Table 2, Item (3c); OR Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
<b>Unpaved roads</b>	(1C) (2C) (3C)	Apply chemical stabilizers prior to wind event; OR Apply water twice [once] per hour during active operation; OR Stop all vehicular traffic.
<b>Open storage piles</b>	(1D) (2D)	Apply water twice [once] per hour; OR Install temporary coverings.
<b>Paved road track-out</b>	(1E) (2E)	Cover all haul vehicles; OR Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
<b>All Categories</b>	(1F)	Any other control measures approved by the Executive Officer and the USEPA as equivalent to the methods specified in Table 1 may be used.

Source: SCAQMD Rule 403. Measures in [brackets] are reasonably available control measures and only apply to sources not within the SCAB.

***SCAQMD Air Quality Management Plan***

The AQMP is designed to satisfy the planning requirements of both the federal and California Clean Air Acts. The AQMP outlines strategies and measures to achieve federal and state standards for healthful air quality for all areas under SCAQMD’s jurisdiction, including portions of the SSAB under its jurisdiction.

The Final 2007 AQMP (SCAQMD, 2007) proposed policies and measures contemplated by responsible agencies to achieve federal standards for healthful air quality in the Basin and those portions of the SSAB (formerly named the Southeast Desert Air Basin) that are under District jurisdiction (namely, the Coachella Valley).







**Table 4-5  
SCAQMD Rule 403 Table 3 Track-Out Control Options  
Paragraph (d)(5)(B) Control Options**

(1)	Pave or apply chemical stabilization at sufficient concentration and frequency to maintain a stabilized surface starting from the point of intersection with the public paved surface, and extending for a centerline distance of at least 100 feet and a width of at least 20 feet.
(2)	Pave from the point of intersection with the public paved road surface, and extending for a centerline distance of at least 25 feet and a width of at least 20 feet, and install a track-out control device immediately adjacent to the paved surface such that exiting vehicles do not travel on any unpaved road surface after passing through the track-out control device.
(3)	Any other control measures approved by the Executive Officer and the USEPA as equivalent to the methods in specified in Table 3 may be used.

***Coachella Valley PM10 SIP***

In 2002, The Coachella Valley portion of Riverside County was designated as a serious non-attainment area for PM10. Therefore SCAQMD prepared the Final 2003 Coachella Valley PM10 SIP, a revision to the 2002 Coachella Valley PM10 SIP (SCAQMD, 2002; SCAQMD, 2003b) to address airborne particulates. The Coachella Valley PM10 SIP outlined expected improvements based on adopted regulations, identified strategies and measures to control fugitive dust specifically in the Coachella Valley, and addressed the timing of new technology and incentive funding programs.

To achieve the emission reductions needed for both ozone and particulate matter, the State strategy proposed aggressive near-term controls for trucks, construction equipment, and agricultural equipment. Under the CARB Carl Moyer Memorial Air Quality Standards Attainment Program incentive grants are available for cleaner-than-required engines, equipment and other sources of pollution providing early or extra emission reductions (SCAQMD, 2007; CARB 2011):

- **Cleaner In-Use Heavy-Duty Trucks.** Comprehensive in-use diesel truck emissions reduction program that includes a fleet modernization rule and an enhanced screening and repair program. The CARB roadside heavy-duty vehicle inspection program will be expanded to more effectively identify and screen trucks that need emission control system repairs.
- **Agricultural Equipment Fleet Modernization.** Accelerate the modernization of the fleet of agricultural equipment used in California, removing older, dirtier equipment from service to be replaced with engines reflecting cleaner technologies.
- **Cleaner In-Use Off-Road Equipment.** Establish fleet average emission limits for off-road equipment (over 25 horsepower) that would require older, dirtier engines to be replaced with engines reflecting current technologies or retrofitted with emission control devices.

## Section 4 – Physical Environment

---

CVWD is meeting the requirements of the CARB In-Use On-Road Heavy-Duty Diesel Vehicle Regulation by complying with the schedule to retrofit its on-road diesel fleet with Diesel Particulate Filters. To date, the District has retrofitted 26 trucks and will be retrofiting 11 more trucks in 2011. CVWD is compliant with the Off-Road Diesel Regulation by reporting its off-road fleet and attaching CARB Equipment Identification Numbers to each piece of equipment. The CVWD also has a written idling policy limiting idling times to 5 minutes for its on-road and off-road fleet.

SCAQMD Rule 403 Fugitive Dust (SCAQMD, 2005) identifies BACM (Rule 403 Table 1) applicable to all construction activities such as backfilling, clearing and grubbing, clearing forms, curt and fill, demolition, disturbed soil, earth-moving activities, landscaping, staging areas, stockpiles, trenching, etc.

SCAQMD Rule 403.1, last amended in April 2004, describes supplemental fugitive dust control requirements for Coachella Valley sources. The Rule requires preparation and implementation of a Fugitive Dust Control Plan for construction projects with a disturbed surface area of more than 5,000 square feet. Projects with a disturbed surface area of 50 or more acres are further required to have a Dust Control Supervisor on-site, or readily available, to ensure compliance with dust control measures.

The Rule 403 Implementation Handbook includes lists of chemical dust suppressants, sample recordkeeping, and guidance on preparation of high wind fugitive dust control plans. Other control measures described in the text of Rule 403.1 are determination of when wind speed conditions exceed 25 miles per hour and stabilization of bulk material deposits in the Coachella Valley Blowsand Zone (SCAQMD, 2004).

### ***2004 Southeast Desert (SED) Modified Ozone State Implementation Plan***

The CARB SED Modified Air Quality Management Area covers the Victor Valley/Barstow region in San Bernardino County (Mojave Desert), the Coachella Valley/San Jacinto region in Riverside County (Coachella), and the Antelope Valley region in Los Angeles County (Antelope Valley). Each district is responsible for developing the portion of the 2004 Southeast Desert Modified Ozone State Implementation Plan (2004 SED SIP) that falls within its jurisdiction. Coachella's air pollution control program is under the jurisdiction of the SCAQMD.

### ***2007 South Coast and Coachella Valley 8-Hour Ozone and PM2.5 Plans***

At a public meeting held on September 27, 2007, the CARB approved the South Coast Air Basin and the Coachella Valley 2007 Air Quality Management Plan for Attaining the Federal 8-hour Ozone and PM2.5 Standards. The plan projects attainment for the 8-hour Ozone standard by 2024 and the PM2.5 standard by 2015.



***2008 CARB Early Progress Plans Demonstrating Progress Toward Attaining the 8-hour National Air Quality Standard for Ozone and Setting Transportation Conformity Budgets for Ventura County, Antelope Valley - Western Mojave Desert, Coachella Valley, Eastern Kern County, Imperial County***

CARB has recommended that the CARB Board adopt the ozone Early Progress Plans in this report as amendments to the SIP in order to establish transportation conformity emissions budgets for Ventura County, Antelope Valley-Western Mojave Desert, Coachella Valley, Eastern Kern County and Imperial County (CARB, 2008a). Normally, these conformity budgets would be with set with reasonable further progress (RFP) plans. However, the U.S. Environmental Protection Agency (USEPA) is revising its regulations setting out the requirements for RFP plans and will not be able to approve RFP plans for these areas until that revision is complete. Setting conformity budgets with these early progress plans will allow transportation planning to move forward in the interim.

***2010 Coachella Valley PM10 Redesignation Request and Maintenance Plan***

The Coachella Valley was designated as a serious nonattainment area for the 24-hour federal standard for PM10 and the first PM10 attainment plan for the Coachella Valley was adopted in 1990. The 2002 plan revision requested and obtained an extension of the attainment date to 2006. In various plan revisions, the SCAQMD adopted increasingly stringent dust measures. Riverside County and nine cities also adopted and tightened local fugitive dust ordinances. As a result, the Coachella Valley attained the 24-hour PM10 standard by the 2006 attainment date. In early 2010, the SCAQMD and CARB adopted the PM10 Redesignation Request and Maintenance Plan for the Coachella Valley.

**4.2.1.4 Existing Air Quality**

The Coachella Valley portion of Riverside County is designated as a “serious-15” non-attainment area (as of June 15, 2005) for ozone (8-hour) and PM10 (USEPA, 2010). **Table 4-6** presents air quality data collected at the two SCAQMD Coachella Valley monitoring stations (Coachella Valley 1 - Palm Springs and Coachella Valley, 2 - Indio) for the years 2006-2009 (SCAQMD, 2010).

A comparison of the data below with 2002 PEIR **Table 4-9**, which presented air quality for the years 1996–1999, shows that air quality measured at Palms Springs has not changed substantially. The Valley remains in attainment for federal PM10 standards. Air quality measured at the Indio station shows higher levels of particulates than in previous years, attributed to increased construction activity in that city.

The frequency of ozone exceedances was substantially higher at both stations in 2008 and 2009 than previously, but the exceedance standard was reduced in 2008. Recall that the origin of ozone in the Coachella Valley is largely the South Coast Air Basin located upwind. At the same

Section 4 – Physical Environment

**Table 4-6  
Coachella Valley Air Quality (2006 – 2009)**

Pollutant*	Number of Samples Federal/State Standards Exceeded and Percentage of Days Exceeded (%)							
	Coachella Valley 1 — Palm Springs Station				Coachella Valley 2 — Indio Station			
	2006	2007	2008	2009	2006	2007	2008	2009
	Fed / St	Fed / St	Fed / St	Fed / St	Fed / St	Fed / St	Fed / St	Fed / St
CO	0 / 0	0 / 0	0 / 0	0 / 0	NM	NM	NM	NM
O <sub>3</sub>	2 / 37 <sup>1</sup>	1 / 29 <sup>1</sup>	51 / 26 <sup>2</sup>	53 / 73 <sup>2</sup>	7 / 4	0 / 8	27 / 11 <sup>2</sup>	24 / 41
NO <sub>x</sub>	0 / 0	0 / 0	0 / 0	0 / 0	NM	NM	NM	NM
PM10 <sup>3</sup>	0 / 2 (3.5%)	0 / 6 (11%)	0 / 4 (9%) <sup>5</sup>	0 / 1 (1.9%)	0 / 57 (49.6%) <sup>6</sup>	0 / 51 (59%) <sup>6</sup>	0 / 25 (22%) <sup>5</sup>	0 / 9 (7.5%)
PM2.5 <sup>4</sup>	0 / NSS	0 / NSS	0 / NSS	0 / NSS	0 / NSS	0 / NSS	0 / NSS	0 / NSS

Source: SCAQMD, 2010.

\* CO = carbon monoxide; O<sub>3</sub> = ozone; NM = Not Measured; NO<sub>x</sub> = nitrogen oxides; NSS = No State Standard; PM10 = particulates 10 microns or less in diameter; PM2.5 = particulates 2.5 microns or less in diameter.

Notes:

1 = Federal and state one-hour standards considered.

2 = Federal and state current eight-hour standards considered.

3 = Samples collected every 6 days; percentage of days exceeding standard shown in parenthesis.

4 = Samples were collected every 3 days

5 = Less than 12 full months of data; may not be representative.

6 = Data for the sample collected on a high-wind day were excluded in accordance with EPA's Natural Events Policy.

NSS = no standard for hourly emissions, State standard is 12 µg/m<sup>3</sup> AAM.

time, PM10 and PM2.5 exceedances in the Coachella Valley decreased, due to the ongoing implementation of the SCAQMD maintenance plans.

### 4.2.2 Significance Criteria

Based on existing limits for new source review (Regulation XIII), the SCAQMD has developed significance criteria for project construction and operation. These criteria are published in the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). The SCAQMD is preparing a new CEQA guidance document, but it is not yet available for use. **Table 4-4** summarizes the thresholds updated as of April 2011 available on the SCAQMD Website.

**Table 4-7** includes a greenhouse gas (GHG) emissions significance threshold for industrial facilities. GHG impacts of the Proposed Project are discussed in **Section 9 - Related Projects and Cumulative Impacts**.

According to State CEQA Guidelines, Appendix G VI(c), a project would be considered to have a significant impact on air quality if it:

- Conflicts with or obstructs implementation of the applicable air quality plan,
- Violates any air quality standard or contributes substantially to an existing or projected air quality violation,
- Results 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),
- Exposes sensitive receptors to substantial pollutant concentrations, or
- Creates objectionable odors affecting a substantial number of people.

### 4.2.3 Programmatic Impact Assessment

The 2002 PEIR evaluated air quality impacts in Section 4.4 and indicated that impacts would be evaluated on a site-specific, project-by-project basis. Mitigation measures for construction emissions and operation emissions were presented in the PEIR and adopted in the MMRP for the 2002 WMP. Construction emissions and operation emissions were found to be less than significant with this mitigation incorporated.

The following is a programmatic assessment of potential construction and operation air quality impacts from implementation of the 2010 WMP Update. Applicable significance thresholds have been updated and modified for the Coachella Valley. Individual 2010 WMP Update elements will be evaluated for air quality impacts on a site-specific basis in second-tier environmental documents.

**Table 4-7  
SCAQMD Air Quality Significance Thresholds for the Coachella Valley**

<b>Mass Daily Thresholds <sup>a</sup></b>		
<b>Pollutant</b>	<b>Construction <sup>b</sup></b>	<b>Operation <sup>c</sup></b>
<b>NOx</b>	100 lbs/day	100 lbs/day
<b>VOC</b>	75 lbs/day	75 lbs/day
<b>PM10</b>	150 lbs/day	150 lbs/day
<b>PM2.5</b>	55 lbs/day	55 lbs/day
<b>SOx</b>	150 lbs/day	150 lbs/day
<b>CO</b>	550 lbs/day	550 lbs/day
<b>Lead</b>	3 lbs/day	3 lbs/day
<b>Toxic Air Contaminants (TACs) and Odor Thresholds</b>		
<b>TACs</b> (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Cancer Burden $>0.5$ excess cancer cases (in areas $\geq$ 1 in 1 million) Chronic & Acute Hazard Index $\geq$ 1.0 (project increment)	
<b>Odor</b>	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
<b>GHG</b>	10,000 MT/yr CO <sub>2</sub> eq for industrial facilities	
<b>Ambient Air Quality Standards for Criteria Pollutants <sup>d</sup></b>		
<b>NO<sub>2</sub></b> 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) & 0.0534 ppm (federal)	
<b>PM10</b> 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>e</sup> & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
<b>PM2.5</b> 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>e</sup> & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
<b>Sulfate</b> 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)	
<b>CO</b> 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state); 35 ppm (federal) 9.0 ppm (state/federal)	
<b>Lead</b> 30-day average Rolling 3-month average Quarterly average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal) 1.5 $\mu\text{g}/\text{m}^3$ (federal)	

<sup>a</sup> Source: SCAQMD, 1993; SCAQMD, 2011.

<sup>b</sup> Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

<sup>c</sup> For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

<sup>d</sup> Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

<sup>e</sup> Ambient air quality threshold based on SCAQMD Rule 403 Fugitive Dust.

lbs/day = pounds per day; ppm = parts per million;  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter;  $\geq$  greater than or equal to; GHG – greenhouse gas; MT/yr CO<sub>2</sub>eq = metric tons per year of carbon dioxide equivalents.

**4.2.3.1 Construction Emissions**

The 2010 WMP Update contains more constructed project elements than the 2002 WMP; so while the rates of emissions from construction vehicles, etc. would be similar, updated for projected construction dates, the total construction emissions from implementation of the Proposed Project would be greater. Whether air quality impacts are significant or not will depend on construction magnitude and scheduling.

Construction emissions will be created from development of specific WMP features (pipelines, pumping stations, tanks, recharge basins, water treatment plants, wastewater treatment plants and desalination plants) and have a temporary impact on air quality. **Table 4-8** lists specific pollutant sources to be considered and information needed to estimate construction emissions for a given project that can then be compared to SCAQMD thresholds in place at the time of construction.

**Table 4-8  
Typical Sources of Air Pollutants Emitted During Construction**

<b>Construction Activity</b>	<b>Basis for Determining Emissions</b>
Temporary electric generation	Emissions from stationary engines dependent on horsepower, % load, fuel type, and operations schedule.
Grading and excavation	Dust emissions dependent on the volume of earthwork per day; one estimation technique assumes 26.4 pounds of PM10 per day per acre*.
Construction equipment	Typical equipment includes loaders, bulldozers, rollers, motor graders, scrapers, etc. Emissions can be estimated based on specific types of equipment, operations schedule, and fuel use.
Construction workers' commutes (and travel on unpaved roadways)	Emission rates dependent on number of workers, length of commute, vehicle type, speed traveled, and construction schedule.
Materials deliveries (including transport of excavated soils)	Emissions dependent on number of trucks, length of trips, fuel use, speed traveled, and construction schedule.

\*SCAQMD CEQA Handbook, 1993.

Table A9-9 (p. A9-93) states, PM10 from graded surfaces = 26.4 pounds/day/acre graded.

In the intervening years since preparation of the 2002 PEIR, many construction projects have been found to have significant impacts with respect to NO<sub>x</sub> and other tailpipe emissions thresholds based upon calculation of peak day emissions. With respect to scheduling, if one or several large WMP projects were being constructed simultaneously, total emissions from construction could temporarily exceed significance thresholds, especially for NO<sub>x</sub>. Feasible mitigation measures' efficiencies, such as through the use of special fuels, may not reduce emissions below established thresholds or may not be suitable or feasible for all projects. Emissions may be brought below thresholds by extending construction schedules, but this results in greater emissions overall and delays projects unnecessarily. The impact is considered to be potentially significant.

## Section 4 – Physical Environment

---

### 4.2.3.2 Operation Emissions

Once constructed, operation of specific facilities in the 2010 WMP Update (pipelines, pumping stations, tanks, recharge basins, water treatment plants, desalination plants and wastewater treatment plants) is anticipated to have minor impacts on Coachella Valley air quality. Pipelines would be buried; tank reservoirs would create no emissions. Treatment plants and pumping stations would be enclosed. Pumping stations would use electric motors; provision of fuel-fired backup generators is not proposed. Vehicles would be required for periodic maintenance of pipelines, pumping stations, reservoirs, treatment plants, but the related air pollutant emissions are anticipated to be a less than significant increase over existing emissions from CVWD operations.

CVWD is meeting the requirements of the CARB In-Use On-Road Heavy-Duty Diesel Vehicle Regulation by complying with the schedule to retrofit its on-road diesel fleet with Diesel Particulate Filters. To date, the District has retrofitted 26 trucks and will be retrofiting 11 more trucks in 2011. CVWD is compliant with the Off-Road Diesel Regulation by reporting its off-road fleet and attaching CARB Equipment Identification Numbers to each piece of equipment. The CVWD also has a written idling policy limiting idling times to 5 minutes for its on-road and off-road fleet.

Maintenance of new groundwater recharge facilities would require earth moving equipment to periodically clean basins to maintain percolation rates and to repair berms or unpaved roads damaged by wind or water erosion. These activities could locally and temporarily increase fugitive dust, but would be required to implement SCAQMD rules for dust control. Therefore, the impact on air quality of recharge basin maintenance would be less than significant.

Overall Proposed Project impacts on energy consumption for operations are discussed in **Section 8 – Human or Built Environment**. Electrical energy is supplied to the Coachella Valley by Southern California Edison (SCE) and Imperial Irrigation District (IID) from a mix of fuels (See **Table 8-6**). Energy use for water conveyance, treatment and desalination will increase air emissions from the SCE and IID systems; reduction in electricity use for well pumping with higher groundwater levels will decrease energy consumption and associated emissions. However, as shown in **Table 8-5**, implementation of the Proposed Project through 2045 is projected to result in a net increase in Valley electrical energy use. Energy for water importation via SWP Exchange and Colorado River is provided by a suite of entities.

SCE and IID air pollutant emission rates for 2007 (the most recent data identified) are tabulated in **An estimate** of composite air pollutant emissions for all in Valley projects is based on estimated energy use from **Table 8-5**, the existing emission rates above, and assuming that West Valley projects would be powered by SCE and East Valley projects by IID. Based on energy usage, emission rates would decrease from 2009 conditions by 2020 and then increase substantially over 2009 conditions by 2045 with the implementation of desalination and other water treatment. Comparing to SCAQMD pounds per day criteria, the overall effect of operation of all Proposed Project elements from operation energy would exceed SCAQMD thresholds. Therefore, based on existing conceptions of facilities and existing SCAQMD thresholds, the impact of operating all of the Proposed Project elements simultaneously by 2045 would be potentially significant. However, the emissions from energy generation would not occur within

the Coachella Valley or even necessarily within the SCAQMD air basin, but rather from fuel-fired power generating facilities on the grid supplying energy to SCE and IID. Therefore, these emissions may not affect the local air basin and thus not contribute to the local impact.

Table 4-9, given in pounds per megawatt-hour (lbs/MWh) and compared to the national average (USEPA, 2007). SCE and IID emission rates have decreased significantly in recent years (USEPA, 2005).

An estimate of composite air pollutant emissions for all in Valley projects is based on estimated energy use from **Table 8-5**, the existing emission rates above, and assuming that West Valley projects would be powered by SCE and East Valley projects by IID. Based on energy usage, emission rates would decrease from 2009 conditions by 2020 and then increase substantially over 2009 conditions by 2045 with the implementation of desalination and other water treatment. Comparing to SCAQMD pounds per day criteria, the overall effect of operation of all Proposed Project elements from operation energy would exceed SCAQMD thresholds. Therefore, based on existing conceptions of facilities and existing SCAQMD thresholds, the impact of operating all of the Proposed Project elements simultaneously by 2045 would be potentially significant. However, the emissions from energy generation would not occur within the Coachella Valley or even necessarily within the SCAQMD air basin, but rather from fuel-fired power generating facilities on the grid supplying energy to SCE and IID. Therefore, these emissions may not affect the local air basin and thus not contribute to the local impact.

**Table 4-9  
Air Pollutant Emission Rates for Power Generators**

Parameter	SCE Emission Rate (lbs/MWh)	IID Emission Rate (lbs/MWh)	National Average Emission Rate (lbs/MWh)
Nitrogen oxide	0.62	1.87	1.79
Sulfur dioxide	0.42	0.96	4.75
Carbon dioxide	681	1,253	1,300

Source: USEPA, 2007. Methane emissions data were not readily available.

Additionally, the mix of fuels used by SCE and IID are changing and are anticipated to change substantially in the future, especially with expected increases in renewable energy facilities, with a further decrease in air pollutant emission rates per unit of electricity from current rates.

Further, it is possible that CVWD will implement low-emission energy facilities in the future that would further reduce overall Proposed Project operation emissions; for example, if the proposed desalination facilities were supplied in whole or in part by solar energy. CVWD has already committed to minimizing existing and future energy use in the design of new facilities, which would reduce or eliminate the unnecessary or wasteful use of energy and therefore energy-associated air pollutant emissions.



## Section 4 – Physical Environment

---

Moreover, the fundamental elements of the Proposed Project are those recommended in California Assembly Bill (AB) 32 Scoping Report (CARB, 2008b) for reducing energy and emissions from the Water Sector (See **Section 9.5.1.3**).

The implementation of and capacity of Proposed Project elements will depend heavily on growth approved by others, and could be significantly larger or smaller or not implemented at all, depending on future development patterns. Associated energy requirements would also change in magnitude from present estimates, as would associated power plant emissions. CVWD will have ongoing coordination with SCE and IID with respect to anticipated energy requirements as the implementation of WMP facilities' proceeds over the next 35 years.

In conclusion, the overall impact on air quality of power generation emissions resulting from Proposed Project implementation (water importation and desalination) is considered to be potentially significant. The emissions would not necessarily be within the Salton Sea Air Basin because the energy generated could be from power plants anywhere on the grid that supply SCE and IID. Mitigation of emissions of power generation per unit of power is beyond the control of CVWD. As discussed above, CVWD is working to reduce its own energy consumption and to develop alternative fuel sources for its own use.

See also the discussion of GHG emissions in **Section 9 — Related Projects and Cumulative Impacts**.

### **4.2.3.3 Consistency with Existing Plans**

Consistency with existing air quality plans is discussed in this section.

#### *Air Quality Management Plan/Growth Management Plan*

A project is deemed inconsistent with the applicable air quality plan if it would result in population and/or employment growth that exceeds growth estimated in the applicable air quality plan. The Proposed Project facilities needs are based on adopted 2008 SCAG population, housing and employment projections. The Proposed Project itself does not include development of housing or employment centers, and would accommodate, but not induce, population or employment growth approved by others (See also **Section 11**). That is, CVWD has no control over the magnitude, distribution or nature of development in the Coachella Valley, but rather is charged with providing utilities to serve growth approved by others (Riverside County and the Valley cities). If the growth does not materialize, CVWD would not build the facilities to serve it. Therefore, the Proposed Project would not conflict with or obstruct the implementation of the AQMP.

#### *Coachella Valley PM10 SIP*

With respect to the Coachella Valley PM10 SIP (SCAQMD, 2003) and the Coachella Valley/San Jacinto region portion of the air basin, the constructed elements that tier off the Proposed Project SPEIR complies with the dust control requirements of the SIP incorporated into the MMRP. SCQMD Rule 403 Fugitive Dust applies to the entire SCAQMD area; Rule 403.1 Wind Entrainment of Fugitive Dust applies only to the Coachella Valley (SCAQMD, 2004). Rule

403.1 requirements include monitoring wind speed; stabilization of material deposits by one or more of watering, use of chemical dust suppressants or installation of wind breaks (if the area is greater than 2500 square feet). The emergency or non-routine maintenance of flood control channels and water spreading basins is exempt. CVWD participates in SIP requirements designed to achieve attainment and mitigates fugitive dust impacts of CVWD actions as required.

By complying with Rules 403 and 403.1, the implementation of Proposed Project elements would not conflict with or obstruct implementation of the SIP. Therefore, the 2010 WMP Update would be consistent with the Coachella Valley PM10 Plan.

### ***2004 Southeast Desert Modified Ozone State Implementation Plan***

SCAQMD prepared the Coachella Valley portion (CV Ozone Budget Portion) of the transportation conformity emissions budgets for ozone precursors for the Southeast Desert Modified Air Quality Management Area ozone non-attainment area (SEDM area). The 2003 South Coast Air Quality Management Plan, (adopted August 1, 2003) Chapter 8 and Appendix 5 contained Coachella Valley attainment demonstration. On May 4, 2004, CARB submitted to USEPA the 2004 SED SIP for each portion of the nonattainment area along with supporting materials.

The SED plan addresses on-road vehicle ozone emissions. The Proposed Project elements would need to calculate their localized, temporary, on-road vehicle ozone emissions during construction and during operations to determine compliance with the Coachella Valley SED SIP. Because the proposed facilities sites are small, and on-road equipment needed for creation of recharge basins would be few in number, on-road vehicle ozone emissions are anticipated to be minor. Therefore, the Proposed Project is considered to be consistent with the Plan.

### ***Regional Mobility Plan/Congestion Management Plan***

The Proposed Project does not involve permanent alterations to existing roadways, substantial increases in vehicles or vehicle miles traveled, or changes to other transportation systems. Similarly, since the 2010 WMP Update will not influence the magnitude or distribution or population or housing, the project will not be relevant to the SCAG Regional Mobility or Congestion Management Plans.

### ***Air Toxics Control Plan***

The Air Toxics Control Plan developed by the SCAQMD (SCAQMD, 2000; 2004) identified potential strategies to reduce levels of toxic air pollutants in the SCAB, which includes the SSAB. Key toxic compounds identified in the plan are:

- Diesel particulates,
- 1,3-Butadiene,
- Benzene,
- Hexavalent chromium,
- Formaldehyde,

## Section 4 – Physical Environment

---

- Perchloroethylene,
- Acetaldehyde,
- Nickel,
- Methylene chloride, and
- Trichloroethylene.

Mobile sources are a major contributor to the total toxic emissions for all key toxic compounds except for methylene chloride, perchloroethylene, trichloroethylene, and nickel. The plan estimated that on road mobile sources contributed 51 percent, off road mobile sources 44 percent and stationary sources 5 percent. Therefore, the focus of the plan is on mobile sources — vehicle use or operations, fuel specifications, and vehicle ground access. Further emission reductions from utility and mobile equipment are listed in the plan, including use of low-sulfur fuel, particulate emissions reduction and, for stationary sources, use of electric and natural gas engines.

Control strategies were presented in the Plan:

### **Early-Action Control Strategies**

1. Fleet conversion of on-road vehicles
2. Amend Rule 1401 for new and modified sources of air toxics (add to list of chemicals)
3. Amend Rule 1402 for to reduce risk from existing sources of air toxics
4. Further reductions from gasoline dispensing facilities

Of these, only No. 1, fleet conversion of on road vehicles from diesel, potentially is relevant to Proposed Project operation; but the number of diesel vehicles is currently small and not projected to increase significantly. The Valley does not have heavy industry or highly toxic emitting stationary sources.

### **Control Strategies (Mobile)**

1. Control of diesel particulate through after-treatment
2. Control of diesel particulate emissions through engine design modifications
3. Alternatively fueled engines
4. Goods movement
5. Emission reductions from diesel engine idling
6. Locomotive operations
7. Control of locomotive idling emissions
8. Commercial motor boats, ships, and tugs
9. Mitigation of emissions at airports
10. Phase-out of alkyl-lead emissions from aviation gasoline
11. Further emission reductions from utility and mobile equipment
12. Reduction of TACs from gasoline-powered engines through the use of catalysts
13. Mobile source NOx emission reduction credit program

Of the above, most potentially relevant strategies consider emissions from engines (1, 2, 3, 5 and 13), which are not significant now and not expected to increase significantly with

implementation of the Proposed Project. The Proposed Project will not involve significant goods movement (no. 4) once constructed. The others are either not relevant to water operations (Nos. 6 through 10), or are outside the CVWD's authority (e.g., no. 12). CVWD equipment is largely electricity powered.

**Control Strategies (Stationary Source)**

1. Control of emissions from metal finishing operations
2. Further reductions of perchloroethylene emissions from dry cleaning operations
3. Control of emissions from motion picture film processing
4. Reduction of TACs from solvent cleaning/degreasing operations
5. Control of methylene chloride emissions from miscellaneous sources and wood product stripping
6. Further emission reductions from biomedical sterilization operations
7. Control of emissions from rubber products manufacturing
8. Risk reduction strategies for aerospace manufacturing operations
9. Reduction of TACs through pollution prevention/elimination

Of these, only No. 9 is potentially relevant to the Proposed Project, but is not specific.

Implementation of the 2010 WMP Update will not require a significant increase in mobile source emissions—the CVWD will not need to increase significantly its diesel vehicle fleet. The construction and operation of recharge basins will not result in the emission of significant toxic emissions—no new diesel equipment will be necessary. Adding tertiary treatment at three existing wastewater plants will not significantly increase emissions of volatile organic compounds or disinfectants such as chlorine gas. Disinfection of tertiary effluent will use less chlorine per gallon treated to achieve the same level of pathogen inactivation. Future treatment plants' capacity expansions are not part of the Proposed Project.

Potentially toxic chemicals used at pumping stations, water treatment plants and desalination plants (chlorine, acids, polymers, etc.) will be transported, handled and stored in keeping with applicable toxic materials regulations that specify enclosure, alarms for leaks, special containers and containment and maintenance. Therefore, these stationary facilities' emissions of air toxics would be less than significant. CVWD vehicles and will use clean fuel when it is available.

Therefore, the Proposed Project is considered to be consistent with the Air Toxics Control Plan.

**4.2.3.4 Additional Air Quality Evaluations**

Additional evaluations address potential impacts relative to sensitive receptors and odors.

***Sensitive Receptors***

With respect to exposure of sensitive receptors (residences, schools, hospitals, convalescent homes) to substantial air pollutant concentrations, individual second-tier CEQA documents will evaluate and mitigate potential exposure of sensitive receptors on a site-specific basis. However,

## Section 4 – Physical Environment

---

because of the small scale, short construction duration and relatively remote locations from sensitive receptors of the larger proposed facilities, it is anticipated that air quality impacts of construction on sensitive receptors would be less than significant.

With respect to air quality impacts of operation, the Proposed Project elements anticipate upgrading existing three wastewater treatment plants from secondary to tertiary quality effluent. The additional units would be tertiary filters on the same sites. Occasional trucking of tertiary sludge off-site would increase on-road emissions, but to a less than significant extent above existing levels. Other proposed facilities — pipelines, electrically powered pumping stations and tanks — would have minimal local emissions and those chiefly from operations vehicles. Water treatment plants and desalination plants will use more electricity, but not to create emissions at adjacent sensitive receptor areas, if any, rather from power plants outside the study area. Pipelines would be buried, pumping stations, tanks, water treatment and desalination plants would be enclosed. Emissions associated with recharge basins would be fugitive dust from occasional basin maintenance, reduced to less than significant levels by adherence to SCAQMD rules. Therefore, the air quality impact on sensitive receptors is considered to be less than significant.

### *Odor Impacts*

With respect to facilities in the 2010 WMP Update, principal potential odor sources in the study area are existing wastewater treatment plants. The Proposed Project includes the upgrade of WRP-4, VSD and CSD wastewater treatment plants from secondary to tertiary quality treatment. The additional units would be yard piping and tertiary filters, which are not odorous. The additional sludge or biosolids produced from the filtration process would not be more odorous than at present. Other proposed facilities—pipelines, pumping stations, recharge basins and desalination plants are not anticipated to create odors. Pipelines would be buried, pumping stations would be enclosed; recharge basins recharge low nutrient Colorado River water, and water treatment and desalination plants would be enclosed. Therefore, odor impacts would be less than significant.

### *Particulates from Exposed Playa at the Salton Sea*

The Quantification Settlement Agreement (QSA) signed in 2003, part of existing conditions for the Proposed Project, involves the transfer of Colorado River water from IID to CVWD, and San Diego County Water Authority (SDCWA), with the result that inflows to the Salton Sea from the Imperial Valley will decrease. As inflows decrease, the elevation of the Salton Sea will also decline and salinity will increase. Mitigation for the QSA included discharge of mitigation water from IID to the Salton Sea, but only through 2017, to slow the decline in water level and increase in salinity. After 2017, sea levels are anticipated to decline and salinity to increase at increasing rates. Even before implementation of the QSA and even with the addition of mitigation water, Salton Sea levels have fallen and salinity has increased.

With continued decline in Sea elevation, additional Sea bed is exposed, forming exposed playa, a potential source of fugitive dust or PM10. The Salton Sea Air Basin currently is a non-attainment area for PM10, so increases in PM10 would be considered a potentially significant impact.

The Salton Sea Ecosystem Restoration Plan (SSERP) PEIR prepared for DWR (CH2MHill, 2007) evaluated acreage of exposed playa under No Action conditions and also under the set of action alternatives. The PEIR analysis also assumed that 30 percent of exposed playa would not be emissive of fugitive dust, 50 percent would employ mitigation measures assumed to be 95 percent efficient and that 20 percent would use other mitigation measures assumed to be 85 percent efficient. However, the emissions predicted for the exposed playa under each alternative were also stated to be “estimated based on a set of conservative assumptions about the variability of flows, the future emissivity of the exposed playa, meteorological conditions and control efficiencies for the placeholder technologies. Further, the emissions estimates are based on preliminary data from limited studies of playa stability and emissivity conducted to date at the Salton Sea, a predictive model and currently proven control measures.” The SSERP PEIR recommended additional research on the amount and composition of fugitive dust emitted from Salton Sea playa and conditions that result in stable vs. emissive conditions. The SSERP PEIR also assumed that the QSA PEIR and IID Water Transfer Project EIR four-step dust mitigation plan would be implemented as part of existing conditions.

The SSERP PEIR used a hydrologic model to simulate exposed playa acreage for each year from 2006 through 2077. Relevant years for the present Proposed Project are 2009 through 2045. The Proposed Project is evaluated with respect to the SSERP No Action Alternative, which reflects existing conditions and future conditions in the absence of both projects. From the simulation, the total exposed playa (median value) was estimated to increase from 4,000 acres in 2006 to 7,000 acres by 2009. By 2045, the exposed playa was anticipated to reach 77,000 acres. As a result, under both SSERP No Action Alternatives, PM10 emissions from exposed playa by 2045 were anticipated to be approximately 150 tons/year, exceeding the SCAQMD and ICAPCD operation emissions threshold for the Salton Sea Air Basin of 70 tons per year.

The SSERP analysis has been used to compare the Proposed Project existing and projected flow estimates with SSERP projections for flows from other sources. Proposed Project existing flows, flows with minimum and with maximum desalination and without desalination are evaluated. It is anticipated that CVWD will make the decision to desalinate sometime after 2015-2020. With no desalination, the anticipated Coachella Valley inflow would increase from about 61,000 AFY to approximately 125,000 AFY in 2045. Therefore, under this scenario, the Proposed Project would offset to a minor extent the decrease in Salton Sea inflow — a beneficial effect. If minimum desalination is implemented, Salton Sea inflows would still increase from present levels to approximately 70,000 AFY, a smaller offset benefit, but still a benefit. If maximum desalination is implemented, there would be a potential decrease in Salton Sea inflows by 21,000 AFY to approximately 40,000 AFY. This decrease in Coachella Valley inflows would contribute to playa exposed by the decline in Salton Sea inflows.

Under the State Water Resources Control Board (SWRCB) Order WRD 2002-0013 (SWRCB, 2002) and the IID Water Conservation and Transfer Project adopted Mitigation Monitoring and Reporting Program (MMRP) (IID, 2003), potential air quality impacts from exposed Salton Sea playa are monitored and mitigated by implementing the following four steps. The agencies concluded however, that the residual impact after implementation of the four step process would be significant and unavoidable. The implementation plan is part of existing conditions for the Proposed Project.

## Section 4 – Physical Environment

---

1. **Restrict future access:** minimize disturbance of natural soil crusts and soils surfaces in exposed shoreline areas;
2. **Research and monitoring:** conduct research to find effective and efficient dust control measures for the exposed playa as the Sea recedes; and monitor the surrounding air quality;
3. **Create or purchase emission reductions:** if monitoring results indicate exposed areas are emissive, negotiate with the local air pollution control districts to develop a long-term program for reduction credits, and
4. **Direct emission reductions at the Salton Sea:** to the extent that offsets are not available, implement feasible dust control measures on the emissive part of the exposed playa. Based on the results of step 2 above, apply water to the Salton Sea playa to re-wet emissive areas or other feasible mitigation measures or a combination.

With respect to the present status of plan implementation, playa access limitations under step 1 are in place (IID, 2010). Implementing step 2, the Salton Sea Regional Air Monitoring System facilities were installed at six locations around the Salton Sea in 2009 and are collecting data. Air quality mitigation pilot projects at the Sea (under step 4) were designed and constructed in 2010 and comprise 10-50 acre areas at multiple locations. Various control techniques are tested using agricultural drain or sea water and each has an established monitoring protocol (IID, 2009). Additional cooperative projects that would potentially reduce dust generation (also under step 4) are the Saline Habitat Complex (currently on hold), Species Conservation Habitat (environmental document in preparation), a planned managed marsh habitat/air quality joint project, and development of alternative land uses. No progress has yet been made on step 3.

The air quality impact of exposed playa will be reduced by the implementation of the four step program. The impact from maximum desalination of Coachella Valley drain flows, should it be implemented under the Proposed Project, will also be reduced by this implementation plan. The Proposed Project impact on Salton Sea air quality from maximum desalination is nevertheless potentially significant and unavoidable because the available mitigation is not anticipated to fully mitigate the air quality impact.

Cumulative effects on air quality with the DWR SSERP and the Salton Sea Authority Restoration Plan are discussed in **Section 9 – Related Projects and Cumulative Impacts**.

### 4.2.4 Future Analysis for WMP Elements

Potential air pollutant emissions of construction and operation for individual Proposed Project elements will be compared to significance thresholds current at that time and to requirements of relevant air quality plans and rules. The document would identify locations of sensitive receptors and evaluate and mitigate potential impacts of air pollutant emissions and odors, if any. Mitigation measures, such as enclosing treatment plants and pumping stations or installing odor control devices, would be incorporated to reduce impacts.

Construction equipment shall be selected with low pollutant emissions and high energy efficiency. Factors to consider include model year, alternative fuels (e.g., compressed natural



gas, biodiesel, emulsified diesel, methanol, propane, butane, and low sulfur diesel) and lean-NO<sub>2</sub> catalyst.

CVWD is meeting and will continue to meet the requirements of the CARB In-Use On-Road Heavy-Duty Diesel Vehicle Regulation by complying with the schedule to retrofit its on-road diesel fleet with Diesel Particulate Filters. As of March 2011, the CVWD has retrofitted 26 trucks and will be retrofitting 11 more trucks in 2011. CVWD is also compliant with the Off-Road Diesel Regulation by reporting its off-road fleet and attaching ARB Equipment Identification Numbers to each piece of equipment. CVWD also has a written idling policy limiting idling times to 5 minutes for its on-road and off-road fleet.

Based on the site-specific description of the proposed facilities, the following shall be determined:

- Acreage of site disturbance that would occur during excavation, grading, and/or filling,
- List of necessary construction equipment (number, type, hours of operation per day, and number of days in operation for each phase of construction),
- Length of construction period, and
- Number of construction workers and vehicles.

Based on the above information, construction emissions shall then be estimated and compared to the current SCAQMD thresholds of significance. Applicable dust control measures shall be incorporated and implemented as applicable in compliance with SCAQMD Rules 403 and 403.1. The reader is referred to Rule 403 (Fugitive Dust) Table 1 — Best Available Control Measures (Applicable to All Construction Activity Sources), Table 2 — Dust Control Measures for Large Operations, and Table 3 — Contingency Control Measures for Large Operations (SCAQMD, 2005). Rule 403.1 Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources (SCAQMD, 2004).

Salton Sea air quality impacts from exposed playa are being monitored by a network of monitoring stations installed under the four step implementation plan. CVWD will obtain the air quality monitoring data and analyses as they are generated on an ongoing basis and, at such time as a decision to desalinate is made and thereafter, consider drain flows and other Salton Sea inflows to attempt to evaluate whether changes in air quality can be determined to be a function of drain flow diversion for desalination.

### **4.2.5 Mitigation Measures**

#### **4.2.5.1 Proposed Project Elements**

**AQ-1:** If individual project element or multiple elements with overlapping construction schedules are calculated in environmental documentation to exceed applicable air quality significance thresholds, the following measures shall be implemented to reduce the aggregate emissions associated with construction of the proposed facilities:

## Section 4 – Physical Environment

---

If the estimated construction emissions exceed the SCAQMD thresholds of significance for CO, ROC, NO<sub>2</sub>, or sulfate, then one or more of the following measures shall be incorporated in to project specifications and operation and maintenance manuals, as applicable:

- Prohibit vehicles from idling in excess of 10 minutes, both on- and off-site.
- Maintain construction equipment following manufacturers' recommendations and in proper tune to reduce exhaust emissions.
- Contractors shall establish and implement trip reduction plans to achieve a 1.5 average vehicle ridership for construction employees.
- Construction activities shall be discontinued during second stage smog alerts as declared by the SCAQMD.
- As feasible, construction equipment should be selected with low pollutant emissions and high energy efficiency. Factors to consider include model year, alternative fuels (e.g., compressed natural gas, biodiesel, emulsified diesel, methanol, propane, butane, and low sulfur diesel) and lean-NO<sub>2</sub> catalyst.

### 4.2.6 Programmatic Impact Determination after Mitigation

Mitigation Measure AQ-1 includes measures to reduce tailpipe emissions, including NO<sub>x</sub>, associated with the use of construction equipment and vehicles during construction of proposed facilities. The approximate NO<sub>x</sub> emissions reduction rates of various alternative fuels are: 60 percent for compressed natural gas, 10 percent for emulsified diesel fuel, and 2 to 10 percent for biodiesel fuel (USEPA, 2008). However, use of construction equipment with alternative fuel(s), while effective, may not be applicable to all projects. Limited equipment availability and high costs may make it infeasible to use a large fleet of construction equipment with alternative fuel(s). The effectiveness of other measures identified above (i.e., limiting idling, maintaining equipment, reduction of worker trips, and discontinuing of activities during smog alerts) in reducing tailpipe emissions is limited and cannot be quantified or both. The peak day emission rate can be reduced by extending the construction schedule for a project, but results in greater overall emissions and is not efficient. Therefore, it is possible that air emissions (particularly NO<sub>x</sub>) associated with equipment/vehicle exhaust during construction would exceed SCAQMD thresholds even with implementation of feasible measures. Therefore, construction impacts on air quality are potentially significant after mitigation.

# Section 5

## Surface Water Resources

---

This section of the Subsequent Program Environmental Impact Report (SPEIR) focuses on changes in the surface water environment that have arisen, are projected, or are in the Proposed Project since publication of the 2002 Water Management Plan (WMP) and its associated PEIR. There are no “new” surface waters (e.g., canals) in the study area, although a 35-mile-long segment of the Coachella Canal was recently lined to reduce seepage. Description of impacts focuses on surface water resources, natural or man-made, in the study area and on the capacity of existing water infrastructure to handle projected changes in flow volumes and/or in water quality from implementation of the Proposed Project. The analysis compares the projected effects of the 2010 WMP Update to the previous assessment for the 2002 WMP. This section summarizes the applicable regulatory background, describes existing surface water resources and flooding/drainage issues, defines significance criteria, presents the evaluation of impacts, and describes mitigation measures, where applicable. These discussions are presented for each major surface water feature, major water source or program.

Background information on California surface water regulations, resources and supplies that bear upon the Coachella Valley have not changed substantially since 2002. The Water Quality Control Plan (Basin Plan) prepared by the California Regional Water Quality Control Board, Colorado River Basin Region 7 (Regional Board) was updated in 2006, but the revised contents do not materially affect the study area or Proposed Project. The Regional Board is proceeding with implementation of Total Maximum Daily Load (TMDL) analyses for certain study area waters, so the status of those TMDLs is described. Certain water quality standards, such as for arsenic in drinking water, became more stringent. State (but not federal) Maximum Contaminant Levels (MCLs) were adopted for perchlorate in drinking water. At the same time, perchlorate levels have fallen to below method reporting detection limits in Colorado River water with treatment at the source on Las Vegas Wash, Nevada.

The study area for the SPEIR is the Coachella Valley and Salton Sea Planning Areas of the West Colorado River Basin, specifically the Coachella Valley within the Coachella hydrologic area of the Whitewater hydrologic unit (DWR, Department of Water Resources), 1964; Regional Board, 2006). Major surface waters in the study area and nearby region are listed below. Surface waters and water sources within the Coachella Valley are shown on **Figure 5-1**.

- Colorado River,
- Coachella Canal,
- The Metropolitan Water District of Southern California (Metropolitan) Colorado River Aqueduct (CRA),
- other local surface waters,
- Whitewater River and its tributaries

## Section 5 – Surface Water Resources

---

- Coachella Valley Stormwater Channel (CVSC), a man-made extension of the Whitewater River,
- a network of agricultural drains, and
- Salton Sea.

### 5.1 REGULATORY FRAMEWORK

#### 5.1.1 Federal Laws and Regulations

##### 5.1.1.1 Clean Water Act

The Clean Water Act (CWA), previously known as the Federal Water Pollution Control Act, was enacted to restore and maintain the chemical, physical and biological integrity of the nation's water to achieve a level of water quality that provides for recreation in and on the water and for the propagation of fish and wildlife ("fishable-swimmable"). The U.S. Environmental Protection Agency (USEPA), charged with implementing the CWA, delegated the preparation of water management plans under CWA Section 208 to the individual states.

Under CWA Section 404, the U. S. Army Corps of Engineers (USACE) regulates discharges of dredged and/or fill material into waters of the United States (U.S.). Waters of the U. S. are navigable waters, tributaries thereto, and adjacent wetlands and other waters where their degradation or destruction could affect interstate or foreign commerce (U.S. Code, 1972, as amended).

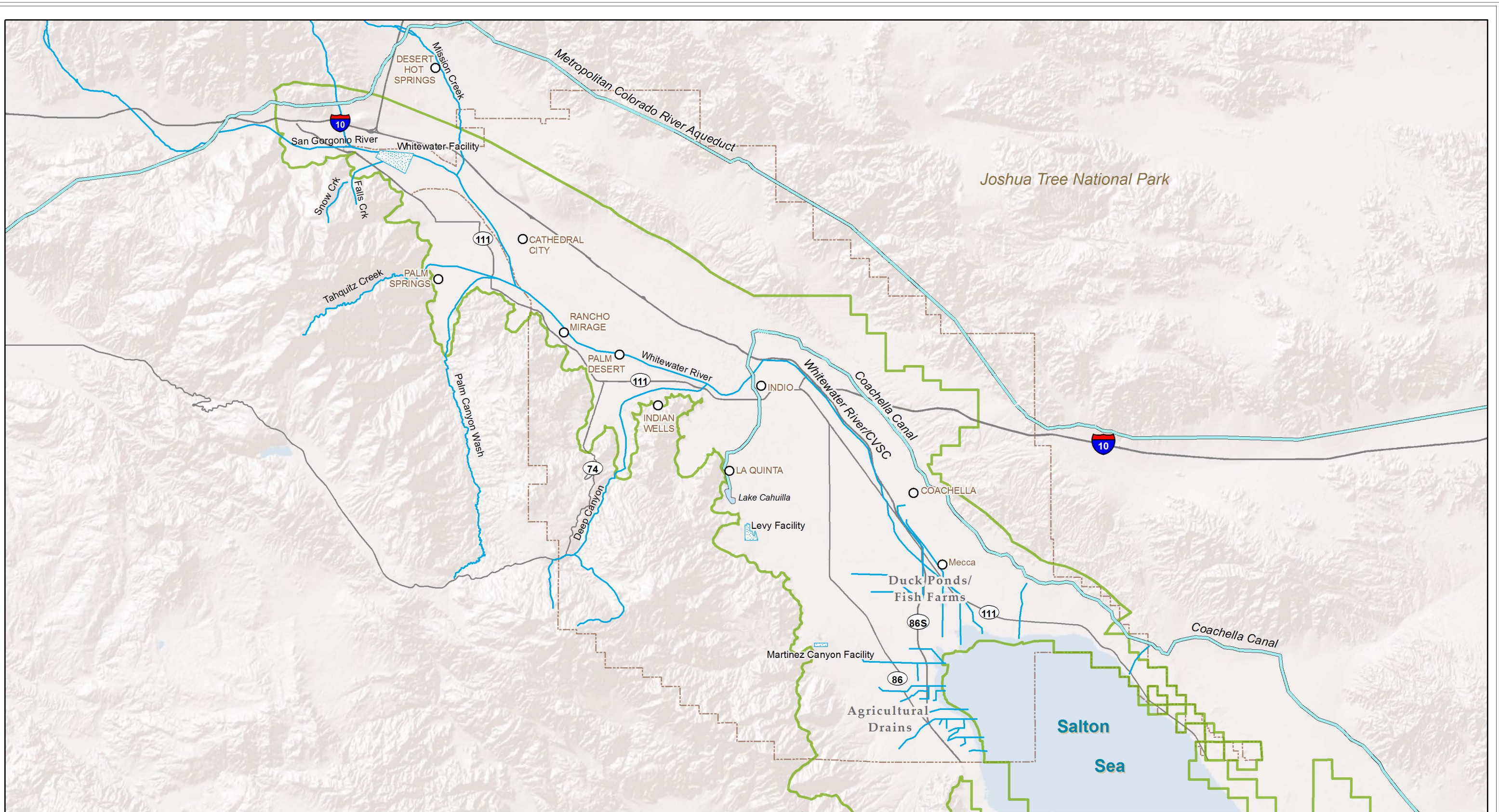
Under CWA Section 401, actions under CWA Section 404 require an analysis of effects on water quality in a Water Quality Certification. This program is administered by the Regional Board in California.

Section 303(d) of the CWA requires states, territories and authorized tribes to prepare a list of water bodies that do not or are not expected to attain water quality standards after application of required technology-based controls. The 303(d) list includes the size of the waterbody, the sampled pollutants affecting designated beneficial uses, the source of the pollutant, and the water body's priority status with regard to developing Total Maximum Daily Loads (TMDLs), which result in limits on discharged pollutants that will overcome water quality impairment.

In 1972, the CWA was amended to prohibit the discharge of pollutants to waters of the U.S. unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES permit program focuses on point source discharges from municipal wastewater plants, but also applies to industrial discharges, construction site dewatering discharges, and stormwater discharges to surface waters.

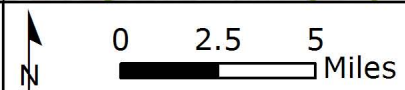
Management of the NPDES program in California has been delegated to the State Water Resources Control Board (SWRCB) and the nine Regional Boards, as discussed below.





**Key to Features**

- |   |          |  |          |  |                     |  |            |
|---|----------|--|----------|--|---------------------|--|------------|
| ○ | Cities   |  | Drainage |  | CVWD                |  | Study Area |
|   | Highways |  | Aqueduct |  | Recharge Facilities |  |            |



Document: \Coachella Valley WD\WMP Update\  
 14 Electronic Files - Modeling\GIS\Projects  
 WaterFeatures.mxd

Date: April 2011 Source: DWR, ESRI, County of Riverside

**Surface Water Features of the Coachella Valley**

Figure 5-1







### 5.1.1.2 EPA Toxics Rule

The USEPA developed water quality criteria for priority toxic pollutants and other water quality standards to be applied to inland surface waters, enclosed bays and estuaries in the State (USEPA, 2008a). The rule includes ambient human health criteria for 57 priority toxics, ambient aquatic life criteria for 23 priority pollutants and a compliance schedule.

## 5.1.2 State Laws and Regulations

### 5.1.2.1 Porter-Cologne Water Quality Control Act

The California Porter-Cologne Water Quality Control Act of 1970 gave the SWRCB ultimate authority over state water quality and established nine Regional Boards based on hydrologic basins. The SWRCB oversees construction runoff control for projects disturbing 1 acre or more (or or less than 1 acre but part of a larger common plan of development or sale) and requires coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, Order No. 2009-0009-DWQ, or acquisition of an individual permit for the construction activity (SWRCB, 2010c). NPDES Construction Stormwater Permits require preparation of a Stormwater Pollution Prevention Plan (SWPPP) that identifies potential pollution sources, runoff controls or Best Management Practices (BMPs) for construction and post construction activities and monitoring.

### 5.1.2.2 Water Quality Control Plan, Colorado River Basin Region

The area that would be directly affected by the implementation of the Proposed Project lies within the boundaries of the Colorado River Basin Regional Board, which encompasses the CVWD and DWA service areas. The Regional Board regulates discharges of water to land through the issuance of waste discharge requirements and discharges to surface waters through the NPDES permit program. The Regional Board also prepares, implements and periodically updates the Basin Plan. The current Region 7 Basin Plan was adopted in 2006 (Regional Board, 2006). The 2007 Triennial Review of the Basin Plan was completed and the Work Plan adopted on March 19, 2008 by Resolution R7-008-013. The 2006 Plan remains in effect as written until the Basin Plan is amended by implementation of individual Work Plan elements.

Basin Plans designate beneficial uses of surface waters and groundwaters that should be protected, establish water quality objectives (limits or levels of water constituents based on both state and federal laws to protect beneficial uses), and define an implementation program to meet water quality objectives.

### *Beneficial Uses*

**Table 5-1** and **Table 5-2** define and summarize the Basin Plan designated beneficial uses for surface waters in the study area. There have been no changes in the beneficial use designations for study area surface waters since the 2002 WMP was developed (Regional Board, 2001; 2006).



## Section 5 – Surface Water Resources

**Table 5-1  
Definitions of the Beneficial Uses of Water**

Category		Definition
MUN	Municipal and Domestic Supply	Uses of water for community, military or individual water supply systems including, but not limited to, drinking water supply.
AGR	Agriculture Supply	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
AQUA	Aquaculture	Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
IND	Industrial Service Supply	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
GWR	Groundwater Recharge	Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting salt water intrusion into fresh water aquifers.
REC I	Water Contact Recreation	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.
REC II	Non-Contact Water Recreation	Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
WARM	Warm Freshwater Habitat	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
COLD	Cold Freshwater Habitats	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
WILD	Wildlife Habitat	Uses of water that support terrestrial ecosystems including, but not limited to, the preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
POW	Hydropower Generation	Uses of water for hydropower generation.
FRSH	Freshwater Replenishment	Uses of water for natural or artificial maintenance of surface water quantity or quality.
RARE	Preservation of Rare, Threatened, or Endangered Species	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animals species established under state or federal law as rare, threatened or endangered.

Source: Regional Board, 2006.

**Table 5-2  
Designated Beneficial Uses for Study Area Surface Waters**

Beneficial Use	Use Code	Surface Water							
		Salton Sea	CVSC <sup>1</sup>	Coachella Valley Drains	Coachella Canal	White-water River <sup>2</sup>	Colorado River Aqueduct <sup>4</sup>	Unlisted Perennial and Intermittent Streams	Washes (Ephemeral Streams) <sup>6</sup>
Municipal and Domestic Supply	MUN				P	X	X	P	
Agricultural Supply	AGR				X	X			
Aquaculture	AQUA	X							
Freshwater Replenishment	FRSH		X	X				I X <sup>7</sup>	I <sup>7</sup>
Industrial Service Supply	IND	P							
Groundwater Recharge	GWR				X	X	X	I X	I
Water Contact Recreation	REC I	X	X <sup>3</sup>	X <sup>3</sup>	X <sup>3</sup>	X	P <sup>3</sup>	I P X	
Non-Contact Water Recreation	REC II	X	X <sup>3</sup>	X <sup>3</sup>	X <sup>3</sup>	X		I X	I
Warm Freshwater Habitat	WARM	X	X	X	X	I	X		<sup>8</sup>
Cold Freshwater Habitats	COLD					X			
Wildlife Habitat	WILD	X	X	X	X	X	X	I X	I
Hydropower Generation	POW					X	P		
Preservation of Rare, Threatened, or Endangered Species	RARE	X	X <sup>5</sup>	X <sup>5</sup>	X <sup>5</sup>			I X <sup>8</sup>	

Source: Regional Board, 2006.

X = Existing Use; P= Potential Use; I = Intermittent Use

1. Section of perennial flow from approximately Indio to the Salton Sea
2. Includes the section of flow from the headwaters in the San Gorgonio Mountains to (and including) the Whitewater Recharge Facility recharge basins near Indian Avenue crossing in Palm Springs
3. Unauthorized use
4. Metropolitan's CRA
5. Rare, endangered, or threatened wildlife exists in or uses some of these waterways. If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by-case basis is upon the CDFG on its own initiative and/or at the request of the Regional Board; and such substantiation must be provided within a reasonable time frame as approved by the Regional Board.
6. Includes the section of ephemeral flow in the Whitewater River Stormwater Channel and CVSC from Indian Avenue to approximately ¼ mile west of Monroe Street crossing.
7. Applies only to tributaries to the Salton Sea.
8. Use, if any, to be determined on a case-by-case basis.

## Section 5 – Surface Water Resources

### Water Quality Objectives

The 2006 Basin Plan defines water quality objectives to protect designated beneficial uses. Where existing water quality is better than established objectives, it is the Regional Board's objective to maintain that higher quality consistent with the SWRCB's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," also known as the state's Anti-Degradation Policy. Numeric water quality objectives have been developed for dissolved oxygen (DO), bacteria, total dissolved solids (TDS), and certain chemical constituents in surface waters as shown in **Table 5-3**.

**Table 5-3**  
**Water Quality Objectives for Study Area Surface Waters**

Constituent	Applicable Beneficial Use Category	Units	Objective	
Dissolved Oxygen	ALL	mg/L	Minimum level at any time: WARM 5.0 COLD 8.0 WARM and COLD 8.0	
Bacteria	REC I & REC II	MPN/100 mL	Geometric mean should not exceed:	
			<i>E. coli</i>	REC I 126 REC II 630
			enterococci	33 165
			Maximum allowable in any sample:	
			<i>E. coli</i>	400 2000
enterococci	100 500			
			Log mean for REC I Fecal coliform 200	
			Not more than 10% of samples/30 days 400	
Chemical Constituents, Inorganic and Organic	MUN	mg/L	Maximum Contaminant Levels (MCLs)	
			Arsenic 0.01	
			Barium 1.0	
			Cadmium 0.005	
			Chromium 0.05	
			Fluoride 2.0	
			Lead 0.015*	
			Mercury 0.002	
			Nitrate (as NO <sub>3</sub> ) 45.0	
			Nitrate plus Nitrite (sum as Nitrogen) 10.0	
			Selenium 0.05	
			Silver 0.10	
			Endrin 0.002	
			Lindane 0.0002	
			Methoxychlor 0.03	
Toxaphene 0.003				
2,4-D 0.07				
2,4,5-TP Silvex 0.05				

Source: Regional Board, 2006, 2011. mg/L = milligram(s) per Liter; MPN = most probable number; mL = milliliter(s).  
\* Limit given is "Action Level". USEPA's Lead and Copper Rule requires drinking water systems to monitor for lead from customer taps. If ten percent of the homes tested have lead levels greater than the action level of 15 ppb, the system must increase monitoring, undertake additional efforts to control corrosion, and inform the public. For each monitoring period, a system (or the state) must calculate the lead level at the 90th percentile of homes monitored.

The Regional Board has also developed narrative water quality objectives for aesthetic qualities, tainting substances, toxicity, temperature, pH, suspended solids and settleable solids, biostimulatory substances, sediment, turbidity, radioactivity, and pesticide wastes (Regional Board, 2006). In addition, waterbody-specific objectives have been defined for the Colorado River, the Salton Sea, and Coachella Valley drains as summarized in **Table 5-4**.

**Table 5-4  
Summary of Numeric Water Quality Objectives for Selected Surface Waters**

Constituent	Applicable Beneficial Use Category	Units	Objective
<b>Colorado River</b>			
Total Dissolved Solids	ALL	mg/L	723 below Hoover Dam 747 below Parker Dam 879 below Imperial Dam
<b>CVSC and Drains<sup>1</sup></b>			
Total Dissolved Solids	ALL	mg/L	2,000 (annual average) 2,500 (maximum)
Selenium <sup>3</sup>	ALL	mg/L	0.005 (4-day average) 0.02 (1-hour average)
<b>Salton Sea and tributaries</b>			
Total Dissolved Solids <sup>2</sup>	ALL	mg/L	35,000
Selenium <sup>3</sup>	ALL	mg/L	0.005 (4-day average) 0.02 (1-hour average)

Source: Regional Board, 2006:

- 1 Any discharge, excepting discharges from agricultural sources, shall not cause the total dissolved solids (TDS) in surface waters to exceed the amount shown. The maximum TDS in the surface water shall not exceed 2,500 mg/L.
- 2 The stated water quality objective is to reduce salinity in the Salton Sea to 35,000 mg/L. However, achievement of this objective shall be accomplished without adversely affecting the primary purpose of the Sea, which is to receive and store agricultural drainage, seepage, and storm waters. Also, because of economic considerations, 35,000 mg/L may not be realistically achievable. In such case, any reduction in salinity, which still allows for survival of the sea's aquatic life, shall be deemed an acceptable alternative or interim objective.
- 3 The objectives shown apply to all surface waters that are tributaries to the Salton Sea (including the CVSC and drains above). The beneficial use of the Salton Sea for recreation (fishing) has been impaired due to elevated levels of selenium in tissues of resident wildlife and aquatic life. These numerical limits are based on (USEPA) National Ambient Water Quality Criteria.

***Region 7 303(d) List and TMDLs for Study Area Waters***

The Regional Board is currently updating the 303(d) list of impaired water bodies in Region 7 (Regional Board, 2009). Proposed changes to the list that affect the Coachella Valley are presented below.

**Coachella Valley Stormwater Channel.** The TMDLs proposed for the CVSC in the 2008 303(d) list are shown in **Table 5-5** and are pathogens (bacteria) (by 2014), toxaphene (by 2019), DDT, PCBs and Dieldrin (by 2021).

## Section 5 – Surface Water Resources

**Table 5-5  
TMDLs for the CVSC**

TMDL Parameter	Source	TMDL Completion Date	Comments
Pathogens (bacteria)	Unknown	2014	Found along a 17-mile stretch from Dillon Rd. to Salton Sea.
Toxaphene	Unknown	2019	Used as an insecticide until 1982. Found in the CVSC along a 2-mile area from Lincoln St. to Salton Sea.
Dichlorodiphenyl-trichloroethane (DDT)	Unknown	2021	Used as a pesticide until early 1970s. Found in analysis of fish tissue samples collected between 1986 and 2000. Applies only to a 2 mile area from Lincoln Street to the Salton Sea.
Dieldrin	Unknown	2021	Used as a pesticide until 1974. Found in analysis of fish tissue samples collected between 1986 and 2000. Applies only to a 2 mile area from Lincoln Street to the Salton Sea.
Polychlorinated biphenyls (PCBs)	Unknown	2021	Used as coolants and lubricants in electrical equipment until 1977. Found in analysis of fish tissue samples collected between 1986 and 2000. Applies only to a 2 mile area from Lincoln Street to the Salton Sea.

Source: Regional Board, 2006; 2009.

**Pathogens (Bacteria).** The TMDL for the CVSC addressed pathogens (bacteria), because the water quality objectives for this parameter were exceeded. The pathogens TMDL was developed and adopted by the Regional Board on May 16, 2007 as a Basin Plan Amendment (BPA). However, it was withdrawn from consideration by the SWRCB at the request of the Regional Board on February 22, 2008 for an 18-month period of further study, to determine the contribution of agriculture to measured *E. coli* (as a bacterial indicator) concentrations in the CVSC.

CVWD completed 12 months of monitoring subsurface drains and submitted a final report to the Regional Board on August 22, 2009. The data, collected in 450 samples in five representative drains in 2008 and 2009, show that representative subsurface agricultural drains flowing into the CVSC are a *de minimis* source of *E. coli* impairment in the CVSC. Effluents from all three wastewater treatment plants that discharge to the CVSC [CVWD Water Reclamation Plant No. 4 (WRP-4), Valley Sanitary District (VSD) and Coachella Sanitary District (CSD)] were found to meet their bacteria discharge limits and the water quality objectives.

To further identify possible sources of bacteria to CVSC, a DNA microbial source tracking (MST) method was used to identify specific bacterial hosts such as humans, cows, geese, chickens or municipal wastewater. From 200 samples, the resulting percentage distribution of fecal sources in the CVSC was found to be: 40 percent avian (birds), 25 percent human, 25 percent rodents and other wild mammals, less than 3 percent livestock and about 6 percent from unknown sources.

On June 17, 2010, the Regional Board adopted Resolution No. R7-2010-0028 (Regional Board, 2010), thereby revising the BPA for the TMDL adopted on May 16, 2007. Attachment 1 to the BPA identifies Waste Load Allocations (WLAs) and Load Allocations (LAs) for bacterial indicator discharges to the CVSC (**Table 5-6**). Allocations are in terms of *E. coli* concentrations in water discharged to the CVSC.

**Table 5-6  
CVSC TMDL Wasteload Allocations**

Allocation type	Discharger	E. coli Allocations
Point Source (WLAs)	VSD WTP Coachella Sanitary District WTP Mid-Valley Water Reclamation Plant (CVWD WRP-4)	A log mean (Geomean) of ≤126 MPN/100 mL (based on a minimum of not less than 5 samples in a 30-day period)
Point Source (WLAs)	Kent SeaTech Corporation Fish Farm (NPDES permittee) Caltrans (MS4 permittee) (stormdrain) City of Coachella (MS4 permittee) (stormdrain)	A log mean (Geomean) of the MPN of ≤126 /100 mL (based on a minimum of not less than 5 samples in a 30-day period), or 400 MPN/100 mL for a single sample
Nonpoint Source (LAs)	Agricultural Runoff Federal Lands Tribal Lands	A log mean (Geomean) of ≤126 MPN/100 mL (based on a minimum of not less than 5 samples in a 30-day period) or 400 MPN/100 mL for a single sample
Nonpoint Source (LAs)	Septic Systems	Zero (0) MPN/100 mL

Source: Regional Board, 2010: Note: Kent SeaTech Corporation aquaculture facility no longer raises fish. The firm, now Kent Biofuels, raises algae for conversion to biofuel. Their current discharge to the CVSC is minimal. WTP = Wastewater Treatment Plant; WRP = Water Reclamation Plant; MPN = Most Probable Number; mg/L = milligram(s) per Liter; WLA – Wasteload Allocation; LA = Load Allocation.

The Regional Board BPA Resolution presents a two-phased implementation plan for TMDL attainment. Implementation begins 90 days following USEPA approval of the TMDL. Phase I action, anticipated to take three years to complete, focuses on monitoring and addressing bacterial indicators from NPDES facilities and urban and stormwater runoff. Regional Board staff will work with USEPA to address waste discharges from federal and tribal lands. Farmers and CVWD are specifically exempted from having to complete Phase I monitoring of agricultural discharges. If *E. coli* water quality objectives are not achieved by the end of Phase I, additional controls will be implemented in Phase II. Farmers and CVWD are not exempted from Phase II actions if they become necessary and if available data indicate that discharges from irrigated agriculture exceed bacterial water quality objectives (Regional Board, 2010). The result of Phase I implementation and need for Phase II will be discussed in the next WMP update.

***Toxaphene.*** There has been no action taken to date on toxaphene in the CVSC. CVWD sampling locations are the CVSC at Avenue 72 (semi-annual voluntary monitoring), at Avenue 52 (one test during the 5-year permit cycle -- part of 2008 MS4 NPDES permit requirements), and upstream of WRP-4 (annual priority pollutant test required by the 2007 WRP-4 NPDES permit). Note that in over 17 years of CVWD’s semi-annual monitoring, toxaphene has not been found in water samples collected from the CVSC.

## Section 5 – Surface Water Resources

***DDT, PCBs and Dieldrin.*** TMDLs for DDT, PCBs and dieldrin in the CVSC have been proposed by the Regional Board (Regional Board, 2008) for completion by 2021 for a 2-mile-long segment of the CVSC from Lincoln Street to the Salton Sea in unincorporated Riverside County. The proposal was based on small numbers of fish flesh samples. The TMDL proposal is not yet accepted by the State Board.

CVWD sampling locations are the CVSC at Avenue 72 (semi-annual voluntary monitoring), at Avenue 52 (one test during the 5-year permit cycle -- part of 2008 MS4 NPDES permit requirements), and upstream of WRP-4 (annual priority pollutant test required by the 2007 WRP-4 NPDES permit). Note that these parameters are not present in CVSC water, with the exception of 4,4' DDT detected upstream of WRP-4 on November 8, 2007 at 0.013 ppb.

**Salton Sea.** Table 5-7 presents the Salton Sea TMDLs included in the 2009 303(d) list adopted by the SWRCB for Region 7. Future Salton Sea TMDLs are proposed for salt, selenium, arsenic, chlorpyrifos, DDT, diazinon and enterococcus, to be completed by 2021 (Regional Board, 2009; 2010). CVWD is a participating stakeholder in the Salton Sea TMDL process.

**Table 5-7  
Present and Future TMDLs for the Salton Sea**

<b>TMDL Parameter</b>	<b>Source</b>	<b>TMDL Completion Date</b>	<b>Comments</b>
Nutrients	Industrial point source, agricultural return flows, out-of-state flows	2006	Phosphorus is the primary nutrient of concern.
Salinity	Agricultural return flows, out-of-state flows	2019	This issue to be addresses by developing an engineering solution collectively with federal, local and state cooperation.
Selenium	Agricultural return flows	2019	Naturally occurring element in soil. Gets leached out into the water in agricultural drains.
Arsenic	Unknown	2021	Naturally-occurring element in earth's crust. Observed in analysis of fish tissue samples collected between 1985 and 2000.
Chlorpyrifos	Unknown	2021	Used as a household and on-farm insecticide. Found in analysis of fish tissue samples collected between 1996 and 1997.
Dichlorodiphenyl trichloroethane (DDT)	Unknown	2021	Used as a pesticide until early 1970s. Found in analysis of fish tissue samples collected between 1980 and 2000.
Diazinon	Unknown	2021	Used as a pesticide. Found in analysis of fish tissue samples collected between 1996 and 1997.
Enterococcus	Unknown	2021	Genus of intestinal lactic acid bacteria. Exceedances observed in samples collected in 2002-2003.

Source: Regional Board, 2009.



A TMDL study has been in progress since 2001 for Salton Sea nutrients, particularly phosphorus, which under current conditions cause eutrophication, algae blooms and water quality degradation that impair aquatic habitat conditions and recreation conditions. A Quality Assurance Project Plan (QAPP), a Problem Statement Report and report on the basis for the numerical target have been prepared (Regional Board, 2010).

The numeric target for the nutrient TMDL is an annual average total phosphorus concentration of no greater than 35 micrograms per liter ( $\mu\text{g/L}$ ). The 1999 average annual total phosphorus concentration was 43  $\mu\text{g/L}$  (with a range of 12 to 116  $\mu\text{g/L}$ ) at the Sea surface and 61  $\mu\text{g/L}$  (range of 27 to 83  $\mu\text{g/L}$ ) at the bottom (Setmire, et al., 2001). The average annual total phosphorus concentration was 69  $\mu\text{g/L}$  in 2002 (Amrhein, et al., 2003). Monitoring indicators, which will not be used for load allocation in the nutrient TMDL, have also been defined (Table 5-8).

**Table 5-8  
Salton Sea Monitoring Indicators**

Target or Indicator	Target Value
Total phosphorus concentration <sup>1</sup>	Annual mean no greater than 35 $\mu\text{g/L}$
Chlorophyll a concentration <sup>2</sup>	Summer mean no greater than 12 $\mu\text{g/L}$
Secchi disk depth <sup>2 3</sup>	Annual mean no lower than 1.4 meters
Ammonium <sup>2</sup>	Summer mean no greater than 1.0 mg/L
Dissolved oxygen <sup>2</sup>	Depth average no less than 5 mg/L

Source: Regional Board Website, 2010.

1. Source target related to load allocation;
2. Monitoring targets that will not be used for load allocation.
3. Secchi disk depth is a measure of water transparency using a circular disk lowered into the water until it is no longer visible.

Specific actions to address the Salton Sea TMDLs will be developed and defined separately in the future by the Salton Sea TMDL Task Force and are not part of the 2010 WMP Update. These actions might involve increased monitoring, development of new treatment technologies, and implementation of additional BMPs.

**Irrigated Lands Regulatory Program.** The California Water Code authorizes State and Regional Boards to conditionally waive waste discharge requirements if it is in the public interest. Of the over 40 categories of waivers issued, the Regional Board considers those most controversial to be wastewater discharges from irrigated agriculture. Wastewater discharges from agricultural lands are irrigation return flow, tile drain flows and stormwater runoff, all of which can affect the quality of receiving surface waters because of potential constituents such as pesticides, sediment, nutrients, salts (including selenium and boron), pathogens and heavy metals. Return flows can also affect groundwater quality with pesticides, nitrate and salts.

## Section 5 – Surface Water Resources

---

The Regional Board has adopted “conditional prohibitions” as a TMDL Implementation Plan incorporated into its Basin Plan. As a control mechanism, the Regional Board staff has developed a “conditional prohibition” as allowed by the Basin Plan. The conditional prohibition states that agricultural discharge to a water of the State is prohibited unless the discharger(s) meets certain conditions, which include the development and implementation of a Compliance Program that meets Regional Board stated requirements, identifying BMPs, identifying and gaining cooperation of responsible parties, public hearings and meeting ongoing reporting schedules (SWRCB, 2010a).

The SWRCB Irrigated Land Regulatory Program (ILRP) reports monthly on progress made by each involved Regional Board. The October 2010 report on the Colorado River Basin Regional Board stated that the Technical Advisory Committee (TAC) for the Coachella Valley Agriculture Conditional Prohibition had agreed on draft recommendations for BMPs, sampling locations, and parameters for the CVSC and drains (SWRCB, 2010b). The Coachella TAC committee has 22 members, who represent CVWD, Palo Verde Irrigation District (PVID), Coachella Valley farmers, Riverside County Flood Control and Water Conservation District, Riverside County Farm Bureau, SWRCB, the Augustine and Twenty-Nine Palms Tribes, the U.S. Bureau of Indian Affairs, and the U.S. Department of Agriculture (CVWD, 2011).

CVWD anticipates that the future requirements for Coachella Valley agricultural discharges will be similar to those developed for the Palo Verde Valley and Palo Verde Mesa, available on the Regional Board website (Regional Board, 2011):

- enrollment in a Group Compliance Program, approved by the [Regional Board] Executive Officer, and compliance with the group’s requirements; or
- submittal directly to the Regional Board an individual water quality management plan (WQMP) and, if applicable, a drain water quality plan (DWQP) for review/approval by the Executive Officer, and implementation of the approved WQMP/DWQP; or
- submittal of a Report of Waste Discharge for general or individual Waste Discharge Requirements.

### 5.1.2.3 Senate Bill 1557

Senate Bill (SB) 1557, which became effective January 1, 2007, prohibits the use of potable water for non-potable purposes when non-potable water is available within the boundaries of CVWD. The intent of the legislation is to reduce use of potable Coachella Valley groundwater to address overdraft.

### 5.1.2.4 Cobey-Alquist Flood Control Act

The Cobey-Alquist Flood Control Act (California Water Code 1965, as amended) states that a large portion of land resources of the State of California is subject to recurrent flooding. The public interest necessitates sound development of land use, as land is a limited, valuable, and irreplaceable resource, and the floodplains of the state are a land resource to be developed in a manner that, in conjunction with economically justified structural measures for flood control,

will prevent loss of life and economic loss caused by excessive flooding. The primary responsibility for planning, adoption, and enforcement of land use regulations to accomplish floodplain management rests with local levels of government. It is State of California policy to encourage local levels of government to plan land use regulations to accomplish floodplain management and to provide state assistance and guidance.

### 5.1.2.5 California Drainage Law

California drainage law is essentially case law. As such, it is complex, but the courts have established the following general principles, which apply in general to development projects:

- The downstream property owner is obligated to accept and make provision for those waters that are the natural flow from the land above.
- The upstream property owner shall not concentrate water where it was not concentrated before without making proper provision for its disposal without damage to the downstream property owner.
- The upstream property owner may reasonably increase drainage runoff by paving or construction of other impervious surfaces, including buildings without liability. The upstream property owner may not further increase drainage runoff by diversion of water that previously drained to another area. Reasonableness is often based on prevailing standards of practice in the community or region.
- No property owner shall block, or permit to be blocked, any drainage channel, ditch, or pipe.
- No property owner shall divert drainage water without properly providing for its disposal.

### 5.1.2.6 Government Code Section 65302

Government Code Section 65302 requires cities and counties located within the state to review the Land Use, Conservation, and Safety Elements of the General Plan “for the consideration of flood hazards, flooding, and floodplains” to address flood risks. Any amendment to the Land Use, Conservation or Safety Elements requires a review of other General Plan elements for internal consistency, including the Housing Element. The Conservation Element of General Plan revisions after January 2009 shall identify rivers, creeks, streams, flood corridors, riparian habitats and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management. The code also requires cities and counties in the state to annually review the Land Use Element within “those areas covered by the plan that are subject to flooding identified by floodplain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources.”

FEMA’s floodplain mapping includes:

- Flood Insurance Rate Maps (FIRM), and
- Digital Flood Insurance Rate Maps (DFIRM).

## Section 5 – Surface Water Resources

---

DWR's floodplain mapping includes:

- Awareness Floodplain Maps,
- Best Available Mapping (BAM),
- Levee Flood Protection Zones (LFPZ) Maps, and
- Central Valley Floodplain Evaluation and Delineation (CVFED) Maps.

### **5.1.2.7 Urban Water Management Planning Act**

The Urban Water Management Planning Act (UWMP Act) requires urban water suppliers to more than 3,000 customers, or more than 3,000 AFY of water, to prepare an Urban Water Management Plan (UWMP). The intent of the UWMP is to assist water supply agencies in water resource planning given their existing and anticipated future demands. The UWMP must include a water supply and demand assessment comparing total water supply available to the water supplier with the total projected water use over a 20-year period. The UWMPs must be updated every five years; the CVWD 2010 UWMP will be adopted by July 1, 2011.

### **5.1.3 Riverside County and Local Regulations**

A number of county and local ordinances govern surface water management in the Coachella Valley as discussed below.

#### **5.1.3.1 Riverside County Ordinance No. 458**

Riverside County adopted Ordinance No. 458 in 1979 to protect the public health, safety and welfare and minimize public and private costs caused by flooding in the unincorporated areas as a requirement of its participation in the National Flood Insurance Program (NFIP) of FEMA. Ordinance 458 specifically regulates development in Special Flood Hazard Areas identified on maps prepared by FEMA, the State of California or the County that are based on the 1 percent chance flood, also referred to as the "100-year flood".

#### **5.1.3.2 Riverside County Stormwater Management Ordinance No. 754**

Riverside County adopted Ordinance No. 754 establishing stormwater/urban runoff management and discharge controls. The ordinance is intended to protect and enhance the water quality of county water courses, water bodies, groundwater and wetlands in a manner pursuant to and consistent with applicable requirements contained in the CWA, California Porter-Cologne Act, and any associated state or federal regulations, administrative orders or permits. This is accomplished by implementation of best management practices to reduce pollutants in stormwater to the maximum extent practicable, regulating illicit connections and discharges to the storm drain system, and the prohibition of non-stormwater discharges to the storm drain system with specified exceptions.

### 5.1.3.3 Riverside County NPDES Permit

Riverside County has been issued NPDES Permit No. CAS617002 for stormwater runoff by the Colorado River Basin Regional Board. Riverside County and the Riverside County Flood Control and Water Conservation District are principal permittees and the Coachella Valley Water District (CVWD) and 10 cities are listed as co-permittees. A Report of Waste Discharge was submitted to the Colorado River Basin Regional Board on March 6, 2006. On May 21, 2008, the renewal of Board Order No. R7-2008-0001 and NPDES No. CAS617002 was certified by the Executive Officer of the Colorado River Basin RWQCB to supersede Order No. 01-077. The new Waste Discharge Report enforces water discharges by the principal permittees and co-permittees and will expire on May 21, 2013.

### 5.1.3.4 CVWD Ordinance No. 1234 (as Amended)

CVWD is the designated flood control agency within its service area. CVWD Ordinance No. 1234 provides conditions of approval for development in flood hazard areas within the CVWD Stormwater Service Area. In order to minimize flood damage and to provide a greater level of protection, the standard project storm (SPS) and standard project flood (SPF) rather than the 100-year storm and 100-year flood should be used for the design of flood control facilities. Ordinance No. 1234 then indicates that any flood protection facilities not designed and constructed for the SPS and SPF will not normally be owned, operated, or maintained by CVWD and it also identifies several other requirements for developer who construct such flood protection facilities, related to notification, transfer of ownership and indemnification.

### 5.1.3.5 CVWD Ordinance No. 1302 (as Amended)

The CVWD mandates efficiency in newly installed landscape irrigation systems via Ordinance 1302, Valley-wide Water Efficient Landscaping Model Ordinance. This ordinance establishes effective water-efficient landscape requirements for newly installed and rehabilitated landscapes. The ordinance also implements the requirements of the State of California Water Conservation in Landscaping Act. The requirements are in the *General Landscape Guidelines and Irrigation System Design Criteria* book. Most cities in the Valley have adopted the CVWD ordinance or a version thereof; some have adopted more stringent ordinances, and others completely different ordinances. The cities are required to adopt an ordinance at least as stringent as the State Model Water Efficient Landscape Ordinance (DWR, 2009). CVWD's ordinance is significantly more stringent than the State model ordinance. Riverside County has adopted its own ordinance (Ordinance No. 859) that is consistent with the State model ordinance but is less stringent than CVWD's. If a proposed development in the County is within CVWD's service area, the County sends the developer to CVWD for a plan check against the CVWD ordinance.

### 5.1.3.6 Tribal Lands Permits

There are five federally-recognized Coachella Valley tribes. The NPDES stormwater program does apply to tribal lands within the state. USEPA is the stormwater permitting authority for Indian country in California under Construction General Permit No. CAR10000I and Multi-Sector General Permit No. CAR05000I.

### 5.2 THE COLORADO RIVER AND THE COACHELLA CANAL

The Proposed Project includes delivery of Colorado River water via the Coachella Canal and through exchange of SWP water with Metropolitan via the Colorado River Aqueduct (CRA). This section provides background information on the Colorado River and the Coachella Canal, defines significance criteria, presents impacts of the Proposed Project and describes mitigation measures. Exchange water is discussed in the next section.

#### 5.2.1 Environmental Setting

Colorado River water has been a major source of imported supply for the Coachella Valley since 1949 with the completion of the Coachella Canal. CVWD currently receives approximately 40 percent of its overall water supply from the Colorado River. Colorado River water from the Coachella Canal is used untreated for crop irrigation, duck clubs, fish farms, golf course and homeowner association landscape irrigation and groundwater replenishment, primarily in the East Valley. Although CVWD and DWA exchange their SWP water with Metropolitan for Colorado River water, this SPEIR refers to that source as SWP Exchange water (see **Section 5.3**).

##### 5.2.1.1 Background and Agreements

The Colorado River is managed and operated in accordance with the *Law of the River*, the collection of interstate compacts, federal and state legislation, various agreements and contracts, an international treaty, a U.S. Supreme Court decree, and federal administrative actions that govern the rights to use of Colorado River water within the seven Colorado River Basin states. The 1922 *Colorado River Compact* apportioned the waters of the Colorado River Basin between the Upper Colorado River Basin (Colorado, Wyoming, Utah, and New Mexico) and the Lower Basin (Nevada, Arizona, and California). Annual use of water allocated by the Colorado River Compact is 15 million AF: 7.5 million AF to the Upper Basin and 7.5 million AF to the Lower Basin, plus up to 1 million AF of surplus supplies. The Lower Basin's water was further apportioned among the three Lower Basin states: Arizona's basic annual apportionment is 2.8 million AF, California's is 4.4 million AF, and Nevada's is 0.3 million AF. California has been diverting up to 5.3 million AF in recent years, using the unused portions of the Arizona and Nevada entitlements. Mexico is entitled to 1.5 million AF of the Colorado River under the *1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande*.

California's apportionment of Colorado River water is allocated by the 1931 *Seven Party Agreement* among Palo Verde Irrigation District (PVID), Imperial Irrigation District (IID), CVWD and Metropolitan. The three remaining parties - the City and the County of San Diego and the City of Los Angeles - are now part of Metropolitan. The Secretary of the Interior determines how much water is to be allocated for use in Arizona, California and Nevada and whether a surplus, normal or shortage condition exists.

## Section 5 – Surface Water Resources

The Coachella Valley service area for Colorado River water delivery under CVWD’s contract with the U.S. Bureau of Reclamation (Reclamation) for Colorado River water is defined as Improvement District No. 1 (ID-1), a 136,436 acre area which encompasses most of the East Valley and a portion of the West Valley north of Interstate 10.

In 2003, CVWD, IID and Metropolitan completed negotiation of the Quantification Settlement Agreement (QSA), which quantifies the Colorado River water allocations of California’s agricultural water contractors for the next 75 years and provides for the transfer of water between agencies. Under the QSA, CVWD has a base allotment of 330,000 AFY. In accordance with the QSA, CVWD has entered into water transfer agreements with Metropolitan and IID that increase CVWD supplies by an additional 129,000 AFY.

As of 2010, CVWD receives 368,000 AFY of Colorado River water deliveries. CVWD’s allocation will increase to 459,000 AFY of Colorado River water by 2026. This amount is 3,000 AFY more than was anticipated in the 2002 WMP. After deducting 31,000 AFY for conveyance and distribution losses, approximately 428,000 AFY will be available for CVWD use. This amount is about 13,000 AFY less than anticipated in the 2002 WMP. The QSA also transfers 200,000 AFY of Colorado River water from IID to San Diego County Water Authority (SDCWA).

Colorado River water obtained under the QSA must be used for the benefit of ID-1; however, the 35,000 AFY obtained under the Metropolitan/CVWD transfer may be used anywhere within the CVWD service area (**Table 5-9**).

**Table 5-9  
CVWD Deliveries under the Quantification Settlement Agreement**

Component	2010 Amount (AFY)	2045 Amount (AFY)
Base Allotment	330,000	330,000
1988 Metropolitan/IID Approval Agreement	20,000	20,000
Coachella Canal Lining (to SDCWA)	-26,000	-26,000
To Miscellaneous/Indian PPRs	-3,000	-3,000
IID/CVWD First Transfer	12,000	50,000
IID/CVWD Second Transfer	0	53,000
Metropolitan/SWP Transfer <sup>1</sup>	35,000	35,000
<b>Total Diversion at Imperial Dam</b>	<b>368,000</b>	<b>459,000</b>
Less Conveyance Losses <sup>2</sup>	-31,000	-31,000
<b>Total Deliveries to CVWD</b>	<b>337,000</b>	<b>428,000</b>

1. This water can be used anywhere within the CVWD service area.
2. Assumed losses after completion of All-American Canal and Coachella Canal lining projects.

## Section 5 – Surface Water Resources

---

The Coachella Valley’s Colorado River supply faces problems that could impact long-term reliability: extended drought, the Colorado River shortage sharing agreement, endangered species and habitat protection, climate change and lawsuits challenging the QSA. Because of California’s and CVWD’s high priority positions for Colorado River allocations, this supply is expected to be relatively reliable. However, in January 2010, the QSA was rendered invalid along with eleven related agreements (Superior Court of California, 2010). CVWD and the other parties appealed the judgment. On March 9, 2010, the California Court of Appeal, Third Appellate District, issued a temporary stay of the judgment pending further briefing and order of the court regarding appellants’ request for a stay during the pendency of the appeal. Appellate briefs were filed in October 2010 and an appellate decision is expected in 2011. Section 4.7.1 of the 2010 WMP Update presents a detailed discussion of these issues.

### 5.2.1.2 Flows

The estimated average annual natural inflow to the Colorado River above Imperial Dam was approximately 16.3 million AFY from 1906 through 2007, with a range of approximately 6.3 to 27.1 million AFY, measured by the U.S. Geological Survey (Reclamation, 2009). Average rainfall in the river basin is 14 inches; the river’s chief source of water is snowmelt in the Rocky Mountains. The period from 2000 through 2007 was the driest 8-year period in the 100-year historical record of the Colorado River. This drought in the Colorado River Basin reduced Colorado River system storage, while demands for Colorado River water supplies continued to increase. From October 1, 1999 through September 30, 2007, storage in Colorado River reservoirs decreased from 55.8 million AF (approximately 94 percent of capacity) to 32.1 million AF (approximately 54 percent of capacity), and was as low as 29.7 million AF (approximately 52 percent of capacity) in 2004. As of January 1 2011, Lake Powell and Lake Mead were at 59 percent and 40 percent of their storage capacities, respectively (Reclamation, 2011b). Although slightly above-normal snowpack conditions existed in the Colorado River basin in 2008, below normal runoff conditions returned in 2009 and 2010. Consequently, the potential for continued drought conditions exists. The southwestern United States is believed to have experienced extended droughts a number of times in the past 1,200 years, based on streamflow reconstructions using tree-ring data (Meko, D.M., et al., 2007). Based on these reconstructions, a drought mid-1100s may have exceeded 50 years in duration and one in the 800s may have lasted 80 years (TreeFlow, 2010).

Colorado River flows below Parker Dam (Lake Havasu) are regulated based on downstream water demands and the need for flood control releases. Flows below Parker and above Imperial Dam are monitored by the USGS at gauging stations 09427520 and 09429490, respectively. **Table 5-10** shows the average and the range of flow rates at these stations over the 30-year period January 1, 1980 through December 31, 2009 in cubic feet per second (cfs) and AFY.



**Table 5-10  
Summary of Colorado River Flow Rates 1980-2009**

Statistic	USGS Gauge 09427520 Colorado River below Parker Dam and CRA Diversion		USGS Gauge 09429490 Colorado River above Imperial Dam and All American Canal Diversion	
	Flow Rate (cfs)	Annual Flow (AFY)	Flow Rate (cfs)	Annual Flow (AFY)
Average	12,096	8,763,162	10,521	7,622,302
Maximum	40,500	20,464,066	40,700	19,107,372
Minimum	30	5,533,851	2,040	4,759,577

Source: USGS, 2011c and 2011d. Note: cfs and AFY flow rates are not necessarily for the same years.

Colorado River water delivered to the Coachella Valley is diverted from the Imperial Dam 18 miles upstream of Yuma, Arizona into the All-American Canal which lies just north of and parallel to the Mexican border. The CVWD supply is then diverted into the 122-mile-long Coachella Canal, which extends from near the Mexican border northwestward to Lake Cahuilla near La Quinta. The capacity of the Coachella Canal is approximately 1,300 to 1,550 cfs. The Canal is entirely concrete lined with the completion in 2009 of the 33-mile-long Coachella Canal Lining Project (CCLP) to reduce conveyance losses from seepage. In 2009, CVWD’s diversion from Imperial Dam for consumptive use was 308,580 AFY (Reclamation, 2010). Average flow during 2009 in the Canal was 575 cfs.

**5.2.1.3 Water Quality**

The principal chemical constituents discussed in this SPEIR are TDS, perchlorate and selenium, because their concentrations potentially exceed established water quality criteria in Coachella Valley surface waters or concentrations may be altered by implementation of the Proposed Project.

***Total Dissolved Solids***

In a 1971 study, the USEPA analyzed salt loading in the Colorado River Basin and divided it into two categories, naturally occurring and human-caused (USEPA, 1971). The USEPA concluded that about 47 percent of the salinity concentration measured in water arriving at Hoover Dam is from natural causes, including salt contributions from saline springs, ground water discharge into the river system (excluding irrigation return flows), erosion and dissolution of sediments, and the concentrating effects of evaporation and transpiration. The remaining 53 percent of the salinity concentration in the water arriving at Hoover Dam results from various human activities including out-of-Basin exports, irrigation, reservoir evaporation and phreatophyte use, and municipal and industrial uses.

The Colorado River Basin Salinity Control Act (SCA) was passed by the U. S. Congress in 1974 to address the growing salinity problem which would require cost effective salinity control measures on the river. Existing state-adopted and USEPA-approved water quality standards for salinity on the Lower Colorado River are established at the locations shown in **Table 5-11**.

**Table 5-11  
Salinity Standards for the Colorado River**

Location	Salinity Standard <sup>1</sup> (mg/L)
Below Hoover Dam	723
Below Parker Dam	747
At Imperial Dam	879

Source: Colorado River Basin Salinity Control Forum, 2008.

1 – Flow-weighted average annual salinity

Colorado River water used for direct delivery and recharge in the Coachella Valley has higher TDS (salinity) concentrations on average than most of the Valley groundwater. For 1980-2007, the average Colorado River salinity at Imperial Dam was 719 mg/L with a range of 506-962 mg/L (Reclamation, 2008). Based on monthly measurements, the salinity standard was exceeded about 6 percent of the time but none since 1996, and none on an annual flow-weighted average. Monthly monitoring performed by CVWD indicated the TDS concentration of Canal water ranged from 646 to 963 mg/L with an average of 775 mg/L for the years 2005 through 2009. The average TDS in 2009 was 761 mg/L (CVWD, 2011, unpublished water quality data).

Reclamation prepared a final environmental impact statement (EIS) for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead in 2007. This EIS evaluated the impacts of proposed Colorado River operations under the QSA and the interim guidelines on salinity at Hoover, Parker and Imperial Dams using the Colorado River Simulation System salinity module. As shown in **Table 5-12**, Reclamation projected that Colorado River salinity will increase in the future, unrelated to any actions taken by the WMP.

**Table 5-12  
Colorado River Salinity Projections (mg/L)**

Year	Downstream of Hoover Dam Salinity Control Criterion 723 mg/L	Downstream of Parker Dam Salinity Control Criterion 747 mg/L	At Imperial Dam Salinity Control Criterion 879 mg/L
2008	639	657	781
2016	598	618	735
2026	606	625	747
2060	630	650	782

Reference: Reclamation, 2007. Table 4.5-1.

### *Perchlorate*

Perchlorate ( $\text{ClO}_4^-$ ) is a contaminant from the solid salts of ammonium, potassium or sodium perchlorate. Ammonium perchlorate has been used as an oxygen-adding component in solid fuel propellant for rockets, missiles and fireworks. Perchlorate compounds are also used in air bag inflators, nuclear reactors, electronic tube, lubricating oils, electronic plating and a broad variety of other industrial uses. Naturally-occurring perchlorate has also been found in sodium nitrate fertilizers. Perchlorate is highly mobile in aqueous systems and can persist under typical groundwater and surface water conditions for decades.

Perchlorate was initially detected in early 1997 by Metropolitan at a concentration of 9 micrograms per liter ( $\mu\text{g/L}$ ) at Lake Havasu; concentrations in the All-American Canal (AAC), which feeds the Coachella Canal, ranged from 4.2 to 5.3  $\mu\text{g/L}$ . The source of perchlorate in Colorado River water was determined to be the Kerr-McGee Chemical Company and the former PEPCON perchlorate manufacturing facilities in Henderson, Nevada, whose past disposal practices allowed perchlorate waste to permeate the groundwater that flows into Las Vegas Wash and then into Lake Mead. Extensive treatment facilities were subsequently installed beginning in 1999 and have successfully reduced perchlorate that enters Lake Mead. By 2007, perchlorate concentrations had fallen to below 2  $\mu\text{g/L}$  (Metropolitan, 2007).

For several years, it was known that perchlorate interferes with the ability of the thyroid gland to use iodine to produce thyroid hormones. In 2006, after nearly 10 years of study, California set an MCL of 6  $\mu\text{g/L}$  in drinking water. No federal MCL has been established; however, in February 2011, EPA announced it would develop an MCL over the next two years.

Current concentrations in Colorado River water delivered to the Coachella Valley in the CRA since 2008 have been consistently below 2  $\mu\text{g/L}$ , well below the method reporting detection limit of 4  $\mu\text{g/L}$  and the California drinking water MCL (Metropolitan, 2011). Perchlorate concentrations in the Coachella Canal have been below the method reporting detection limit of 4  $\mu\text{g/L}$  since before 2004 (CVWD, 2010a).

In January 2011, the California Office of Environmental Health Hazard Assessment (OEHHA) released for public comment a new draft public health goal (PHG) of 1  $\mu\text{g/L}$  for perchlorate in drinking water. The PHG is not an enforceable regulatory standard but rather is the level of a chemical contaminant in drinking water that does not pose a significant risk to health. OEHHA's press release says that the proposed revision to the PHG is based on new research that indicates infants are more susceptible to the health effects of perchlorate. The State also released for comment its supporting documentation for the new proposed PHG (OEHHA, 2011).

### *Selenium*

Selenium is a relatively minor component of salinity in the Colorado River, but has been found to have a significant toxic effect on wildlife (birds and fishes) if present in sufficient concentrations, since it bioaccumulates in the food chain. In California, the chronic aquatic life standard in flowing freshwaters is currently 5  $\mu\text{g/L}$  (4-day average) (California Toxics Rule, Cal EPA, 2000). In 2004, the USEPA published a draft numeric criterion for selenium in freshwater fish flesh, rather than in water, to recognize the effect of accumulation in tissue. The draft

## Section 5 – Surface Water Resources

---

freshwater chronic criterion is expressed as a concentration in whole-body fish tissue of 7.91 micrograms per gram ( $\mu\text{g/g}$ ) dry weight, and if fish tissue samples exceed 5.85  $\mu\text{g/g}$  during summer or fall, fish should be monitored during the winter to determine if selenium exceeds 7.91 micrograms per gram ( $\mu\text{g/g}$ ) dry weight. EPA stated that “for purposes of setting NPDES permit limitations, the tissue criterion can be translated to a water concentration by using a site-specific bioaccumulation factor – a ratio between the [whole body] tissue concentration and the water concentration” (USEPA, 2010). The criterion remains in draft form at this time, however, and additional studies are underway. During the period 2005-2010, CVWD made 10 measurements of selenium levels in the Coachella Canal. Eight measurements were less than 5  $\mu\text{g/L}$ ; one was 5.0  $\mu\text{g/L}$  and one was 6.4  $\mu\text{g/L}$ . The concentration has been below the 5  $\mu\text{g/L}$  standard for the last five years (CVWD, 2010a).

### 5.2.2 Significance Criteria

#### 5.2.2.1 Flows

State CEQA Guidelines, Appendix G, do not have significance statements for changes in water flow, *per se*. Impacts are defined as they relate to erosion or siltation, alteration of the course of a stream or river, actions that would cause flooding, or which result in substantial water quality degradation. Stormwater and flood potential are discussed in **Section 5.8**.

Therefore, in accordance with Appendix G, the Proposed Project would have a significant impact with respect to Colorado River or Coachella Canal flows if it:

- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course or a stream or river in a manner which would result in substantial erosion or siltation on-or off-site, or
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course or a stream or river or substantially increases the rate or amount of surface runoff in a manner which would result in substantial flooding on-or off-site.

In addition, for purposes of this project, CVWD considers that a significant impact would occur if the Proposed Project resulted in:

- Diversion of additional water from the Colorado River that could not be provided through the existing infrastructure and operational practices of the Coachella Canal.

#### 5.2.2.2 Water Quality

Based on State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on Colorado River or Coachella Canal water quality if it:

- violates any water quality standards or waste discharge requirements,
- otherwise degrades water quality, or

- exceeded Basin Plan objectives, drinking water regulations, or adversely impacted designated beneficial uses (**Section 5.1**)

### 5.2.3 Impacts

#### 5.2.3.1 Flows

Flows in the Colorado River between Parker Dam and Imperial Dam are expected to range from 5.8 million AFY to 14.0 million AFY between 2010 and 2060 according to the Final EIS for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead. The median (50 percent probability) releases are generally about 6.5 million AFY. Releases from Parker Dam in excess of 7.0 million AFY typically correspond to years when flood control releases are being made from Hoover Dam whereas releases of less than 6.0 million AFY are generally associated with years of delivery reductions (Reclamation, 2007).

The 2002 WMP anticipated QSA diversions of 459,000 AFY of Colorado River water for CVWD less Coachella Canal conveyance losses. In addition, up to 35,000 AFY of SWP Exchange water was expected to be delivered at Imperial Dam and conveyed through the Coachella Canal for use by the Mid-Valley Pipeline (MVP) in-lieu recharge project. Consequently, CVWD's total diversion at Imperial Dam was projected to be 493,000 AFY under the 2002 WMP. When the QSA was signed in 2003, the maximum amount of diversion by CVWD authorized under the QSA was increased to 459,000 AFY. The 2010 WMP Update uses this slightly increased amount and supplies the MVP project with 35,000 AFY of SWP water made available to CVWD from Metropolitan through the QSA. In addition, up to 50,000 AFY of water transfers acquired could be delivered at Imperial Dam to meet water needs in the expanded WMP planning area northeast of the San Andreas fault. The Proposed Project also envisions producing up to 85,000 AFY of desalinated drain water in the East Valley. Up to 30,000 AFY of this supply would be used for recharge at Whitewater through an exchange for Colorado River water. The combination of these two components would result in a net increase in diversions of about 20,000 AFY at Imperial Dam. However, there would be no change in the diversion amounts authorized by the QSA. The increased flow represents water transfers external to the QSA.

Due to the expected reduction in SWP reliability in the absence of Delta habitat and conveyance improvements (see **Section 3.1.3.2**), CVWD and DWA plan to use all available SWP Exchange water for recharge at Whitewater, as discussed in **Section 5.3**, rather than take delivery at Imperial Dam. In addition, during those years before the MVP project is fully implemented, CVWD plans to take delivery of up to 35,000 AFY of SWP water available under the QSA for recharge at Whitewater. The consequence of this change is a near-term (until about 2025) reduction in river flows between Parker Dam and Imperial Dam of up to 35,000 AFY, but on average the reduction would be less than 20,000 AFY over this period. This reduction is about 0.25 percent of the average annual flow above Imperial Dam. After 2020, anticipated exchange of desalinated drain water for Colorado River water would be delivered for recharge at Whitewater. This reduction is about 0.40 percent of the current average annual flow above Imperial Dam. Based on the small flow changes, the impact on erosion and siltation in the

## Section 5 – Surface Water Resources

---

Colorado River is therefore less than significant. There would be no change in the course of the river or in drainage patterns in the river basin and a reduced potential for flooding.

Flows in the Coachella Canal are expected to increase from the current 308,580 AFY to 459,000 AFY by 2027 in accordance with the 2003 QSA. Peak monthly flows are expected to increase from 575 cfs in July 2009 to about 900 cfs by 2027 and beyond. The Proposed Project may increase the average annual flow in the Canal by as much as 20,000 AFY (28 cfs) due to the exchange and transfer of desalinated drain water for recharge at Whitewater and the additional water transfers required to serve demands northeast of the San Andreas fault. These changes in flow rate are minor, well within the design capacity of the Canal (1,300 to 1,550 cfs), and are therefore less than significant for flooding potential. The Canal is now lined, so erosion and siltation from changes in water flows are no longer significant issues.

### 5.2.3.2 Water Quality

The principal chemical constituents in Canal water discussed here are TDS, perchlorate and selenium because their concentrations potentially exceed or have exceeded established water quality criteria or MCLs.

#### *TDS*

Under the Proposed Project, CVWD plans to take up to 35,000 AFY of Colorado River water available through the QSA or desalinated drain water exchanged for Colorado River through the CRA and delivered at the Whitewater turnouts instead of flowing to the Coachella Canal. The diversion of additional lower salinity Colorado River water from Lake Havasu would increase slightly the salinity of the river downstream. However, the expected 0.4 percent change in the downstream river flow relative to existing conditions would cause the salinity at Imperial Dam to change from 781 mg/L to 782 mg/L. This estimate assumes the same river operations as for the Proposed Project and is within the range of TDS observed in Canal water for the period 2005 through 2009. No additional actions taken by the Proposed Project would affect Colorado River salinity. Therefore, the impact of the Proposed Project on Colorado River salinity would be less than significant.

#### *Perchlorate*

With the on-going treatment for perchlorate at the source of contamination on Las Vegas Wash, a tributary to Lake Mead on the Colorado River, perchlorate concentrations for several years have been less than 2 parts per billion (ppb), below the minimum reporting limit of 4 ppb and the 6 ppb State MCL. Therefore, perchlorate entering the Coachella Valley in Colorado River water is at present not an issue. The effect of a future revision to the State's perchlorate MCL or adoption of a federal perchlorate MCL on compliance is speculative until new or revised MCLs are adopted. The Proposed Project takes no action that would change the concentration of perchlorate in Colorado River water delivered through the Coachella Canal. Therefore, there would be no impact.

### *Selenium*

The ambient water quality criteria for selenium are currently in flux. The current chronic aquatic life water quality standard for flowing freshwaters is 5 µg/L (4-day average), which is met in the Canal. Implementation of the Proposed Project will have a less than significant impact on flow in the Coachella Canal. Similarly, the Proposed Project will not affect selenium concentrations in the Coachella Canal since the Proposed Project would neither increase nor decrease the processes which contribute selenium to Colorado River water or to evaporation in the river or Canal that could increase its concentration. Therefore, the Proposed Project would not impact selenium concentrations in the Coachella Canal.

### **5.3 THE STATE WATER PROJECT AND EXCHANGE PROGRAM**

CVWD and DWA have contracts for imported water supplies from the State Water Project (SWP), which is managed by the California DWR. DWA and CVWD initially contracted for water from the SWP in 1962 and 1963, respectively, primarily to help alleviate groundwater overdraft in the West Valley. Because there is no direct delivery of SWP water to the Valley, CVWD's and DWA's SWP water is exchanged with Metropolitan for Colorado River water delivered at turnouts from Metropolitan's CRA. SWP Exchange water is an important component of the Proposed Project as a source for groundwater recharge in the West Valley.

#### **5.3.1 Environmental Setting**

##### **5.3.1.1 SWP Background**

The SWP comprises 660 miles of aqueduct and conveyance facilities extending from Lake Oroville in northern California to Lake Perris in the south. The SWP has contracts to deliver 4.172 million AFY to 29 contracting agencies. CVWD's original SWP water allocation (Table A Amount) was 23,100 AFY and DWA's original SWP Table A Amount was 38,100 AFY, for a combined Table A Amount of 61,200 AFY.

Each year, DWR determines the amount of water available for delivery to SWP contractors based on hydrology, reservoir storage, the requirements of water rights licenses and permits, water quality and environmental requirements for protected species in the Sacramento-San Joaquin Delta. The available supply is then allocated in proportion to each SWP contractor's Table A Amount.

Since 1973, CVWD and DWA Table A water deliveries have been exchanged with Metropolitan for a like amount of Colorado River water from Metropolitan's CRA, which extends from Lake Havasu at Parker Dam through the Coachella Valley to Metropolitan's Lake Mathews. In 1985, Metropolitan, DWA and CVWD executed an advanced delivery agreement that allowed Metropolitan to pre-deliver up to 600,000 AF (increased to 800,000 AF in 2003) of SWP Exchange water into the Coachella Valley. Metropolitan then has the option to deliver CVWD's and DWA's SWP Table A allocation either from the CRA or from water previously stored in the basin. The 2002 WMP established a goal of maintaining an average amount of SWP Exchange water at 140,000 AFY in the Whitewater River Subbasin.

## Section 5 – Surface Water Resources

---

Since adoption of the 2002 WMP, CVWD and DWA have increased their combined Table A Amounts to 194,100 AFY through the acquisition of permanent water transfers from Metropolitan (100,000 AFY), Tulare Lake Basin Water Storage District (16,900 AFY) and Berrenda Mesa Water District via Kern County Water Agency (16,000 AFY). The 100,000 AFY transfer from Metropolitan is subject to call-back in any given year if Metropolitan needs the supply. During call-back years, Metropolitan is responsible for all SWP costs associated with the called-back water. In addition, CVWD and DWA have purchased one-time water transfers totaling about 50,000 AF since 2002.

CVWD's and DWA's SWP Exchange water is used to replenish both the Upper Whitewater River and the Mission Creek Subbasins. Water for recharge is allocated between the subbasins in proportion to pumping in the two subbasins.

### 5.3.1.2 SWP Reliability

Although the SWP has historically provided about 73 percent of CVWD's and DWA's Table A Amounts, the long-term SWP reliability factor for Table A water, according to the 2009 Final SWP Reliability Report (DWR, 2010), has been reduced to approximately 60 percent as a result of legal, regulatory and environmental restrictions in the Sacramento-San Joaquin Delta (Delta) and climate change. To account for additional uncertainties related with SWP reliability in the future, the 2010 WMP Update further reduces the reliability factor anticipated for 2030 and future conditions based on the following factors:

- uncertainty in modeling restrictions associated with biological opinions about sensitive Delta species,
- risk of levee failure in the Delta,
- additional pumping restrictions resulting from biological opinions on new species, or revisions to existing biological opinions,
- impacts associated with litigations such as the California Endangered Species Act (CESA) lawsuit, and
- impacts of climate change on flow magnitudes and timing.

After taking the above factors into consideration and to plan for higher contingency, the 2010 WMP Update assumes a low-range, long-term average SWP reliability of 50 percent in the absence of Delta habitat conservation and conveyance improvement measures. The 2010 WMP Update also considered a high-range reliability scenario where Delta habitat conservation and conveyance improvements are implemented. Under this scenario, reliability is expected to be 77 percent of Table A Amounts after 2025.

### 5.3.2 Significance Criteria

State CEQA Guidelines, Appendix G, do not have significance statements for changes in water flow, *per se*. Impacts are defined as they relate to erosion or siltation, alteration of the course of



a stream or river, or actions that would cause flooding or inundation, or which result in water quality changes.

CVWD considers that significant impacts would occur if the Proposed Project resulted in:

- substantial increases in the amount of water diverted by the SWP from the Delta,
- substantial changes in the amount of SWP available to other SWP contractors as a result of the proposed water transfers, or
- Project-related changes in the flow regime of the California Aqueduct that could not be accommodated by the existing infrastructure.

Based on State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on SWP Exchange water quality if it:

- violates any water quality standards or waste discharge requirements,
- results in changes in water quality that exceed Basin Plan objectives, or which adversely impact designated beneficial uses, or
- otherwise degrades water quality.

### 5.3.3 Impacts

This section identifies and evaluates new or changed impacts on water resources and compares the 2002 WMP and the 2010 WMP Update.

#### 5.3.3.1 Deliveries and Flows

The Proposed Project includes the potential acquisition of additional SWP and other water supplies through transfers and exchanges as well as continued use of the existing SWP Table A water. By 2045, these transfers are expected to provide up to 50,000 AFY of additional average annual supplies. The origin of these transfers could be other SWP contractors or other water agencies in the state having water supplies available for long-term lease or permanent transfer. If CVWD and/or DWA acquire additional leases or permanent transfers of water in the future, Metropolitan would take the transferred/leased water and exchange it for CRA water delivered at Whitewater and Mission Creek<sup>1</sup> for recharge, as at present. Alternatively, CVWD could take delivery of some or all of the transferred water at Imperial Dam to meet demands in the expanded study area east of the San Andreas fault. The ultimate amount of the transfers would depend on future water demands, SWP reliability and availability of other water sources.

---

<sup>1</sup> Acquisition of additional SWP water or other water transfers to meet the current and future needs of the Mission Creek and Garnet Hill Subbasins is not part of the Proposed Project, but rather is the subject of a separate water management plan. Should that plan also identify the need for additional water, it is expected that CVWD and DWA would pursue potential water acquisitions jointly.

## Section 5 – Surface Water Resources

---

Permanent transfers of SWP waters are implemented through amendments of each participating SWP contractor's water supply contract. The amendment must be in conformity with provisions of the long-term water supply contracts, applicable laws and bond covenants. Other issues are negotiated in public among DWR and the two participants (DWR, 2003).

CEQA compliance for future water transfers and leases would be completed as second tier CEQA documents for specific transfers. These CEQA documents will address the potential environmental impacts in the willing seller's / contractor's service area, the buying contractor's service area, potential effects on SWP facilities and operations, and potential effects on the Delta and areas of origin and other regions, as appropriate. DWR has discretion to approve or deny transfers. As a statewide agency that operates the SWP, DWR will identify implement feasible mitigation measures for potentially significant environmental impacts of the transfer if the impacts are not addressed by other public agencies and are within DWR's jurisdiction (DWR, 2003).

Impacts on the seller's service area from a transfer would be addressed when the seller and the amount of transfer are identified. In the past, the SWP Table A transferors have been agricultural water districts in the Central Valley. Examples of potential impacts were those associated with fallowing of agricultural land or changing crop patterns. Impacts on CVWD and DWA service areas were and would continue to be increased water supply for recharge, which is a benefit. No new facilities would be required because the transferred water would be conveyed in existing facilities with no impact on capacity, erosion or siltation.

With respect to the SWP, DWR's SWP operational policies would control the allowable amount of additional flow such that the capacity and operations of the SWP would not significantly affect deliveries to other SWP contractors. Additional water from short-term transfers or leases would have a lower delivery priority than water deliveries for existing contracts and new permanent transfers, which would have equal priority. Short-term transfers would normally be scheduled for delivery during times of the year (usually winter) when sufficient conveyance capacity in the SWP or other water conveyance projects involved in the transfer is readily available. Permanent transfers would be delivered based on contractor delivery requests and SWP operational constraints as are existing deliveries. The timing of SWP delivery would be the decision of DWR in conjunction with Metropolitan, CVWD and DWA. The transferred water would be exchanged with Metropolitan for Colorado River water and could be taken at any time of year for recharge. Therefore, there would be a less than significant impact on the flow of water in the SWP between the normal delivery point(s) of the transferor/lessor and Metropolitan's delivery points.

SWP water diversions from the Sacramento-San Joaquin Delta are subject to the laws, regulations, decisions and agreements that govern operation of the SWP. DWR makes annual water supply allocations to SWP contractors as a function of the available supplies and the operational and environmental constraints. The allowable diversions from the Delta are strictly controlled by the DWR and Reclamation, which must consider all Delta water needs and environmental requirements before allocating diversions for the SWP and CVP. In years when allocations of SWP water are limited, CVWD and DWA would have a reduced amount of SWP water like other SWP contractors.

With respect to potential effects on the Delta, if the SWP or other transferred water to CVWD or DWA were located south of the Delta, there would be no impact on flow through the Delta since the transferred water would already have been conveyed through the Delta for the lessor/transferor under its SWP contracts.

If the transferor/lessor were north of or within the Delta, then the transfer/lease could potentially affect flow through or within the Delta. However, exportation of the water through the Delta is subject to DWR and Reclamation decisions based on a suite of factors. Pumping of transfer water through the Delta would be subject to DWR's and Reclamation's consideration of applicable laws, regulations, legal decisions, agreements, resources agency biological opinions and court orders and the time the water would be transferred. Depending on conditions in the Delta at the time, a portion of the transferred water may be used to meet water quality and environmental requirements and the remaining water would be exported at the SWP pumps, conveyed through associated delivery facilities and delivered to the buyer. Therefore, the water transfers would likely take place only when sufficient supplies were available in the Delta to make deliveries to the buyer. DWR would, therefore, ensure the transfer to CVWD and DWA would have no adverse impact on the Delta.

A transfer could not be implemented, however, unless approved by DWR as being in compliance with SWP and Delta operating conditions to protect sensitive species. The impact may also depend on whether habitat and conveyance improvements to the Delta system have been implemented or are proposed. Therefore, any potentially significant impact on the Delta of water transfer or leases, if any, would be under the consideration of DWR, a responsible agency under CEQA. It is anticipated that DWR would not approve a transfer if it was deemed to have significant adverse impacts that could not be mitigated by SWP operations.

Specifically, DWR completed the Monterey Plus EIR for the SWP in April 2010 (DWR, 2010). The EIR concluded that with the incorporation of Mitigation Measure 7.3.5, implementation of the Monterey Plus water supply management practices in the Delta would have a less than significant impact on special status fish species in the Delta due to Delta export changes. The mitigation measure reaffirms that the "Department [DWR] shall continue to operate the SWP Delta export facilities in compliance with requirements of federal and State Agencies in effect at the time of operation, to avoid, reduce or minimize potential impacts on the aquatic resources caused by SWP pumping attributable to the proposed Project [Monterey Plus]." The EIR concluded that implementation of the mitigation measure in combination with environmental programs already in place or forthcoming that are relevant to the SWP would reduce this impact to a less-than-significant-level.

The mitigation measure further states:

The SWP will be operated in compliance with State and federal regulatory permits and other requirements, in effect at the time of the export pumping, that provide protection for the Delta aquatic environment, including for water quality, listed species and other aquatic resources. These requirements include court decisions, regulations and requirements set by federal and State agencies under any operations resulting from the Monterey Agreement,

## Section 5 – Surface Water Resources

---

which are designed to minimize the effects of pumping of fisheries populations currently and in the future in order to prevent jeopardy and project listed species and habitat. The requirements described in the federal and State permits and opinions are currently in effect and are on-going, although they are subject to change. Mitigation measures discussed in the final EIR are not indefinite and vague, possibilities; they are presently being imposed on the SWP in ways that serve to mitigate any Monterey Amendment Delta impacts. The Department [DWR] is legally obligated to operate the SWP facilities in compliance with the requirements of the existing regulatory process under the circumstances described in the DEIR and FEIR. Therefore, in this case, the Department [DWR] has determined that it is appropriate under CEQA to rely on this continual and ongoing regulatory process to mitigate any potential current and future impacts to the Delta aquatic environment from the proposed project.

Therefore, effects on Delta inflow, outflow and south Delta water levels would be less than significant with this mitigation by the DWR, because water would be transferred only when the Delta was in balanced condition and flow in the Delta was within historical averages and similar to existing conditions.

### 5.3.3.2 Water Quality

SWP Exchange water is Colorado River water delivered via the CRA. The TDS of SWP Exchange water delivered has a lower TDS than Coachella Canal water because the CRA diverts water from the Colorado River at Lake Havasu, which is upstream of Imperial Dam. Based on historical and projected variations in Colorado River water quality, the TDS range for the SWP Exchange water recharged at the Whitewater Recharge Facility is 530 to 750 mg/L, averaging 636 mg/L since recharge began in 1973 (Reclamation, 2008). Perchlorate concentrations in SWP Exchange water are less than the minimum reporting detection limit of 4 µg/L (see **Section 5.2.1.3**).

Water transfers or leases, if located south of the Delta, would not affect the quality of the SWP because of the transferor's/lessor's actions. Transfers and leases are not anticipated to have impacts on SWP water quality resulting from any activity of CVWD or DWA. Leased or transferred water would be exchanged for Colorado River water and delivered for recharge at Whitewater, as at present or delivered.

Impacts on Delta water quality from diversions upstream of the SWP would be less than significant, because water could only be moved consistent with DWR Delta operating criteria. No impact on water quality from transfers is anticipated.

### 5.3.4 Mitigation Measures

Mitigation for impacts on a seller's service area, if applicable, would be identified in second tier CEQA documents when the seller enters negotiations for a transfer. No mitigation is anticipated for impacts on CVWD or DWA's service areas since no construction or change in operation is anticipated. The amount of transferred water is anticipated to be accommodated within the SWP or other associated conveyance project without impact on their operation, because the water could be transferred at any time of the year for recharge in the Coachella Valley.

The DWR would ensure no impact on the Delta would occur through their decisions on water transfers through the Delta based on applicable laws, regulations, legal decisions, agreements, resources agency biological opinions and court orders and the time the water would be transferred.

### 5.4 METROPOLITAN'S COLORADO RIVER AQUEDUCT AND THE WHITEWATER RIVER

#### 5.4.1 Environmental Setting

The CRA, completed in 1941, conveys Colorado River water 242 miles via five pumping stations from Lake Havasu to Lake Mathews in western Riverside County. The aqueduct has a sustained delivery capacity of more than 1,740 cfs or 1.26 million AFY (Metropolitan, 2010). The CRA passes along the east side of the CVWD service area and crosses the Whitewater River channel north of Palm Springs. The proximity of the aqueduct to the Coachella Valley made it a logical choice for delivering imported water to the Valley in implementing the SWP Exchange program with Metropolitan. Metropolitan releases CVWD and DWA SWP Exchange water from the CRA at turnouts on the Whitewater River, whence it flows in the unlined, natural channel under Interstate 10 to the Whitewater Recharge Facility near Windy Point for recharge.

The Whitewater River is a natural water course that originates from the southerly and easterly slopes of the San Bernardino Mountains. Several of its tributaries originate from the easterly slopes of the San Jacinto and Santa Rosa Mountains. The Whitewater River discharges to the Salton Sea through a man-made extension of the river known as the Coachella Valley Stormwater Channel (CVSC). The tributary area of the river near the Salton Sea is about 1,495 square miles. The rights of various claimants to use water from the Whitewater River and its tributaries was adjudicated by the Riverside County Superior Court in the 1938 judgment: *In the Matter of the Determination of the Relative Rights, Based upon Prior Appropriation, of the Various Claimants to the Waters of the Whitewater River and its Tributaries, in San Bernardino and Riverside Counties, California* (Superior Court Riverside County, 1938, No. 18035). The SWRCB considers the river and its tributaries to be “fully appropriated” (SWRCB, 1991).

##### 5.4.1.1 Flows

Flows in the CRA are dependent on Metropolitan's Colorado River diversions as approved by Reclamation and Metropolitan system operations. During 2009, Metropolitan diverted 1,105,232 AF (average annual flow of 1,523 cfs) of Colorado River water for consumptive use. Average monthly flow diversions ranged from a low of 426 cfs in October 2009 to a high of 1,793 cfs during November 2009 (Reclamation, 2010). During periodic maintenance shutdowns, the flow in the CRA is essentially zero for a period of up to several weeks.

Flows in the Whitewater River above the recharge facility are measured at USGS stream gage 10257550 at Windy Point (USGS, 2009). Maximum peak flow measured for water years 1985–2009 was in January 2005, at 5,450 cubic feet per second (cfs), during a storm. Total annual flow measured in 2005 was 131,900 AF. Peak month flows in water year 2004-2005 were 2,090

## Section 5 – Surface Water Resources

---

cfs in January 2005. During heavy rain storms, flows in the river have reached the Salton Sea. The minimum flow is zero.

### 5.4.1.2 Water Quality

The quality of the Whitewater River below the CRA turnout is a function of natural storm runoff from the watershed and Metropolitan's releases of Colorado River water under the Exchange agreement.

#### *TDS*

As discussed above, the TDS of the Colorado River increases as it flows downstream. As a result, CRA water has a lower TDS concentration than AAC water because the intake is at Parker Dam, upriver from the AAC diversion point at Imperial Dam. The TDS water quality objective for Colorado River water below Parker Dam is 747 mg/L (**Table 5-11**). The TDS of water diverted at Parker Dam averages approximately 636 mg/L (Reclamation, 2008).

#### *Perchlorate*

Metropolitan conducted initial monitoring of its Colorado River supply for perchlorate in 1997 and found 9 µg/L. Perchlorate concentrations in CRA water have since fallen to below the State MCL of 6 µg/L and the minimum reporting limit of 4 µg/L because of effective treatment and removal at the source on Las Vegas Wash, a Colorado River tributary. Perchlorate in Colorado River water has remained at less than 2 µg/L between July 2008 and October 2009 (Lake Mead Water Quality Forum, January 2010).

#### *Selenium*

The current aquatic life water quality criterion is 5 µg/L, while the MCL for drinking water is 50 µg/L. The average concentration of naturally-occurring selenium in CRA water for 2008-2009 was <5 µg/L (Metropolitan, 2009).

### 5.4.2 Significance Criteria

CVWD considers that significant impacts would occur if the Proposed Project results in:

- diversion of additional water from the Colorado River that could not be provided through the existing infrastructure and operation practices of the CRA, the turnout structure for the Whitewater Recharge Facility, or the Whitewater River, or
- changes in water quality that exceed Basin Plan water quality objectives, or which adversely impact designated beneficial uses.

### 5.4.3 Impacts

#### 5.4.3.1 Infrastructure and Flow Impacts

##### *The Metropolitan CRA*

The deliveries of SWP Exchange water for recharge are subject to the operational needs of Metropolitan. The Proposed Project includes some changes in the water exchange program to adjust for anticipated future reductions in SWP reliability. In the next ten years, CVWD anticipates delivering up to 35,000 AFY of its QSA supply to Whitewater for recharge. The amount of this water delivered will gradually decline as the Mid-Valley Pipeline (MVP) project is fully implemented. After 2025, desalinated drain water produced in the East Valley may be exchanged for CRA water and delivered at Whitewater for recharge. This exchange would reach about 30,000 AFY by 2045. The delivery of QSA and desalinated drain water would increase the flow in the CRA by a like amount. This delivery would be less than 3 percent of the CRA capacity and would be subject to Metropolitan's operational requirements. Since the change in CRA flow is minor, this impact is less than significant. However, increased water conveyance through the CRA will require additional pumping energy, which is discussed in **Section 8.5.3**. Delivery of water made available from future water transfers would not increase flow in the CRA but instead could reduce flow downstream of the Whitewater River turnouts. This flow reduction would be offset by increased deliveries to Metropolitan's system from the water transfers through the SWP.

##### *Whitewater River Turnouts*

The Whitewater River turnouts on the CRA are designed to deliver 200 cfs through the Whitewater Hydroelectric Plant and over 500 cfs through other turnouts. In the past, Metropolitan has delivered nearly 300,000 AF in a single year to the Valley through the Whitewater River turnouts as part of the advance delivery program. The average annual flows anticipated under the Proposed Project are expected to be about 90,000 AFY. Acquisition of additional water transfers could increase this amount by about 35,000 AFY in 2045, assuming all water is delivered at Whitewater. Therefore, the deliveries anticipated with the Proposed Project can be accommodated by the existing infrastructure without any impacts on the existing facilities.

##### *Whitewater River*

Historically, flow rates in the Whitewater River between the Metropolitan turnout and the Whitewater Recharge Facility have been highly variable, influenced by runoff from the tributaries and the water released by Metropolitan. From October 1, 1999 through December 31, 2009, flows as measured at the USGS Windy Point gauge (upstream from the Whitewater River Recharge Facility) averaged 71 cfs and ranged from 0 to 2,090 cfs. The high flow was during a storm event in January 2005. Average annual flows ranged from 1.8 to 252 cfs (USGS, 2011a and 2011b).

Annual releases of SWP Exchange water are expected to be comparable to those in past years. Peak monthly and daily flows are expected to be similar to historic levels, with releases from the

## Section 5 – Surface Water Resources

---

CRA occurring about 25 percent of the time. There is no set schedule for releases at the turnouts; water is released when available from Metropolitan, with higher flows generally expected after the summer months. Changes in future flow rates cannot be predicted and are a function of SWP water availability, Metropolitan system demands and other operational factors. Impacts on the Whitewater River channel will be less than significant, as flows will be within levels experienced in the channel in the past. Biological effects associated with changing flow regimes in the channel are discussed in **Section 7**.

### 5.4.3.2 Water Quality Impacts

#### *The Metropolitan CRA*

As described in **Section 5.2.3.2**, Reclamation conducted studies of salinity under future Colorado River operations in 2007. These studies indicate that salinity at Parker Dam is expected to range from 618 to 650 mg/L, as shown in **Table 5-12**. Changes in water deliveries under the Proposed Project do not include any actions that would change the salt loading of the Colorado River between Hoover Dam and Imperial Dam. Since the CRA takes water from Lake Havasu, which is impounded by Parker Dam (located between Hoover Dam and Imperial Dam), the Proposed Project would have no impact on salinity in the CRA.

#### *Whitewater River*

Salinity in the Whitewater River is affected by variable local runoff and water releases from the CRA for groundwater recharge at the Whitewater Recharge Facility. For the period 2000-2009, SWP Exchange water releases constituted more than 90 percent of the total flow in the Whitewater River. While increases in Exchange water deliveries are proposed in the 2010 WMP Update, the ratio of imported to natural flow is expected to be about the same over the planning period. Therefore, the TDS of the Whitewater River flow is expected to be similar to existing values. The Proposed Project would take no other actions to change the salinity of the Whitewater River. No other water quality parameters exceed current drinking water or aquatic life standards in the Whitewater River. Therefore, the Proposed Project will have no impact on water quality in the Whitewater River.

### 5.4.4 Mitigation Measures

No mitigation is necessary.

## 5.5 OTHER LOCAL SURFACE WATERS

### 5.5.1 Environmental Setting

Other surface waters in the study area are several local rivers and streams that are tributaries to the Whitewater River, notably Snow Creek, Falls Creek, Tahquitz Creek, Andreas Creek, Chino Creek, Palm Canyon Wash and Deep Creek. In 2008, surface water supplied approximately 2 percent of the total water demand of the West Valley, to meet urban and golf course demands, but no supply to the East Valley. Because surface water supplies are affected by variations in annual precipitation, the annual supply is highly variable. Since 1936, the estimated historical



surface water supply has ranged from approximately 1,400 to 9,000 AFY, averaging about 5,800 AFY (2010 WMP Update Section 4.4).

The majority of local surface water is derived from runoff from the San Bernardino and San Jacinto Mountains with lesser amounts from the Santa Rosa Mountains. This runoff either percolates in the streambeds or is captured in mountain-front debris basins where it recharges the groundwater basin. According to estimates developed for the 2010 WMP Update, a long-term average of approximately 57,000 AFY of natural runoff and inflow from adjacent groundwater basins is recharged into the Coachella Valley groundwater aquifer through existing channels and flood control basins.

### 5.5.2 Significance Criteria

Based on State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on local surface waters if it:

- violated any water quality standards or waste discharge requirements
- otherwise degraded water quality, or
- substantially altered the existing drainage pattern of the area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site, or which would result in flooding on- or off-site.

### 5.5.3 Impacts

The Proposed Project does not include any changes in the existing water gathering and use methods for local surface runoff. No diversions or discharges to local streams are proposed. Consequently, there would be no impact on local surface water flows or quality.

Construction of proposed facilities on the Valley floor could have site runoff to local drainage channels, thence to the CVSC or possibly agricultural drains, with potential impacts on flow and water quality. If the area of disturbance for a given project exceeds 1 acre, runoff amount and quality is controlled by preparation and implementation of BMPs defined in a construction SWPPP, required by the SWRCB Construction General Permit. The impact would be less than significant with mitigation incorporated.

### 5.5.4 Mitigation Measures

No mitigation is necessary.

## 5.6 CVSC AND AGRICULTURAL DRAINS

The CVSC, a constructed extension of the Whitewater River that is managed and operated by CVWD, is the main drainage channel for the East Valley and is an important feature of the study area. This largely unlined earthen channel extends approximately 17 miles southeast from the City of Indio, through the City of Coachella, and the agricultural communities of Thermal and

## Section 5 – Surface Water Resources

---

Mecca down to the north end of the Salton Sea. The construction of the CVSC was begun in the early 1920s to convey Whitewater River storm flows safely past Coachella Valley communities and to provide adequate drainage for agricultural return waters in the East Valley area of semi-perched groundwater. The CVSC maximum design capacity (at the mouth) is 82,000 cfs. In addition to agricultural drainage, the CVSC also receives treated effluent discharged from three municipal wastewater treatment plants (CSD, VSD and CVWD WRP-4) pursuant to NPDES permits.

Throughout much of the East Valley, agricultural drains were installed 6 to 10 feet below ground surface to drain shallow groundwater perched on fine-grained, ancient lakebed soils. Most of the drains empty into the CVSC; however, 25 smaller open channel drains at the southern end of the Coachella Valley discharge directly to the Salton Sea. The quantity of flow in the drains, and therefore in the CVSC, depends upon water levels in the underlying aquifers and the quantities of applied irrigation water.

### 5.6.1 Environmental Setting

#### 5.6.1.1 Flows

Approximately 50 percent of the total agricultural drainage from the Valley flows into the CVSC and to the Salton Sea. The remaining 50 percent flows directly to the Salton Sea through 25 agricultural drains. The components of flow in the CVSC and smaller drains are agricultural drainage collected in the CVWD tile drain system, wastewater discharges from municipal treatment plants and fish farms, regulatory water and seasonal stormwater runoff. Regulatory water is Canal water that cannot be delivered to farms and other uses for scheduling reasons and is occasionally discharged from irrigation laterals directly into the CVSC and tributary drains.

Agricultural drainage flows reached a historical peak in the mid 1970s when groundwater levels were at historic highs. Drainage has decreased steadily since then as groundwater levels have dropped and more of the returns from irrigation use percolated into the groundwater basin. Wastewater discharges have gradually increased with population growth. With improved delivery scheduling, regulatory releases have decreased.

Treated wastewater flows discharged to the CVSC in 2009 were estimated to be 4,800 AFY from CVWD WRP-4, 6,900 AFY from VSD, and 3,500 AFY from the City of Coachella, Coachella Sanitary District WWTP, for a total of 15,200 AFY or about 28 percent of total flow to the Sea from the Coachella Valley.

Combined flow in the CVSC and smaller drains to the Salton Sea decreased steadily from a high of approximately 175,000 AFY in 1977 to 81,500 AFY in 1999 to 70,000 AFY in 2009. Declining water levels in the underlying aquifers account for the reduced agricultural return flows into the drains. In addition, drain flows have decreased due to increased efficiency in agricultural practices, conversion of some agricultural land to urban development, and reduction in effluent discharged from fish farms.

Flows measured in the CVSC and the drains are fairly consistent from month to month in response to agricultural activity and local runoff conditions. CVWD does not measure

intermittent storm flows in the CVSC and the drains; the USGS gauge on the CVSC near Mecca does not measure storm flows above 200 cfs. Historical data indicate that flow rates can vary from essentially zero to more than five times the average annual flow rate in a given month (CVWD unpublished data, 2010). Typically, the peak monthly flow rates for most drains are about 1.6 times the average annual rate with smaller drains having higher peaking factors. Some of the smaller drains can be dry for several months in a row.

CVWD has installed bank stabilization along the CVSC, consisting of concrete side walls that are then covered with native earth material. CVWD also maintains a partially lined pilot channel in the bottom of the CVSC (in the Rancho Mirage-Indian Wells-Palm Desert area), which contains normal low flows in the channel. The District maintains the CVSC under the terms of a 1977 memorandum of understanding (MOU) with the California Department of Fish and Game (CDFG) to minimize impacts on habitat. This agreement allows the District to clean alternate sides of the channel each year as well as to “perform emergency maintenance activities required for the immediate protection of public health or safety or for the prevention of imminent damage to public or private facilities caused by action of water or other natural forces.” CVWD has maintained the individual open agricultural drains in a similar manner, although they are not subject to the terms of the MOU. Because the US Army Corps of Engineers (USACE) was not party to the MOU and the CVSC is a Water of the U.S., CVWD is in the process of negotiating a new channel maintenance agreement with the USACE. In the interim, CVWD mows rather than clears vegetation in the CVSC; and the general level of maintenance of the channel has been reduced.

### 5.6.1.2 Water Quality

The Regional Board has established numeric water quality objectives for TDS, pH and selenium in the drains. Water quality in the CVSC and the 25 drains that empty directly into the Salton Sea is monitored semiannually by CVWD for general mineral and inorganic constituents. Selected drains and the CVSC are sampled and analyzed biannually for trace metals. The pH levels in the drains and the CVSC range from 6.9 to 9.4 with an average of 7.7.

#### *TDS*

The Basin Plan water quality objective for TDS in the CVSC and the drains is an annual average 2,000 mg/L with a maximum of 2,500 mg/L. However, the Basin Plan also states that “any discharge, *excepting discharges from agricultural sources* [emphasis added], shall not cause concentration of TDS in surface water to exceed the specified limits” (Regional Board, 2006). The primary discharges to the CVSC and the drains are from agricultural sources and the TDS concentrations of the non-agricultural discharges are substantially below the water quality objective for TDS.

For the period 2002 to 2010, Annual average TDS concentrations in individual drains ranged from 510 milligrams per liter (mg/L) to 9,165 mg/L as shown in **Table 5-13**. In 2009-2010, the range was 510 mg/L to 3,900 mg/L and six of the 26 drains exceeded the 2,000 mg/L water quality objective, none of which have point source discharges. Annual average TDS concentrations in the CVSC from 2002 to 2010 ranged from 1,059 mg/L to 1,400 mg/L (CVWD,

## Section 5 – Surface Water Resources

2010b), all measurements taken were below the annual water quality objective of 2,000 mg/L for TDS.

### *Selenium*

Selenium in the CVWD service area is derived from imported Colorado River irrigation water. Selenium tends to build up in soils and root zones as crops are irrigated with Canal water. Irrigation drainage is discharged to the subsurface tile drain system, which flows in turn to the CVSC and to CVWD agricultural drains, thence into the Salton Sea.

**Table 5-13**  
**Average Annual TDS Concentrations in the CVSC and Drains (2002-2010)**

Drain	2002	2003	2004	2005	2006	2007	2008	2009	2010
A Channel	812	820	987	759	1,121	992	1,213	1,052	1,500
Arthur 0.5	5,044	4,331	3,819	3,956	3,705	3,210	3,121	2,420	2,300
Arthur St.	1,748	1,754	2,424	1,831	1,835	1,850	1,873	1,875	1,900
Ave 74	2,735	1,512	1,820	1,232	3,405	2,745	921	1,067	3,400
Ave 76	1,290	2,048	1,899	1,972	2,290	1,935	1,981	1,850	2,100
Ave 78	NA	832	950	1,368	737	787	813	705	580
Ave 79	711	734	968	774	768	829	905	711	600
Ave 83	1,602	3,298	1,492	2,648	1,247	1,458	1,019	1,495	3,100
C Channel	1,807	2,138	1,643	1,725	1,845	1,715	1,797	1,885	2,000
Caleb Channel	1,453	1,467	1,430	1,205	1,875	1,980	1,791	1,865	1,900
Cleveland 0.5	1,943	1,853	2,036	2,351	2,540	2,288	2,073	2,100	2,000
Cleveland East	1,964	1,576	1,650	1,974	2,025	1,925	1,850	1,745	1,700
Cleveland West	2,311	2,350	2,202	2,092	2,355	2,145	2,106	2,045	2,000
D Channel	1,935	1,158	1,623	1,279	1,692	1,600	1,594	1,490	2,000
E Channel	1,538	1,473	1,489	1,716	1,481	1,481	1,370	1,710	2,000
F Channel	2,006	1,962	2,044	2,277	2,263	2,115	2,132	2,110	2,000
Garfield 0.5	2,231	2,072	1,748	1,837	1,870	2,165	1,978	2,060	2,600
Garfield St.	2,516	2,139	1,736	1,684	1,625	1,700	1,818	1,815	1,800
Grant 0.5	4,266	3,499	1,773	1,959	1,740	1,795	1,933	1,705	2,000
Grant St.	2,713	2,227	1,871	3,633	2,770	2,375	1,910	2,705	2,000
Hayes	1,872	1,751	1,582	1,640	2,450	2,310	1,902	1,940	2,000
Hayes 0.5	9,165	7,459	6,745	5,375	4,815	4,500	4,295	3,885	3,900
Johnson St.	1,917	1,642	1,735	2,108	1,765	1,795	1,654	1,730	1,700
Lincoln-Oasis	2,022	1,641	1,014	1,678	831	1,910	752	954	510
McKinley	1,701	1,750	2,094	1,976	1,810	1,965	1,793	1,780	1,900
Oasis-Grant	7,137	5,131	2,210	3,759	2,418	3,055	3,881	1,665	1,700
CVSC	1,254	1,298	1,059	1,367	1,133	1,111	1,128	1,165	1,400

Source: CVWD, 2010b.

The current water quality objective is a 4-day average of 5 µg/L with a maximum 1-hour average of 20 µg/L, based on chronic ambient criteria for aquatic life. USEPA promulgated water quality standards for priority toxic pollutants in May 2000. With exception of one reading of 6.4 µg/L,

## Section 5 – Surface Water Resources

the concentration of selenium in Coachella Canal water has consistently been 5 µg/L or less for at least the last six years.

Historical and recent selenium concentrations in the CVSC and drains are shown in **Table 5-14**. The selenium concentration in the drains varies from non-detect (<5 µg/L) to 18 µg/L, with 10 of the 26 drains non-detect in 2009. Selenium in the CVSC is consistently non-detect.

**Table 5-14  
Selenium Concentrations (µg/L) in the CVSC and Drains 2002 – 2009**

Drain	Aug 2002	Aug 2003	Aug 2004	Aug 2005	Aug 2006	Aug 2007	Aug 2008	Aug 2009
A Channel	<5	<5	<5	<5	5.8	5.2	<5	<5
Arthur 0.5	<5	<5	<5	<5	15	12	7.9	10
Arthur St.	<5	<5	<5	<5	6	6.7	16	<5
Ave 74	<5	<5	<5	<5	9.4	7.1	<5	<5
Ave 76	<5	<5	<5	<5	8.1	5.6	5.1	<5
Ave 78	NA	<5	<5	<5	<5	<5	<5	<5
Ave 79	<5	<5	<5	<5	<5	<5	<5	<5
Ave 83	<5	<5	<5	<5	<5	<5	<5	<5
C Channel	<5	<5	<5	<5	10	7.9	<5	<5
Caleb Channel	<5	<5	<5	<5	8.3	6.7	7.4	<5
Cleveland 0.5	<5	<5	<5	<5	11	9.3	9.7	7.9
Cleveland East	9.7	5.6	5	<5	12	8.3	12	8.5
Cleveland West	7.3	<5	<5	<5	13	10	12	9.2
D Channel	5.2	5.3	<5	<5	8.5	6.3	7.2	5.7
E Channel	<5	9.6	7.7	7.9	18	18	18	18
F Channel	<5	5.4	<5	<5	9.2	8.8	NA	NA
Garfield 0.5	<5	<5		<5	8.2	6.7	7.2	5.5
Garfield St.	<5	<5	<5	<5	9.1	8.1	8.7	7.3
Grant 0.5	<5	<5	<5	<5	6.9	5.7	NA	<5
Grant St.	<5	<5	<5	<5	7.7	6.9	7.1	<5
Hayes	<5	<5	<5	<5	9.2	6.9	8	<5
Hayes 0.5	<5	<5	<5	<5	15	9.1	15	9.8
Johnson St.	<5	<5	<5	<5	6.3	5.3	<5	<5
Lincoln-Oasis	<5	<5	<5	<5	NA	5.2	<5	<5
McKinley	<5	<5	NA	<5	8.8	7.1	10	<5
Oasis-Grant	<5	5.4	<5	<5	7.7	9.8	9.6	6.9
CVSC	<5	<5	<5	<5	<5	<5	NA	<5

Source: CVWD, 2010a.

NA: No Analysis

Detection level for reporting is 5 µg/L.

### 5.6.2 Significance Criteria

CVWD considers that significant impacts on flows in the CVSC or drains would occur if the Proposed Project results in:

## Section 5 – Surface Water Resources

---

- flow increases in the CVSC and open channel drains that would impair their function as agricultural drains or stormwater conveyance channels,
- a change in drain or CVSC water quality that causes an established water quality objective to be exceeded or impairs a designated beneficial use, or
- substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-or off-site.

### 5.6.3 Impacts

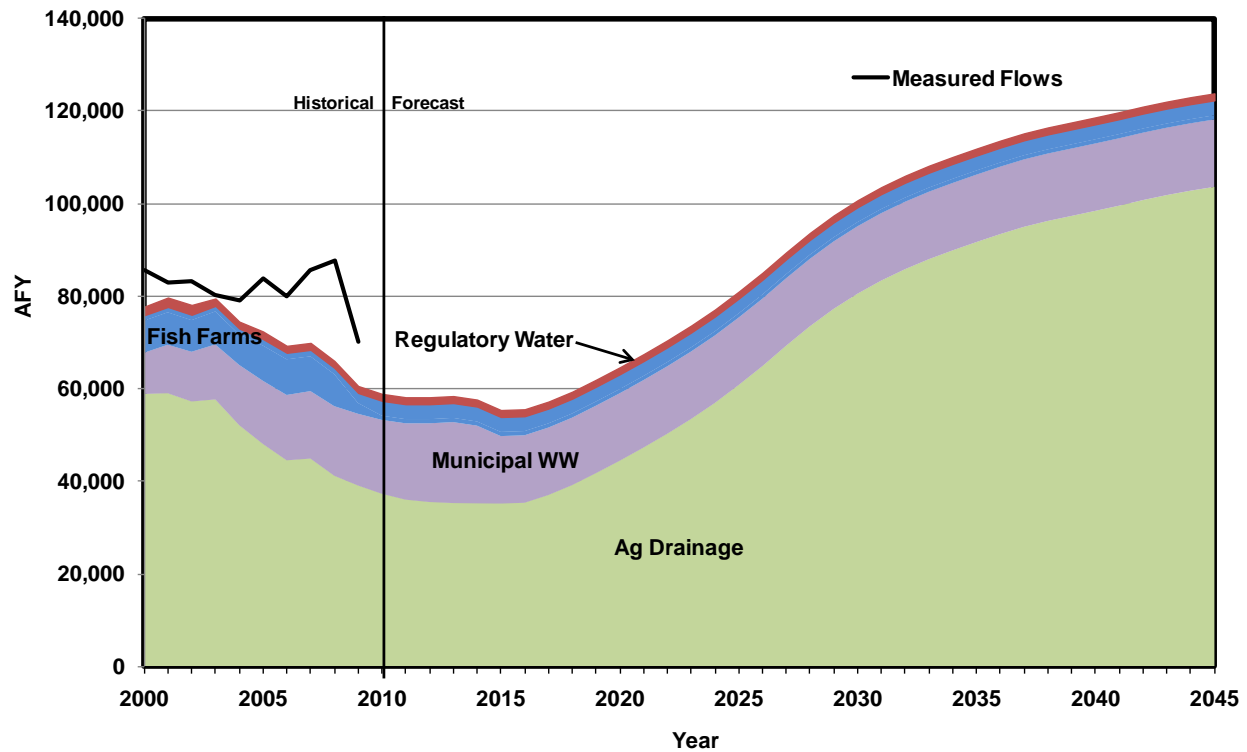
#### 5.6.3.1 Flows

Implementation of the 2010 WMP Update would control and eliminate long-term groundwater overdraft, resulting in recovery of groundwater levels in the basin. As groundwater levels in the East Valley increase, drain and CVSC flows are projected to increase, as was projected in the 2002 PEIR. However, implementation of the 2010 WMP Update is expected to result in somewhat reduced drain flows compared to the 2002 WMP due to modification in the timing and location of programs proposed to reduce overdraft. The Coachella Valley groundwater model was used to evaluate the effects of the 2010 WMP Update on future drain flows. Model results show drain and CVSC flows declining slightly until about 2015. After 2015, flows to the drains and the CVSC are projected to increase steadily during the planning period in the absence of drain water desalination projects, as shown on **Figure 5-2**. Total flow to the Salton Sea could be as much as 125,000 AFY by 2045 if no drain water desalination is implemented. In the figure, measured flows are shown in black and compared to modeled flows for the period 2000 to 2009. Since measured flows tend to be average about 6,600 AFY more than modeled flows, it is expected that future flows will continue this trend. However, for consistency, modeled flows are presented.

Development and population growth in the East Valley will generate increasing amounts of wastewater effluent to be treated at the three wastewater treatment facilities that discharge to the CVSC. Projections prepared for the 2010 WMP Update indicate the combined volume of effluent treated at these three plants would increase from about 16,600 AFY currently to 57,600 AFY by 2045. At the same time, the increased effluent flows generated by growth are proposed for recycled water uses. The 2010 WMP Update assumes that all of the incremental effluent flows generated by future development will be recycled and existing municipal effluent discharge (16,600 AFY) to the CVSC will be maintained to minimize the effects of flow reductions on habitat in the CVSC channel. Therefore, there would be no impact on CVSC flows from recycled water use compared to current conditions.

Discharge of fish farm effluent to the CVSC has declined due to a change in operations at one major fish farm; however, it should be noted that the volume of fish farm effluent discharge is a function of economic conditions and would not be affected by the Proposed Project.

Discharge of regulatory water is not expected to change in the future because it is affected by Canal water delivery operations, which were modified through improved water delivery scheduling to reduce these discharges.



**Figure 5-2**  
**Historical and Projected Coachella Valley Flows to Salton Sea**  
**without Drain Water Desalination**

As indicated in the Proposed Project description (**Section 3**), the 2010 WMP Update anticipates the capture, treatment and reuse of up to 85,000 AFY of drain water to offset imported water supplies lost to reduced SWP reliability and to accommodate projected growth. This represents a significant increase over the 11,000 AFY of drain water reuse in the 2002 WMP. The amount of drain water to be recovered and the effect on flows to the Salton Sea would be a function of the following factors:

- SWP reliability – increased reliability including completion of Delta conveyance improvements would reduce the need for desalinated drain water,
- magnitude of future growth – reduced growth would reduce the need for additional water supplies,
- effectiveness of water conservation activities – increased conservation would reduce the need for desalination while reduced effectiveness could increase the need,
- ability to acquire other sources of imported water – acquisition of other water sources would reduce the need for desalination, and
- method of brine disposal – direct discharge to the Salton Sea would minimize flow reductions while zero discharge methods could increase the flow reduction.

## Section 5 – Surface Water Resources

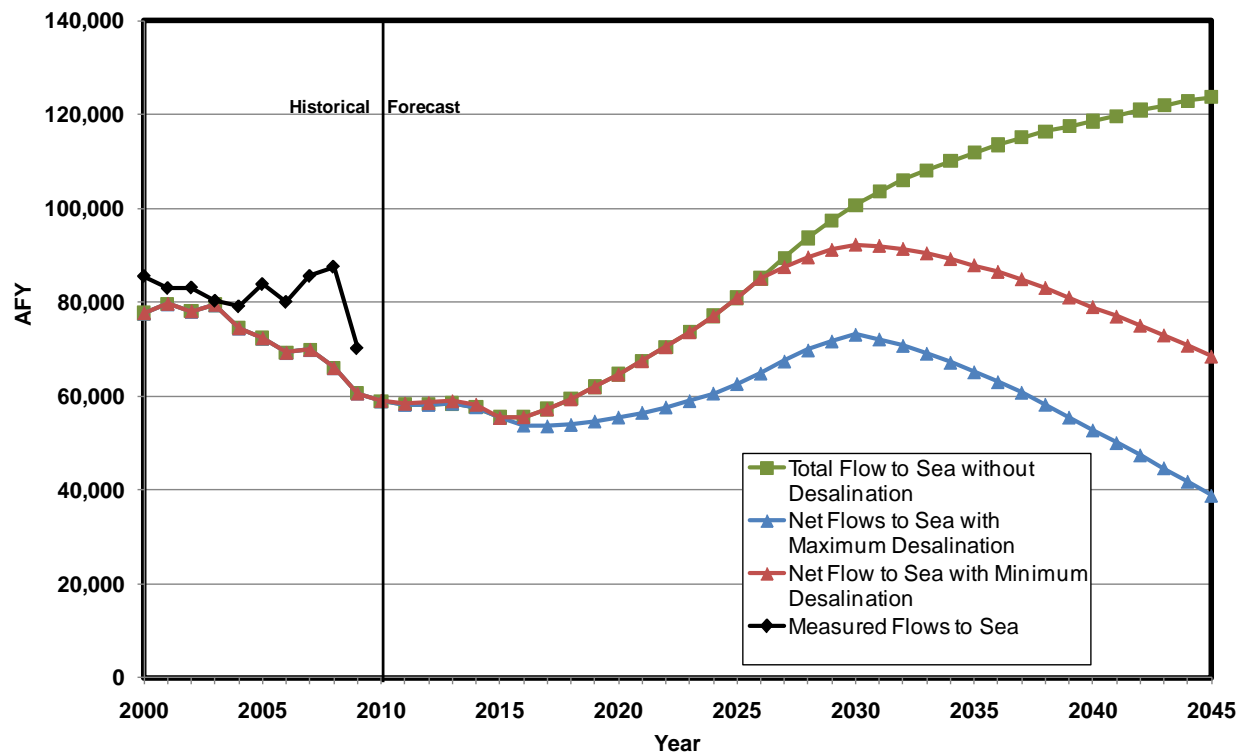
---

Desalination creates a brine flow, which would require disposal in a suitable manner that is yet to be determined. Brine flows could range from 17,000 to 21,000 AFY depending on the quality of the source water. A feasibility study for desalination and brine disposal will be prepared when the need for desalination is confirmed. One potential beneficial use of the brine is discharge to the Torres-Martinez wetland to create brackish ponds, as proposed in the Tribe's wetland plans, rather than pumping saline water from the Salton Sea. Residual brine flow could be conveyed to the Salton Sea vicinity, where some could be used to create saline marsh habitat.

In the WMP, the amount of drain flow that would be recovered, desalinated and reused, could range from 55,000 AFY to 85,000 AFY depending on future availability of SWP supplies and successful implementation of Delta conveyance and environmental improvements. Consequently, the combined flow to the Salton Sea from the Coachella Valley would decrease from a modeled current flow of about 61,000 AFY to about 40,000 AFY by 2045 if maximum desalination is implemented. If the desalination capacity is 55,000 AFY, total Coachella Valley flow to the Salton Sea is projected to increase from 61,000 AFY to 70,000 AFY. **Figure 5-3** shows the range of effects desalination would have on flows to the Sea. Here, as in **Figure 5-2**, measured flows are shown in black and compared to modeled flows for the period 2000 to 2009.

The 2002 PEIR included an evaluation of the impact of changing drain flow rates on channel depth and velocities and concluded that the 2002 WMP would have a less than significant impact on the hydrology and infrastructure of the drains and the CVSC. Since the 2010 WMP Update results in lower drain and CVSC flows than were projected for the 2002 WMP, the impact would be less than that identified in the 2002 PEIR. Consequently, flow impacts on the CVSC and drains are considered to be less than significant, since beneficial uses would be maintained, erosion and siltation would be reduced and there would be no change in drainage patterns. Potential impacts on biological resources in the CVSC and drains from changes in flows and for maintenance to maintain flood capacity were mitigated for in the 2002 PEIR and the mitigation measures subsequently incorporated into the 2008 Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) (See **Section 7 – Biological Resources**).





**Figure 5-3**  
**Projected Flows to Salton Sea for Maximum and Minimum Desalination Scenarios**

### 5.6.3.2 Water Quality

The 2002 PEIR evaluated the impact of the 2002 WMP on drain water quality and found that impacts would be less than significant with respect to water quality parameters except for future selenium concentration, which was found to be potentially significant. Since the 2010 WMP Update results in changes in usage of Colorado River water and increased water conservation, impacts relative to salinity and selenium are re-evaluated in this SPEIR. Impacts on selenium concentrations in the CVSC and drains from implementation of the 2010 WMP Update are the same as those evaluated and mitigated in the 2002 PEIR and adopted MMRP, as discussed below.

#### *Salinity*

The 2002 PEIR projected that salinity in the CVSC and the drains would increase from a then current level of 1,430 mg/L to about 2,900 mg/L by 2035 with implementation of the 2002 WMP. The salinity water quality objective for the drains is an annual average of 2,000 mg/L and a maximum of 2,500 mg/L for discharges to the drains, not including agricultural discharges (see **Table 5-4**).

The impact of the 2010 WMP Update on the salinity of the CVSC and the drains is considered in terms of change in return flow quality that could reach the drains. The 2010 WMP Update

## Section 5 – Surface Water Resources

---

includes changes in Canal water usage that would increase the amount of in-lieu recharge and reduce the amount of direct recharge with Colorado River water. The 2010 WMP Update would secondarily increase salinity concentrations in the CVSC and drains with ongoing and planned use of Colorado River water for irrigation. The salinity of the drains would probably reach 2,800 to 2,900 mg/L TDs and thus exceed the water quality objective of 2,000 mg/L, but the Basin Plan water quality objective does not apply to agricultural drainage. This increase would have no impact on biological resources or beneficial uses of in the drains (since this TDS level is not important for biota in the drains) and would also export additional salt from the groundwater basin, a beneficial effect. Increases in effluent concentration from urban indoor water conservation are anticipated to be a minor contributor to the TDS concentration of the CVSC. Therefore, the impact would be less than significant and no mitigation is required.

Even with the increase in salinity, the flows would continue to provide a water supply for wetlands in the drains and at the mouth of the drains at the Salton Sea, a beneficial effect.

### *Selenium*

The 2002 PEIR speculated that implementation of the WMP could increase selenium concentrations in the CVSC and drains over time to exceed aquatic life criteria. Consequently, the 2002 PEIR concluded that the 2002 WMP could have potentially significant effects on selenium concentrations in the drains and CVSC by 2035. Mitigation for these potentially significant effects was investigated. The 2002 PEIR found reducing selenium concentrations in drain waters to be infeasible with then current technology. Therefore, CVWD committed to replacement of aquatic habitat in the drains and CVSC using low-selenium water. This mitigation was incorporated into the CVMSHCP.

For this SPEIR, the previous evaluation and also selenium studies conducted since 2002 have been reviewed. The Salton Sea Species Conservation Habitat (SCH) Project recently published a draft report on selenium treatment technologies (DWR and CDFG, 2010). Table 1 of that report compares selenium concentrations in the Salton Sea with concentrations in inflow sources. For the years 2006-2008, Salton Sea selenium concentrations ranged from 1.9 to 3.2 µg/L (USGS, 2009) and in the CVSC values ranged from 1.7 to 2.4 µg/L. It was also noted in the report that since 1999, selenium concentrations in Salton Sea water remained low and that selenium concentrations decreased in the Whitewater River. Selenium concentrations in the New River and Alamo River, which contribute the majority of Salton Sea inflows, remained steady (but higher than in Whitewater — 3.2 to 3.5 µg/L in the New River and 5.1 to 5.8 µg/L in the Alamo River). Selenium concentrations monitored in IID agricultural drains varied widely and often had higher concentrations (range of 0.8 to 79 µg/L). Total selenium concentrations in the IID drains were directly correlated with salinity and inversely correlated with total suspended solids (TSS) concentrations (Saiki, et al., 2010).

The State currently has not proposed a TMDL for selenium in the CVSC or drains; however, a TMDL for selenium in the Salton Sea is anticipated in 2019. CVWD will participate in the development of the future TMDL, as appropriate.

CVWD has continued to monitor selenium in the CVSC and drains, in accordance with 2002 PEIR adopted mitigation measures and CVMSHCP requirements. CVWD has found that

selenium concentrations have not shown an increasing trend, but the 2002 WMP elements that were predicted to increase selenium in the drains have not yet been implemented. CVWD continues to monitor selenium in the drains and selenium removal technologies. As in the 2002 PEIR, the impact is considered to be potentially significant. Impacts on aquatic biota from increased selenium have already been mitigated in the 2002 PEIR and the CVMSHCP. **Section 10 – Alternatives** discusses recent potential mitigation methods that address selenium concentrations in agricultural drains.

### 5.6.4 Mitigation Measures

#### 5.6.4.1 TDS

No mitigation is required.

#### 5.6.4.2 Selenium

The possibility of increased selenium concentrations in the drains and CVSC was identified in the 2002 PEIR as a potentially significant impact; MMRP Mitigation Measure 5-1 was adopted at that time. However, Measure 5-1 addressed monitoring only. Several selenium mitigation measures were discussed and found to be infeasible (2002 PEIR section 5.5.4): chemical selenium removal, wetlands and hay bales, desalination, evaporation ponds, deep well injection, integrated drain management and beneficial uses of drain water and salts. A Statement of Overriding Considerations was filed for this issue in 2002.

For this SPEIR, approaches to selenium treatment for agricultural drainage have been revisited. The 2010 DWR and CVWD report reviewed available physical, chemical and biological selenium treatment technologies for the Salton Sea SCH project. Physical treatment processes evaluated were reverse osmosis, nanofiltration, and ion exchange; chemical processes studies were zero-valent iron (ZVI) and ferrous hydroxide; biological systems were anaerobic bacteria removal, algal treatment and constructed wetlands. The report concluded that physical treatments can be effective in removing selenium, but that they were not suitable due to complexity and cost and the impracticality of treating agricultural drain waters over a large area. Chemical treatment with iron is also costly and has not been demonstrated to reduce low levels of selenium (such as are present in agricultural drainage). The report concluded that physical and chemical treatments were not applicable or feasible for the SCH Project. Upon review of the report, it is concluded that these treatments similarly are not suitable mitigation measures for the low levels of selenium in drains and the CVSC in the 2010 WMP Update.

Biological treatments offer the advantage of relatively low cost and maintenance. Several issues were identified for biological treatment. The first is whether treatment wetlands can reliably reduce selenium to levels below 5 µg/L. Ways to increase treatment efficiency under varying climatic conditions and plant palettes are under study. Another issue is whether biological treatment may transform selenium into more bioavailable forms (Amweg, et al., 2002). Concerns have also been raised about exposure of wildlife to selenium remaining in the treatment wetland itself. Keeping wildlife away by guns or flagging tape has been suggested as well as to provide an alternative wetland supplied with clean water as compensation habitat for birds to feed and reproduce. Ultimately, it might be necessary to retire the treatment wetland.

## Section 5 – Surface Water Resources

---

Once the sediments and plant tissues accumulate selenium to potentially toxic levels, the wetland treatment system must be closed, drained, and converted to a moist treatment bed to promote biological volatilization of selenium.

CVWD believes that it would not be feasible to discourage birds and other wildlife from using selenium treatment wetlands. Using noise would also not be desirable, since local wetlands are populated by sensitive obligate wetland species such as California black rail and California clapper rail, and the area is on a major flyway for MBTA birds. Moreover, using bird discouraging tape on a vast area of agriculture would not be practical.

Selenium mitigation in the 2002 PEIR, later incorporated into the CVMSHCP, was the replacement of all sensitive species habitat with low selenium water. Physical, chemical and biological treatment of selenium in drainage waters was revisited for the 2010 WMP Update and SPEIR. Treatment methods are still under study as discussed in **Section 10** of this SPEIR. No approach has yet been developed that is readily applicable to Coachella Valley agricultural drainage. A mitigation approach may be identified and implemented in the future. The projected impact remains potentially significant with respect to water quality but no additional mitigation is required for biologic impacts.

### 5.7 SALTON SEA

The Salton Sea is an important surface water body in the Coachella Valley and is California's largest lake. The following section addresses the potential impacts of the Proposed Project on the Sea.

#### 5.7.1 Environmental Setting

The Salton Sea is a terminal body of saline water that occupies the bottom of the Salton Trough, a topographic low between the Coachella and Imperial Valleys. The current Salton Sea was formed in 1905 when flood flows from the Colorado River broke through a temporary canal heading that had been design to bypass a silted section of the Imperial Canal. The Sea has been maintained primarily by irrigation drainage, chiefly from the Imperial Valley and to a lesser extent (approximately 6 percent of total inflow) from the Coachella Valley, by municipal effluents and by stormwater. The Sea is a great, shallow water body, approximately 35 miles long and 15 miles wide, occupying approximately 376 square miles (Salton Sea Authority, 2000); the maximum depth is less than 50 feet and the water elevation is currently (May 31, 2010) 231.3 feet below mean sea level (ft msl) (USGS, 2011e). Because the Sea has no outlet, high evaporation rates in this desert valley concentrate salts and other constituents from the inflows. The salinity of the Sea has increased steadily since its formation, such that its salinity is now about 53 parts per thousand, or approximately 50 percent higher than the salinity of the ocean (DWR and CDFG, 2010).

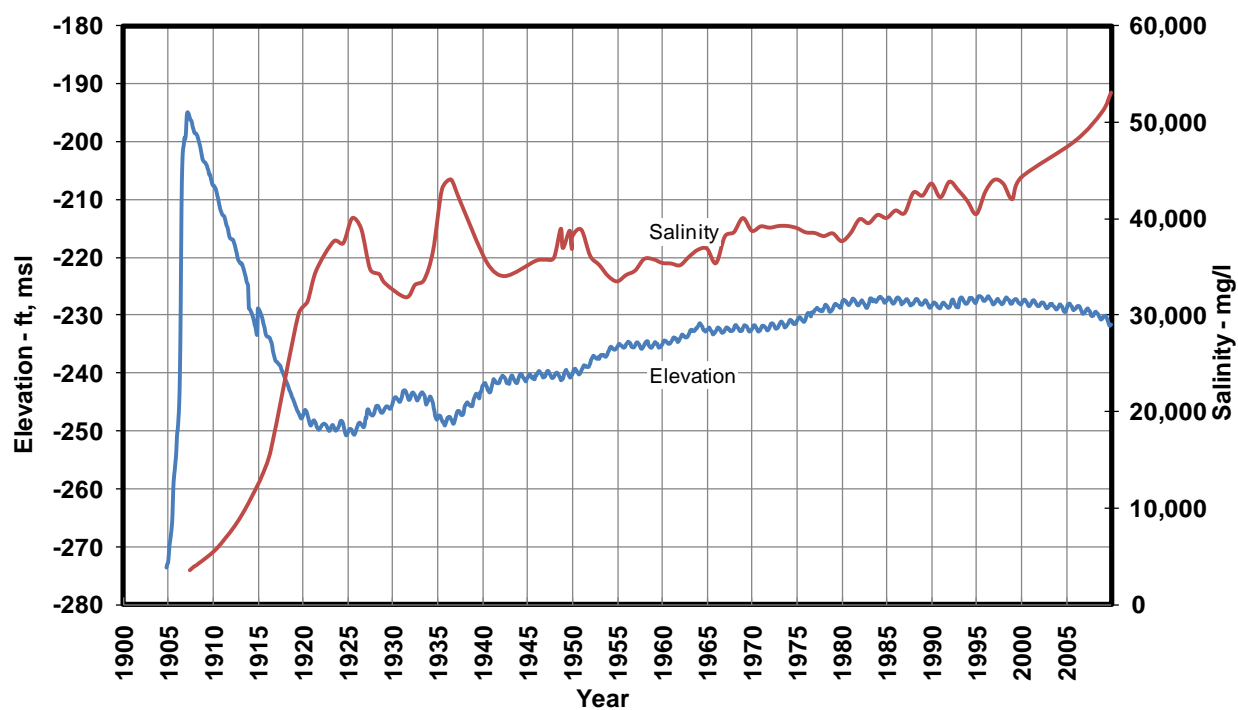
The Sea is not only a repository for agricultural drainage and effluent, it is one of a dwindling number of large stopovers for migratory birds on the Pacific Flyway and provides habitat for a number of resident bird species. Its fish and wildlife resources are already adversely affected by the increasing salinity and other water quality issues, including temperature, eutrophication, and subsequent low dissolved oxygen conditions and algal blooms. The extensive marine sport

fishery comprised of corvina, gulf croaker and sargo has disappeared; leaving only salinity-tolerant tilapia as sport fish. Pileworm and barnacle populations have been severely reduced. Bird numbers have continued to be very high, however, because of the continuing abundance of tilapia. Salinity-tolerant Endangered desert pupfish and other non-game fishes persist along the shoreline near and in the mouths of lower-salinity drainages into the Sea.

**5.7.1.1 Sea Levels and Inflow**

Historical Salton Sea levels, shown on **Figure 5-4** (USGS, 2009), have decreased steadily since 1995 from a high of -226.7 ft msl to the December 2, 2010 level of -231.99 ft msl (USGS, 2011e). Over the past ten years, Sea levels have fluctuated between 1 and 1.7 ft annually due to evaporation and seasonal inflow variations.

Total inflow to the Sea in 2009 is estimated to be approximately 1.02 million AFY based on change in water levels and surface evaporation. Inflows are projected to decrease further with the transfer of Colorado River water from IID elsewhere under implementation of the QSA and the associated reduction in Imperial Valley irrigation drainage, and by wastewater recycling in Mexicali.



Source: Water level data from USGS, 2011e; salinity data from DWR and CDFG, 2010.

**Figure 5-4**  
**Salton Sea Levels and Salinity 1904 to 2009**

The QSA requires IID to mitigate the effects of the transfer by providing conserved water to the Sea, but only through 2017. Even with this addition, surface water elevations at the Sea are projected to decline from an existing (Dec. 2009) elevation of -230.6 to -236 feet msl by 2020 (CH2MHill, 2007). After 2018, when mitigation inflow ceases, if no Salton Sea restoration

## Section 5 – Surface Water Resources

---

program is in place (SSERP No Action Alternative), the median sea elevation (50 percent exceedance) is projected to decline to approximately -248 ft msl by 2045 under the No Action Alternative – CEQA Conditions scenario and to -258 ft msl by 2045 for the No Action Alternative – Variability Conditions scenario (CH2MHill, 2007). Water level projections have 5<sup>th</sup> – 95<sup>th</sup> percentile ranges of about 3 ft for the CEQA Conditions scenario and 3 to 11 ft for the Variability Conditions scenario (CH2MHill, 2007).

From 2018 on, the SSERP PEIR projected that salinity will increase further and at an increasing rate, the shoreline will recede further, conditions will eliminate shorebird habitat, expose soils to wind erosion, and result in bird population declines. In the absence of a comprehensive restoration program, the Salton Sea ecosystem is anticipated to collapse.

### 5.7.1.2 Water Quality

#### *TDS*

With respect to Salton Sea salinity, the 2006 Basin Plan states:

“The total dissolved solids concentration of Salton Sea in 1992 was approximately 44,000 mg/L. The water quality objective for Salton Sea is to reduce the present level of salinity, and stabilize it at 35,000 mg/L unless it can be demonstrated that a different level of salinity is optimal for the sustenance of the Sea's wild and aquatic life (California Department of Fish and Game is attempting to make this determination). However, the achievement of this water quality objective shall be accomplished without adversely affecting the primary purpose of the Sea which is to receive and store agricultural drainage, seepage, and storm waters. Also, because of economic considerations, 35,000 mg/L may not be realistically achievable. In such case, any reduction in salinity which still allows for survival of the sea's aquatic life shall be deemed an acceptable alternative or interim objective.

“The primary purpose of the Salton Sea and the agricultural drains in the Imperial, Palo Verde, Coachella, and Bard Valleys is for collection, transport, and/or storage of drainage (including subsurface) waters from irrigated cropland in order to maintain adequate soil salinity balance for agriculture in the Region. Although this is clearly the primary purpose of these waters, this cannot be recognized as a beneficial use in [Basin Plan] Tables 2-2 and 2-3 since federal regulations specify that waste transport or assimilation cannot be designated as a beneficial use for any waters of the United States (Clean Water Act, 40 CFR Section 131.10 (a)).”

As shown in **Figure 5-4**, the salinity of the Salton Sea has steadily increased since the early 1980s. The current (2009) Salton Sea salinity is estimated to be 53,000 mg/L and increasing. The SSERP PEIR projected the Salton Sea salinity to reach 65,000 mg/L by 2020 and 129,000 mg/L by 2040 for the No Action Alternative – CEQA Conditions scenario. Salton Sea salinity was projected to reach 76,000 mg/L by 2020 and 249,000 mg/L by 2040 for the No Action Alternative – Variability Conditions scenario.

**Selenium**

Most of the selenium in the Salton Sea comes from Colorado River water used for agricultural irrigation in the Imperial and Coachella Valleys. Concentrated agricultural return flows resulted in elevated selenium concentrations in Salton Sea fishes and therefore limited recreational fishing. As a result of elevated selenium in fish flesh, the California Department of Health Services (now California Health Department) issued an advisory in 1986 limiting the consumption of Salton Sea fish to 4 ounces twice per month. At the present time, however, most of the fishery has disappeared because of elevated salinity.

Selenium also bioaccumulates in fish and wildlife and poses threats to many local species (migratory birds, endangered species, and resident waterfowl); it is therefore a significant concern to the Salton Sea Wildlife Refuge and other adjacent parks and refuges.

The Basin Plan (Regional Board, 2006) states, with respect to selenium in the Salton Sea, that:

“The beneficial use of the Salton Sea for recreation has been impaired due to elevated levels of selenium in tissues of resident wildlife and aquatic life. The following objectives apply to all freshwater surface waters:

- a. A four day average value of selenium shall not exceed 0.005 mg/L;
- b. A one hour average value of selenium shall not exceed 0.02 mg/L.

These numerical limits are based on the USEPA “National Ambient Water Quality Criteria.”

In 2004, the USEPA drafted revisions to the ambient water quality criteria for selenium (**Table 5-15**) (USEPA, 2004).

**Table 5-15  
Draft USEPA Ambient Water Quality Criteria for Selenium**

Water Body	Acute Criterion	Chronic Criterion
Freshwater	258/417 formula*, in µg/L	7.91 µg/g in fish tissue (whole body, dry weight)
Saltwater	127 µg/L	None

Source: USEPA Website, 2010.

Relative to calculating the draft water quality criteria in **Table 5-15**, USEPA stated:

“The draft selenium criteria recommendations state that freshwater aquatic life should be protected under the following conditions:

- A. The concentration of selenium in whole-body fish tissue is not more than 7.91 µg/g dry weight. This is the chronic exposure criterion. In addition, if whole-body fish tissue concentrations exceed 5.85 µg/g dry weight during summer or fall, fish tissue should be

## Section 5 – Surface Water Resources

---

monitored during the winter to determine whether the selenium concentration exceeds 7.91 µg/g dry weight.

B. The 24-hour average concentration of total recoverable (dissolved and particulate) selenium in water seldom (e.g., not more than once in three years) exceeds 258 µg/L for selenite, and likewise seldom exceeds the numerical value given by  $\exp(0.5812[\ln(\text{sulfate})]+3.357)$  for selenate. These are the acute exposure criteria. At an example sulfate concentration of 100 mg/L, the 24-hour average selenate concentration should not exceed 417 µg/L. Sulfate is a commonly measured water quality parameter that has been found to have a mitigating influence on the acute toxicity of the selenate form of selenium” (USEPA, 2004).

Likewise, the draft selenium criteria recommendations state that:

“Saltwater aquatic life should be protected from acute effects of selenium if the 24-hour average concentration of selenite seldom exceeds 127 µg/L. Because selenium might be as chronically toxic to saltwater fishes as it is to freshwater fishes, the fish community should be monitored if selenium exceeds 5.85 µg/g dry weight in summer or fall or 7.91 µg/g dry weight during any season in the whole-body tissue of saltwater fishes” (USEPA, 2004).

### 5.7.1.3 Salton Sea Ecosystem Restoration Program

State legislation enacted in 2003 (SB 277, SB 317, and SB 654) and 2004 (SB 1214) requires the California Natural Resources Agency, in coordination with DWR and CDFG, to undertake a restoration study to determine a preferred alternative for restoration of the Salton Sea ecosystem and the protection of wildlife dependent on that ecosystem. The objectives of the restoration were to: 1) restore long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea, 2) eliminate air quality impacts from restoration projects, and 3) protect water quality. The Salton Sea Ecosystem Restoration Program (SSERP) coordinated efforts among the Legislature, various federal, State, and local agencies, stakeholders, and the general public to implement restoration activities at the Salton Sea in conformance with these objectives. The legislation also required the preparation of a programmatic EIR, as well as other documents by December 31, 2006 (DWR, 2011).

The SSERP consisted of several major elements:

- Habitat Restoration focused on maintaining diverse and sustainable populations of fish and wildlife, ensuring a mosaic of habitats in the Salton Sea watershed.
- Water Quality Management focused on reducing salinity levels, controlling nutrients, and selenium management.
- Air Quality Management included the elimination of air quality impacts from Restoration Plan actions, maintaining existing air monitoring stations, and performing further air quality data collection.



- Water Management Infrastructure – In order to implement the other necessary elements of the Ecosystem Restoration Plan, water management infrastructure may need to be developed. These options may include different configurations of barriers to partition the Salton Sea, potential water conveyance structures (pipelines, canals), and water treatment facilities.

The SSERP Final Program EIR, completed in June 2007 (CH2MHill, 2007), recommended a preferred program. However, the \$9 billion SSERP was not funded by the State legislature and under current economic conditions may not be funded for some years. **Section 9** of this SPEIR presents additional discussion of the SSERP.

### 5.7.1.4 Salton Sea Authority Salton Sea Restoration Plan

The Salton Sea Authority (SSA) is a Joint Powers Authority whose goal is the revitalization of the Salton Sea. The SSA Board of Directors is comprised of five agencies—CVWD, IID, Riverside County, Imperial County and the Torres Martinez Desert Cahuilla Indians—with representatives from, CVAG, SCAG, CDFG and the state Resources Agency.

The purpose of the SSA is to work with California state agencies, federal agencies, and Mexico to develop programs that would continue beneficial use of the Salton Sea. The SSA defines "beneficial use" to include the primary purpose of the Sea as a depository for agricultural drainage, storm water and wastewater flows; as well as for protection of endangered species, fisheries and waterfowl; and for recreational purposes.

In 2006, the SSA issued a plan for the restoration of the Sea that assumed 102,000 AFY of flow from the combined Coachella Valley drains and CVSC into a north Recreational Saltwater Lake created by a dike across the sea. South of the dike would be a Salt Sink ringed by a water course and additional habitat ponds circulating between a south lake and the north lake. The SSA Plan was evaluated as one of the alternatives in the SSERP EIR, but was not selected as the preferred plan.

The SSA continues to implement elements of its Plan as feasible and is seeking additional funding.

### 5.7.1.5 Species Conservation Habitat Project

The DWR and CDFG Species Conservation Habitat Project Implementation Plan (EIR/EIS in preparation) initially proposed the construction of approximately 2,400 acres of ponds to support fish, chiefly tilapia, for fish-eating birds at the mouths of the three major rivers into the Salton Sea — Whitewater/CVSC, Alamo River and New River (DWR and CDFG, 2010). The relationship of this project to the Proposed Project is discussed further in **Section 9 – Related Projects and Cumulative Impacts**. The Whitewater/CVSC ponds were later eliminated from consideration on the bases of “water availability,” “long term reliability” and “land access.”

## Section 5 – Surface Water Resources

---

### 5.7.1.6 Senate Bill 51 (2010)

Senate Bill 51 (Ducheny), which was passed by the California Legislature in September 2010, creates the Salton Sea Restoration Council as a state agency within the Resources Agency (comprised of an executive committee, science committee, local government forum and a stakeholder forum). CVWD is invited to be a voting member of the executive committee.

The council is the governing structure responsible for determining and recommending a preferred plan to the Governor and the Legislature by June 30, 2013 for the restoration of the Salton Sea ecosystem and the protection of wildlife dependent on that ecosystem. With the passage of Senate Bill 51, the Fish and Game Code, Article 2, was amended to add bill text as Sections 2940 to 2947.

### 5.7.2 Significance Criteria

#### 5.7.2.1 Flows/Water Levels

State CEQA Guidelines, Appendix G, do not have significance statements for changes in water flow, *per se*. Impacts are defined as they relate to erosion or siltation, alteration of the course of a stream or river, actions that would cause flooding, or which result in substantial water quality degradation. Stormwater and flood potential are discussed in **Section 5.8**.

Therefore, in accordance with Appendix G, the Proposed Project would have a significant impact with respect to Salton Sea inflows or quantity if it:

- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course or a stream or river in a manner which would result in substantial erosion or siltation on-or off-site
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course or a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in substantial flooding on-or off-site

#### 5.7.2.2 Water Quality

Based on State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on Salton Sea water quality if it:

- violates any water quality standards or waste discharge requirements, or
- substantially degrades water quality.

### 5.7.3 Impacts

#### 5.7.3.1 Inflows and Levels

The SSERP PEIR (CH2MHill, 2007) considered inflows from the Coachella Valley in its planning. To address uncertainty regarding future inflows to the Salton Sea over the SSERP 75-year planning horizon (2003 to 2078), a “No Action Alternative – Variability Conditions” was developed and evaluated in the PEIR (CH2MHill, 2007). In that alternative, Coachella Valley inflow projections were reconsidered based on “potential delayed implementation or modifications of the Coachella Valley Water Management Plan and reduced agricultural return flows due to reduced Colorado River salinity.” The SSERP PEIR stated that Coachella Valley inflows under the No Action Alternative – Variability Conditions could be 94,000 AFY for the 2003-2078 period, which includes the 2010 WMP Update planning period of 2009 to 2045. See also **Section 9 – Related Projects and Cumulative Impacts**.

As discussed in **Section 5.6.3.1**, Coachella Valley future contributions of flow to the Salton Sea could change from about 60,000 AFY under current (2009) modeled conditions increasing to as much as 126,000 AFY by 2045 if no drain water desalination is implemented, increasing to about 70,000 AFY by 2045 if minimum drain water desalination is implemented, or decreasing to about 41,000 AFY by 2045 if the maximum amount of drain water desalination is implemented. With maximum desalination, the inflow from the Coachella Valley could decline 19,000 AFY by 2045 compared to existing (2009) conditions. This reduction would represent a 1.9 percent decrease in the total inflow to the Sea compared to current (2009) conditions (19,000 AFY divided by 1,022,000 AFY). In 2045, this reduction represents a 2.5 percent decrease relative to projected future Salton Sea if Coachella Valley flows had not declined (19,000 AFY divided by 758,000 AFY [698,000AFY + 60,000 AFY]). The vast majority of the decline in future Salton Sea inflows (97.5 percent) is due decreases from other sources to the Sea. The Proposed Project contribution to changes in inflow is considered to be less than significant.

To assess the potential impact of these flow variations, a water balance analysis for the Salton Sea is performed using the SSERP’s No Action Alternative – CEQA Conditions scenario as a projection of future Salton Sea inflow conditions from other sources. A range of Coachella Valley flows for the Proposed Project is used instead of those used in the SSERP PEIR to evaluate the change in Salton Sea elevation and playa area due to water management practices in the Coachella Valley. The results of this evaluation are presented in **Table 5-16**. Change in Salton Sea elevation may be important for determining the effect of flow changes on infrastructure required to convey drain flows to Salton Sea brine pools or other features. Changes in playa area are important for considering effects on air quality.

**Table 5-16** shows Salton Sea elevations will decline in the future. As described previously, this decline principally results from reduced inflow associated with the QSA water transfers, implementation of water recovery programs in Mexico and other factors. If existing flows from the Coachella Valley area maintained in the future, the Salton Sea would decline about 6 ft by 2020 and 24 ft by 2045. With no desalination under the Proposed Project, inflows to the Salton Sea from the Coachella Valley would increase compared to current conditions, partially offsetting declines in inflow from other sources. Salton Sea elevations would not change in 2020 and would be about 4 ft higher in 2045. These effects would be beneficial. With maximum

## Section 5 – Surface Water Resources

---

desalination, Salton Sea inflows would decline slightly by 2045 compared to existing conditions; however, Salton Sea elevations would be essentially the same as if existing Coachella Valley flows were maintained through 2045. Therefore, the Proposed Project contribution to Salton Sea elevation and playa change is considered to be less than significant.

The SSERP PEIR evaluated a No Action Alternative – Variability Conditions scenario in which Salton Sea inflow from the various sources as well as climate change was allowed to vary. This scenario was evaluated to reflect the future uncertainty associated with each of the inflow components including those from the Coachella Valley. The SSERP PEIR presented estimated Salton Sea elevation and playa changes with probability bands (Figure 5-11, CH2MHill, 2007). For 2020, there is a 90 percent chance the Salton Sea elevation would be between -238 ft msl and -243 ft msl. For 2045, there is a 90 percent chance the Salton Sea elevation would be between -253 ft msl and -264 ft msl. With the Proposed Project, the change in Salton Sea elevation between current conditions and the 2020 and 2045 conditions falls within the anticipated elevation ranges for the SSERP No Action Alternative – Variability Conditions scenario.

The SSERP model analysis (SSERP PEIR Appendix H2) also states:

“No specific (model) trace should be considered a prediction of future conditions, but the suite of model results and associated range of future outcomes is valuable for long range planning. For the purposes of comparison of alternatives in the PEIR, the results for a trace roughly match the mean of all results and were used to develop quantitative descriptions of the alternatives and served as the basis of the impact assessments in the PEIR.”

Although the Salton Sea elevation is projected to decline in the future, this decline is largely the result of the IID Water Conservation and Transfer Project and anticipated changes in water management practices in Mexico that reduce Salton Sea inflow. The impacts associated with these programs were addressed in other environmental documents. Because the incremental impact of implementing the 2010 WMP Update falls within the anticipated range of changes associated with these projects and represents (worst case) a minor fraction of change in Salton Sea inflows (1.9 percent by 2045 compared to 2009 existing conditions), the impact on the overall hydrology of the Salton Sea associated with the 2010 WMP Update is considered to be less than significant.

### 5.7.3.2 Water Quality

The Proposed Project would have a less than significant impact on the quality of flows entering the Salton Sea. While the salinity of the drains and CVSC is anticipated to increase in the future, the effect is still beneficial because these flows would still represent a dilution of Salton Sea waters. Even though current salinity is lower, the effect on the Salton Sea would be essentially the same, since the Sea salinity is increasing and elevation declining with or without the Proposed Project. Selenium in drain flows may increase by an unknown amount; adopted mitigation and monitoring are in place for biologic impacts. No feasible mitigation for selenium concentration in drain waters has been identified (See **Section 10 – Alternatives**).

**Section 5 – Surface Water Resources**

**Table 5-16  
Potential Effect of Water Management Plan Update on Salton Sea**

Scenario	Year	Salton Sea Inflow				Salton Sea Elevation (ft msl)	Elevation Difference from Existing (ft msl)	Sea Surface Area (Acres)	Playa Area Exposure from Existing (acres)
		Coachella Valley Inflow <sup>1</sup> (AFY)	Other Inflows <sup>2</sup> (AFY)	Total Inflow (AFY)	Difference from Existing Conditions (AFY)				
Existing Conditions	2009	60,000	962,000	1,022,000	0	-232	0	224,000	0
Maintain Existing Coachella Valley Inflow – No WMP Update	2009	60,000	962,000	1,022,000	0	-232	0	224,000	0
	2020	60,000	886,000	946,000	-76,000	-238	-6	209,000	15,000
	2045	60,000	698,000	758,000	-254,000	-256	-24	149,000	75,000
2010 WMP Update – No Desalination	2009	60,000	962,000	1,022,000	0	-232	0	224,000	0
	2020	67,000	886,000	953,000	-69,000	-238	-6	209,000	15,000
	2045	126,000	698,000	824,000	-198,000	-252	-20	159,000	65,000
2010 WMP Update – Maximum Desalination	2009	60,000	962,000	1,022,000	0	-232	0	224,000	0
	2020	58,000	886,000	944,000	-78,000	-238	-6	209,000	15,000
	2045	41,000	698,000	739,000	-283,000	-256	-24	149,000	75,000

Notes:

1. Coachella Valley inflows are based on modeled flows for consistent comparison. Measured Coachella Valley flows to the Salton Sea were about 70,000 AFY in 2009.
2. Other inflows are derived from the SSERP No Action Alternative – CEQA Conditions scenario, which reflects a single hydrological trace for inflows. The same trace is used for all comparisons to provide consistency.

## Section 5 – Surface Water Resources

---

Under the 2010 WMP Update, municipal wastewater effluent flows now discharged to the CVSC would continue at existing levels. Incremental increases in effluent flows due to urban growth would be recycled; the net flow rate in the CVSC would be slightly less (about 10 percent) than at present. Therefore, the impact would be less than significant.

Land that remains in agriculture in the future would continue to produce the same quality of drain flow as at present. Urban development projected on existing agricultural land (24,500 acres) would still require drainage to manage water levels in the Semi-perched aquifer in the East Valley and transport drainage from horticultural irrigation. East Valley desert land converted to urban development would have runoff from impervious surfaces and landscape irrigation; the quality is anticipated to be the same for urban drainage elsewhere in the Valley but to contain more pollutants than desert runoff. Changes in land use and runoff or drainage quality are not impacts for which CVWD is responsible. They are impacts that can and should be mitigated by others.

However, whether the CVSC and drain flows increase or decrease under these scenarios the effect on the Salton Sea would be the same. Water augmentation will continue through 2017, but sea level continues to decline and salinity concentrations continue to rise. After 2017, the ecosystem is anticipated to collapse rapidly, as salinity concentration increases at a greater rate. The Salton Sea Ecosystem Restoration Project PEIR models, based on a 1999 concentration of 44,000 mg/L, projected that in the absence of a restoration program (No Action alternative) the Sea salinity would reach 71,000 mg/L by 2020 and 197,000 mg/L by 2040 (CH2MHill, 2007). At the same time, no habitat wetlands using lower-salinity agricultural drainage water are proposed at the north end of the Sea to provide alternative habitat as the ecosystem of the Sea collapses (habitat is proposed only at the south end of the Sea). Therefore, the impact on the Sea salinity as a whole from the Proposed Project is considered to be less than significant.

Desalination treatment would produce a brine requiring disposal. A disposal study will be performed as part of the desalination study. One possible method to be considered is supplemental supply to the SCH Project ponds, since the SCH Implementation Plan called for salinity in the higher elevation ponds of about 20,000 mg/L, increasing as ponds were built closer to the receding Sea. However, these ponds are no longer proposed at the north end of the Sea. If found to be non-toxic, the brine may also be a beneficial input to the Torres-Martinez wetland, which seeks to construct brackish water ponds in the future. In the absence of this brine, saline water would need to be pumped from the body of the Sea to meet desired salinity concentrations. Therefore, the effect of a non-toxic brine as supply to the Torres Martinez wetland ponds would be beneficial.

### 5.7.4 Mitigation Measures

No programmatic mitigation is identified at this time.

## 5.8 FLOODING AND STORMWATER PROTECTION

### 5.8.1 Environmental Setting

FEMA prepared flood boundary and floodway maps for the Coachella Valley identifying 100-year floodplains and anticipated flow depths and velocities within the floodplain under 100-year storm conditions (see **Figure 5-5**).

CVWD is the County of Riverside flood plain ordinance administrator within the District's Stormwater Boundary. The Coachella Valley Stormwater District was merged with CVWD in 1937. CVWD is therefore responsible for stormwater protection in the Coachella Valley (except the DWA service area), and operates and maintains approximately 207 miles of stormwater protection facilities within the district to protect 590 square miles from flooding. Many of these facilities were built or improved in the 1970s and 1980s in cooperation with cities and other agencies following severe floods. Such cooperation is vital because while CVWD is responsible for flood control facilities, the building of roads, bridges and related infrastructure rests with other levels of government, such as Riverside and Imperial counties and the Valley cities.

The backbone of the Valley flood control system is 25 miles of Whitewater River riverbed. Because the river spreads across the East Valley during flooding, it was channelized and extended as the CVSC, downstream to the Salton Sea from Point Happy in La Quinta near Highway 111 and Washington Avenue. The riverbed and channel are fed by several smaller channels, dikes and levees designed and built to collect rapidly moving floodwater as it pours from the adjacent mountains onto the Valley floor.

To protect the Coachella Valley floor from runoff from the surrounding mountains, earthen dikes have been constructed on the east and west sides of the Valley near the bases of the slopes. The Reclamation constructed the District's Eastside Dike to protect the Coachella Canal. Two dikes, totaling 4.5 miles in length, were also constructed on the western side of the valley to shield Lake Cahuilla and farm lands between Avenue 58 and Avenue 66.

From the mid-1970s to the early 1990s, most of the District's flood control efforts were directed toward providing regional protection from flash floods from the mountains for the "Cove" communities along the base of the western mountains from La Quinta to Rancho Mirage. CVWD has also carried out detailed engineering studies for construction of flood protection works between Thousand Palms and Indio and along the western side of the Coachella Valley from Martinez Canyon to Travertine Point in the Oasis area.

The District is currently working with the USACE on a flood control project, involving the upper Whitewater River at Thousand Palms. See also **Section 9 – Related Projects and Cumulative Impacts**. The CVWD currently uses the Riverside County Flood Plain Ordinance 458 and CVWD's development design manual. The District has also developed Ordinance No. 1234, establishing requirements for developments in flood hazard areas (CVWD, 1992). The District also incorporates California Drainage Law and related case law on flood management. The requirement is that a new structure must be protected from flooding and cannot cause flooding on any other property.

## Section 5 – Surface Water Resources

---

### 5.8.2 Significance Criteria

Based upon State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on flooding and stormwater protection if it:

- exposes 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,
- places within a 100-year flood hazard area structures that would impede or redirect flood flows,
- places 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,
- causes inundation by seiche, tsunami, or mudflow,
- creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff, or
- substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

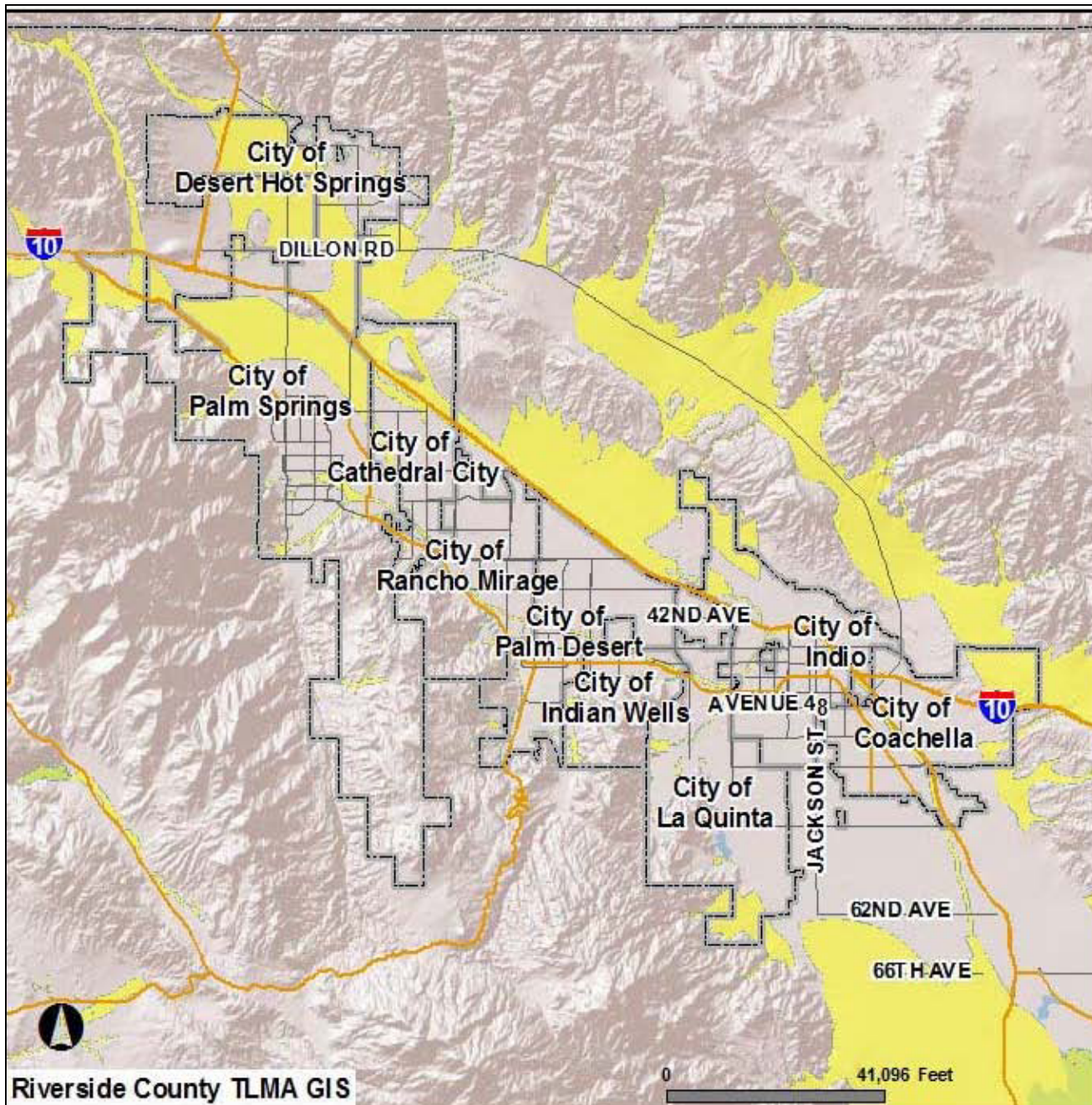
### 5.8.3 Impacts

The 2010 WMP Update includes no specific facility sites or site acreages. Future facilities considered programmatically in the Plan are buried pipelines (domestic water, recycled water and wastewater), pumping stations, recharge basins, water recycling facilities and desalination plants. Buried structures, such as pipelines, will have no impacts on flooding nor be affected by floods on the ground surface. The largest potential aboveground sites would be for treatment plant sites, which could be up to 10 to 20 acres in area. Construction of all facilities that affect more than one acre will have a construction SWPPP and, with the exception of buried pipelines, will incorporate runoff control into their site plans. The precise locations and dimensions of these structures have not been determined at this time.

Evaluation of the effects of these structures on flooding or their susceptibility to flood damage would be performed as part of future site-specific, tiered environmental documents. Recharge basins proposed on the western edges of the Coachella Valley, such as at Martinez Canyon, have not been precisely sited, but may be located within a floodplain. If the basins were sited downstream of existing dikes, no flooding or effect on floodplain characteristics would occur. If sited on the upstream side of the dikes, the structures would not impede flood flows, but could redirect them locally. The dikes are constructed to retain runoff from the mountains along their upstream bases in zones designated as flood easements, in which no habitable development is permitted.


The 2010 WMP Update assumes that development of the park and recharge basins proposed at Indio's Posse Park site by the city of Indio will include an evaluation of site drainage characteristics and mitigation of potential flood impacts, as applicable.





 INTERSTATES

 HIGHWAYS

 MAYBE SUBJECT TO A FLOOD PLAIN REVIEW

**FLOOD ZONES**

 CITY

 FLOOD PLAIN REVIEW REQUIRED

**Flood Zones in the Coachella Valley**

Figure 5-5



## Section 5 – Surface Water Resources

---

Recharge basins would comply with local floodplain ordinances, which may include structures to direct drainage flows around the basins. Flow onto other lands will be considered on a site-specific basis, as in some areas there may be agriculture or other development downstream. Detailed hydrologic studies will be performed as part of subsequent site-specific environmental documents to identify the impacts and need for mitigation. Impacts could be potentially significant before mitigation.

The Proposed Project does not include housing and therefore would not place housing in a 100-year flood area. Portions of the southeastern Coachella Valley are in a 100-year flood hazard area, per County of Riverside mapping; Riverside County, Eastern Coachella Valley Area Plan, 2003; 2008). Anticipated WMP facilities, the largest of which could be water or desalination treatment plants, would not significantly impede or redirect 100-year flood flows. Each site would be evaluated in second tier environmental documents for location relative to 100-year flood plains and drainage and would consider flood routing, if applicable, to avoid impacts on housing on adjacent properties. Impacts related to exposure of people or structures to risk of loss, injury or death involving flooding would be less than significant, as proposed second tier facilities would be protected from flooding, as applicable. Therefore, the effect would be less than significant.

The Proposed Project study area is inland and therefore not subject to damage from a tsunami (seismic sea wave). Mudflows are not known for the Proposed Project area, and anticipated future Project sites are generally flat. Seismically-induced seiches (standing waves) could develop in storage or treatment basins if full at the time of an earthquake event. These structures could require subsequent repair, but would not expose people or structures to a significant risk of loss, injury or death involving inundation by seiche with incorporation of standard design criteria. Therefore, impacts would be less than significant.

### 5.8.4 Mitigation Measures

The Mitigation Measure below was adopted for flooding and stormwater potential in the 2002 WMP and PEIR. The same measure is proposed for the present 2010 WMP Update and SPEIR. Based on the information available at this time, impacts relative to flooding and stormwater potential remaining after mitigation would be less than significant.

**HYD-1:** Detailed hydrologic studies will be performed as part of subsequent site-specific environmental documents to identify the potential impacts of and need for flooding and stormwater management. Based upon the results of these studies, specific mitigation measures for potential flood-related impacts will be identified and incorporated into the project design and in future site-specific environmental documents.

# Section 6

## Groundwater Resources

---

As described in **Section 3**, a primary objective of both the 2002 Water Management Plan (WMP) and the 2010 WMP Update is to address groundwater overdraft and its associated adverse impacts. This section evaluates the impact of the 2010 WMP Update, the present Proposed Project, compared to the projected impacts of the 2002 WMP on the Coachella Valley basin under present project conditions (the No Project Alternative). The general overview of local hydrogeology, a description of the hydrogeologic subbasins, a conceptual understanding of the hydrogeologic system, and sources of groundwater recharge and discharge (inflow and outflow) were presented in the 2002 Program Environmental Impact Report (PEIR) Section 6. The impacts of the Proposed Project on groundwater budget and overdraft, water quality, and water levels are also discussed and compared to previous analyses in the 2002 PEIR. Selected terms related to hydrogeology are defined in the Glossary (**Appendix B**).

### 6.1 REGULATORY FRAMEWORK

#### 6.1.1 Colorado River Basin Water Quality Control Plan

As discussed in **Section 5**, the California Regional Water Quality Control Board, Region 7, (Regional Board) has designated beneficial uses and water quality objectives for groundwater and surface waters for the Coachella Valley in the Water Quality Control Plan (Basin Plan) (2006).

##### 6.1.1.1 Beneficial Uses of Groundwater

The 2006 Basin Plan (Regional Board, 2006; amended 2011), as in the 2002 Basin Plan, designated three beneficial uses of groundwater in the Coachella hydrologic subunit of the Whitewater hydrologic subunit: Municipal (MUN), Industrial (IND) and Agricultural (AGR). Beneficial use limitations for individual aquifers or groundwater basins have not been defined at this time.

##### 6.1.1.2 Water Quality Objectives for Groundwater

Water quality objectives to protect designated beneficial uses are also presented in the Basin Plan for the Region. The Basin Plan presents no specific numeric water quality objectives for study area groundwaters. The Basin Plan states (page 3-8):

“Ideally, the Regional Board’s goal is to maintain the existing water quality of all non-degraded ground water basins. However, from a practical standpoint, it must be noted that in most cases ground water that is pumped generally returns to the basin after use with an increase in mineral concentrations, such as total dissolved solids (TDS), nitrate, etc., that are picked up by water during its use. Under these circumstances, the Regional Board’s objective is to minimize the quantities of contaminants reaching any ground water basin. This could be achieved by establishing best management practices for major

## Section 6 – Groundwater Resources

---

discharges to land. Until such time as the Regional Board can complete necessary investigations for the establishment of best management practices, the objective will be to maintain the existing water quality where feasible.”

Narrative and numerical limits are presented in **Table 6-1** for the following parameters: taste and odors, bacteriological quality, chemical and physical quality, brine disposal (prohibited) and radioactivity.

**Table 6-1**  
**Water Quality Objectives Relevant to Coachella Valley Groundwater**

Parameter	Narrative Requirement
Taste and Odors	Groundwater for use as domestic or municipal supply shall not contain taste- or odor-producing substances in concentrations that adversely affect beneficial uses as a result of human activity.
Bacteriological Quality	In groundwaters designated for use as domestic or municipal supply (MUN), the concentrations of coliform organisms shall not exceed the limits specified in Section 64426.1 of Title 22 of the CCR. [Summary: no more than 5 percent of 40 samples are total coliform positive in a given month, or any repeat sample is fecal coliform positive or <i>E. coli</i> positive.]
Chemical and Physical Quality	Groundwaters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the CCR, which are incorporated by reference into this plan: Table 64431-A of Section 64431 - 14 - (Inorganic Chemicals), Table 64444-A of Section 64444 (Organic Chemicals), and Table 64678-A of Section 64678 (Determination of Exceedances of Lead and Copper Action Levels).
Radioactivity	Groundwaters designated for use as domestic or municipal supply shall not contain radioactive material in excess of the maximum contaminant levels (MCLs) specified in Tables 64442 and 64443 of Sections 64442 and 64443, respectively, of Title 22 of the California Code of Regulations (CCR), which are incorporated by reference into this plan

Source: Regional Board, 2006.

### 6.1.2 Groundwater Rights

California does not have a comprehensive law governing groundwater rights. Instead, groundwater rights law is based upon a series of court decisions. There are three legally recognized classifications of groundwater in California: subterranean streams, underflow of surface waters, and percolating groundwater. Subterranean streams and underflow of surface waters are subject to the laws of surface waters and are regulated by the State Water Resources Control Board (SWRCB or State Board).

Percolating groundwater, on the other hand, has few regulation requirements. In most areas of California, overlying land owners may extract percolating ground water and put it to beneficial use without approval from the State Board or a court. California does not have a permit process for regulation of groundwater use. In several basins, however, groundwater use is subject to

regulation in accordance with court decrees adjudicating the groundwater rights within the basins. Groundwater rights in the Coachella Valley are not adjudicated.

The California Supreme Court decided in the 1903 case *Katz v. Walkinshaw* that the “reasonable use” provision that governs other types of water rights also applies to groundwater. The Supreme Court case established the concept of overlying rights, in which the rights of others with land overlying the aquifer must be taken into account. Later court decisions established that surplus groundwater may be appropriated for use outside the basin, although appropriator’s rights are subordinate to those with overlying rights (SWRCB, 2009).

Native American tribes assert unquantified reserved water rights pursuant to federal law and the *Winters* doctrine, which refers to the U. S. Supreme Court decision in the case. Two landmark U.S. Supreme Court cases, *Winters v. U.S.* (1908) and *U.S. v. Rio Grande Dam & Irrigation Co.* (1899), established several key principles: 1) federally reserved lands have a right to use sufficient water to fulfill the “primary purpose” of the reservation, and 2) these water rights cannot be destroyed by state water law or by water users acting in accordance with state law (Parr & Parr, 2009).

### 6.1.3 Artesian Flowing Wells

California water law (California Water Code §300) defines an artesian well as “any artificial hole made in the ground through which water naturally flows from subterranean sources to the surface of the ground for any length of time.” State law also defines waste as “the causing, suffering or permitting any water flowing from an artesian well, to run either:

- Into any natural watercourse or channel, or into any bay or pond, unless the water is used thereafter for irrigation or domestic use.
- Into any street, road, or highway.
- Upon the land of any person or upon the public land of the United States or of the State, unless it is used thereon for irrigation, domestic use, or the propagation of fish.”

The use of any water flowing from an artesian well for the irrigation of land, whenever over 5 per cent of the water received on the land for irrigation purposes is permitted to escape from the land, is defined as a waste (California Water Code §302).

State law further specifies that any artesian well which is not capped or equipped with a mechanical appliance that effectively arrests and prevents the flow of any water from the well is a public nuisance and the landowner allowing such waste is guilty of a misdemeanor (California Water Code §305-307).

Historically, artesian groundwater conditions existed in much of the East Valley.

## Section 6 – Groundwater Resources

---

### 6.1.4 Riverside County Well Permitting

Riverside County Ordinance No. 682.4 contains minimum requirements for well construction, destruction and abandonment. Permit application, construction site inspection and abandonment procedures are specially emphasized herein in addition to California Department of Water Resources (DWR) standards (Riverside County, 2007). Pursuant to the authority cited in Chapter 13801(c) of the California Water Code, the Riverside County Department of Environmental Health is responsible for enforcing the provisions of this ordinance. A permit application is required for the construction or destruction of a water well or a monitoring well. The permit fee is required and non-refundable. This application is submitted to the Riverside County Department of Environmental Health by the well owner or their agent. Well standards are based upon DWR Bulletins 74-81 and 74-90.

### 6.1.5 Drinking Water Regulations

Drinking water quality is regulated under the authority of the federal Safe Drinking Water Act (SDWA) (42 U. S. Code §300f *et seq.*) and the state Safe Drinking Water Act (California Health and Safety Code §116270 *et seq.*) and associated regulations implementing those statutes. The federal act authorizes the U. S. Environmental Protection Agency (USEPA) to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. These standards apply to approved drinking water sources and water distributed in public water systems but do not apply to the water supply, i.e., groundwater basin or surface waters. The 1996 amendments to SDWA require that USEPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards.

The federal law establishes National Primary Drinking Water Regulations (NPDWRs or primary standards), which are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor or color) in drinking water.

California regulations follow the federal regulations in adopting either the NPDWRs or more stringent maximum contaminant levels (MCLs). A Public Health Goal (PHG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Office of Environmental Health Hazard Assessment (OEHHA). A MCL is the highest level of a contaminant that is allowed in drinking water. Primary MCLs are established for contaminants that affect health and are set as close to the PHGs (or Maximum Contaminant Level Goals, MCLGs in the case of the federal SDWA) as is economically and technologically feasible. Secondary MCLs are equivalent to Consumer Acceptance Contaminant Levels and are based on aesthetics of drinking water. Under the California SDWA, the California Department of Public Health (DPH) is responsible for establishing MCLs.



### 6.1.6 Groundwater Replenishment Assessments

While not a regulatory program per se, Coachella Valley Water District (CVWD) and Desert Water Agency (DWA) collect groundwater replenishment assessments for water produced within defined areas of benefit pursuant to the California Water Code (CVWD: California Water Code §31630 – 31639; DWA: California Water Code Appendix §100-15.4). Assessments are based upon volume of production and a charge established for each area of benefit. The replenishment assessment charge can include the following components:

- State Water Project (SWP) variable transportation, off-aqueduct power, delta water charge and surplus water purchase costs,
- cost of importing and recharging other non-SWP water,
- cost of treatment and distribution of reclaimed water for recharge or for direct use in lieu of groundwater, and
- cost of programs providing incentives to use reclaimed water or Colorado River water in place of groundwater.

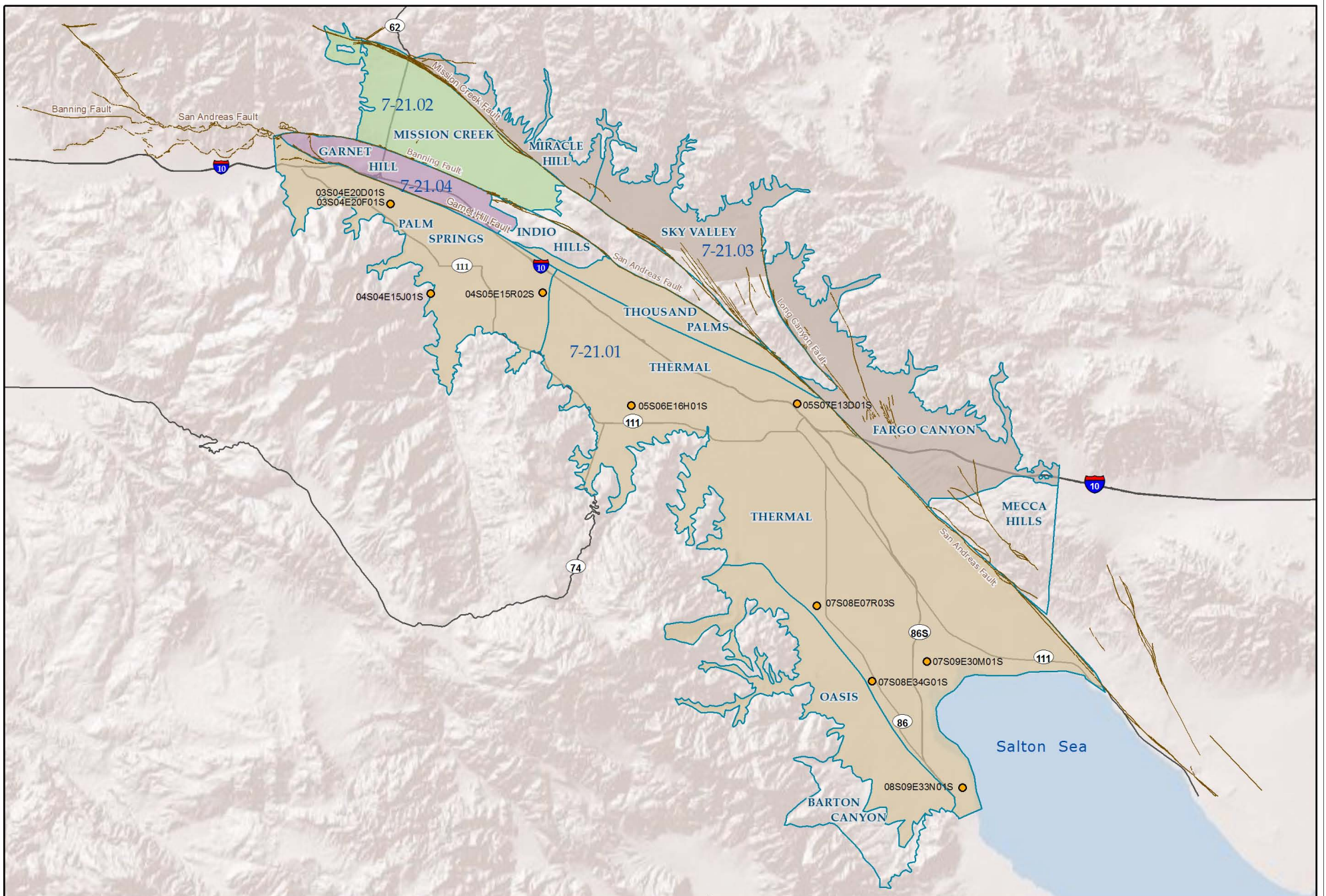
The laws for both agencies require the installation of water meters on all wells subject to assessment and the reporting of production to each agency. Minimal groundwater producers (pumping 10 acre-feet per year (AFY) or less in the DWA service area and 25 AFY or less in the CVWD service area) are exempt from assessments and reporting requirements.

## 6.2 ENVIRONMENTAL SETTING

The existing conditions in the groundwater basin are described in terms of groundwater balance, water levels and water quality. Changes to the environmental setting that have occurred since the 2002 PEIR was adopted are discussed.

### 6.2.1 Background

For purposes of the 2010 WMP Update, the Coachella Valley has been divided geographically into the West Valley and the East Valley. The West Valley lies northwest of a line generally extending from Washington Street and Point Happy northeasterly across the Valley floor to the Indio Hills near Jefferson Street. The East Valley lies southeast of the line described above. This delineation generally reflects the underlying groundwater basin structure: the West Valley Basin is characterized as an unconfined aquifer while the East Valley is characterized as a confined aquifer with unconfined conditions along the basin margins. Evaluation of the groundwater impacts of the Proposed Project requires an understanding of the diverse hydrogeology of the Coachella Valley. The following section describes the hydrogeology of the Coachella Valley.



**Key to Features**

- Fault
- Highway
- Desert Hot Springs
- Garnet Hill
- Mission Creek
- Whitewater

- Groundwater Well
  - Groundwater Subareas
- Source: DWR, ESRI, USGS, County of Riverside. Note: DWR Subbasin 7-21.04 was modified based on latest information.

0 2 4 8 Miles

Document: \Coachella Valley WD\WMP Update\14 Electronic Files - Modeling\GIS\Projects\CVWDESubbasins.mxd

Date: April 2011

**Coachella Valley Groundwater Subbasins**

Figure 6-1





## **6.2.2 Overview of Hydrogeology**

Groundwater has been the principal source of urban water supply in the Coachella Valley since the early part of the 20th century. Groundwater also supplies water for crop irrigation, fish farms, duck clubs, golf courses, greenhouses and industrial uses in the Valley. The Coachella Valley Groundwater Basin (defined as DWR Basin No. 7-21) encompasses the entire floor of the Coachella Valley and consists of five subbasins, as shown on **Figure 6-1**. These subbasins are the San Gorgonio Pass, Whitewater (Indio), Garnet Hill, Mission Creek and Desert Hot Springs subbasins. The 2010 WMP Update study area, as described in Section 2, consists of the Whitewater River (Indio) Subbasin, Garnet Hill Subbasin and portions of Desert Hot Springs Subbasin, described below.

### **6.2.2.1 Groundwater Basin Descriptions**

#### ***Whitewater River Subbasin***

The Whitewater River Subbasin, designated the Indio Subbasin (Basin No. 7-21.01) in DWR Bulletin No. 108 (DWR, 1964) and Bulletin 118 (DWR, 2003), underlies the major portion of the Valley floor and encompasses approximately 400 square miles. Beginning approximately one mile west of the junction of State Highway 111 and Interstate Highway 10, the Whitewater River Subbasin extends southeast approximately 70 miles to the Salton Sea. The Subbasin is bordered on the southwest by the Santa Rosa and San Jacinto Mountains and is separated from Garnet Hill, Mission Creek and Desert Hot Springs Subbasins to the north and east by the Garnet Hill and San Andreas faults (CVWD, 2010a; DWR, 1964). The Garnet Hill fault, which extends southeastward from the north side of San Gorgonio Pass to the Indio Hills, is a relatively effective barrier to groundwater movement from the Garnet Hill Subbasin into the Whitewater River Subbasin, with some portions in the shallower zones more permeable. The San Andreas fault, extending southeastward from the junction of the Mission Creek and Banning faults in the Indio Hills and continuing out of the basin on the east flank of the Salton Sea, is also an effective barrier to groundwater movement from the northeast.

The subbasin underlies the cities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, and Coachella, and the unincorporated communities of Thousand Palms, Thermal, Bermuda Dunes, Oasis and Mecca. From about Indio southeasterly to the Salton Sea, the subbasin contains increasingly thick layers of silt and clay, especially in the shallower portions of the subbasin. These silt and clay layers, remnants of ancient lake beds, impede the percolation of water applied for irrigation and restrict groundwater recharge opportunities to the westerly and easterly fringes of the subbasin.

In 1964, the DWR estimated that the Coachella Valley groundwater basin contained a total of approximately 39.2 million acre-feet (AF) of water in the first 1,000 feet below the ground surface; much of this water originated as runoff from the adjacent mountains. Of this amount, approximately 28.8 million AF of water was stored in the Whitewater River subbasin. However, the amount of water in the subbasin has decreased over the years due to pumping to serve urban, rural and agricultural development in the Coachella Valley at a rate faster than its rate of recharge.

## Section 6 – Groundwater Resources

---

The groundwater basin is not adjudicated; rather it is jointly managed by CVWD and DWA under the terms of the 1976 Water Management Agreement. DWA and CVWD jointly operate a groundwater replenishment program whereby groundwater pumpers (other than minimal pumpers) pay a per AF charge that is used to pay the cost of importing water and recharging the aquifer.

The Whitewater River Subbasin is divided into four subareas: Palm Springs, Thermal, Thousand Palms and Oasis. The Palm Springs Subarea is the forebay or main area of recharge to the Subbasin and the Thermal Subarea comprises the pressure or confined area within the basin. The other two subareas are peripheral areas having unconfined groundwater conditions (CVWD, 2010a).

The historical groundwater levels within the Whitewater River Subbasin indicate a steady decline in the levels throughout the Subbasin prior to 1949. With the importation of Colorado River water from the Coachella Canal after 1949, the demand on the groundwater basin declined in the East Valley (generally east and south of Washington Street) below Point Happy and the groundwater levels rose sharply. Water levels in the deeper aquifers of the East Valley rose from 1950 to 1980. However, since the early 1980s, water levels in this area have again declined, at least partly due to increasing urbanization and groundwater usage. Recharge activities with SWP Exchange water commenced in 1973 at the Whitewater River Recharge Facility. Recharge activities at this location have varied with the availability of SWP Exchange water. Groundwater levels in the vicinity of the recharge basins have stabilized since recharge commenced. However, in the vicinity of Palm Desert and southerly, water levels have generally declined.

### *Mission Creek Subbasin*

Water-bearing materials underlying the Mission Creek upland comprise the Mission Creek Subbasin (number 7-21.02 in DWR Bulletin 118) (DWR, 2003). The subbasin is bounded on the south by the Banning fault and on the north and east by the Mission Creek fault. The subbasin is bordered on the west by non-waterbearing rocks of the San Bernardino Mountains. To the southeast of the subbasin are the Indio Hills, which consist of the semiwater-bearing Palm Springs Formation. The area within this boundary reflects the estimated geographic limit of effective storage within the subbasin.

Both the Mission Creek fault and the Banning fault are effective barriers to groundwater movement, as evidenced by offset water levels, fault springs and changes in vegetation. The wells drilled in this Subbasin pass thorough unconsolidated Recent alluvium (sands and gravels forming the uppermost geologic formation in the Subbasin) and semi-consolidated and interbedded sands, gravels and silts. Although these Pleistocene deposits are the main source of water, water also occurs in Recent alluvium where the water table is sufficiently shallow.

CVWD, DWA and Mission Springs Water District (MSWD) jointly manage this subbasin under the terms of the Mission Creek Settlement Agreement (December, 2004). This agreement and the 2003 Mission Creek Groundwater Replenishment Agreement between CVWD and DWA specify that the SWP water made available to these contractors by DWR will be allocated between the Mission Creek and Whitewater River Subbasins in proportion to the amount of water produced or diverted from each subbasin during the preceding year. Groundwater

recharge in the Mission Creek basin has taken place since 2002 (DWA, 2010). In 2009, production from the Mission Creek Subbasin was about 7 percent of the combined production from these two subbasins. CVWD, MSWD and DWA are jointly developing a separate water management plan for this subbasin, which will have a separate CEQA compliance process. This plan is not part of the Proposed Project and is not sufficiently defined enough at this time to evaluate potential cumulative effects as a related project.

### *Garnet Hill Subbasin*

The area between the Garnet Hill fault and the Banning fault, named the Garnet Hill Subarea by DWR (DWR, 1964), was considered a distinct subbasin by the U. S. Geological Survey (USGS) (Tyley, 1974) because of the effectiveness of the Banning and Garnet Hill faults as barriers to groundwater movement. This is illustrated by a difference of 170 feet in groundwater level elevation in a horizontal distance of 3,200 feet across the Garnet Hill fault, measured in 1961. Although some recharge to this subbasin may come from Mission Creek and other streams that pass through during periods of high flood flows, the chemical character of the groundwater plus its direction of movement indicate that the main source of recharge to the subbasin comes from the Whitewater River. Based on groundwater level measurements, this area is partially influenced by artificial recharge activities at the Whitewater Recharge Facilities at Windy Point, especially during periods of high recharge. This subbasin is considered part of the Whitewater River (Indio) in DWR Bulletin 118.

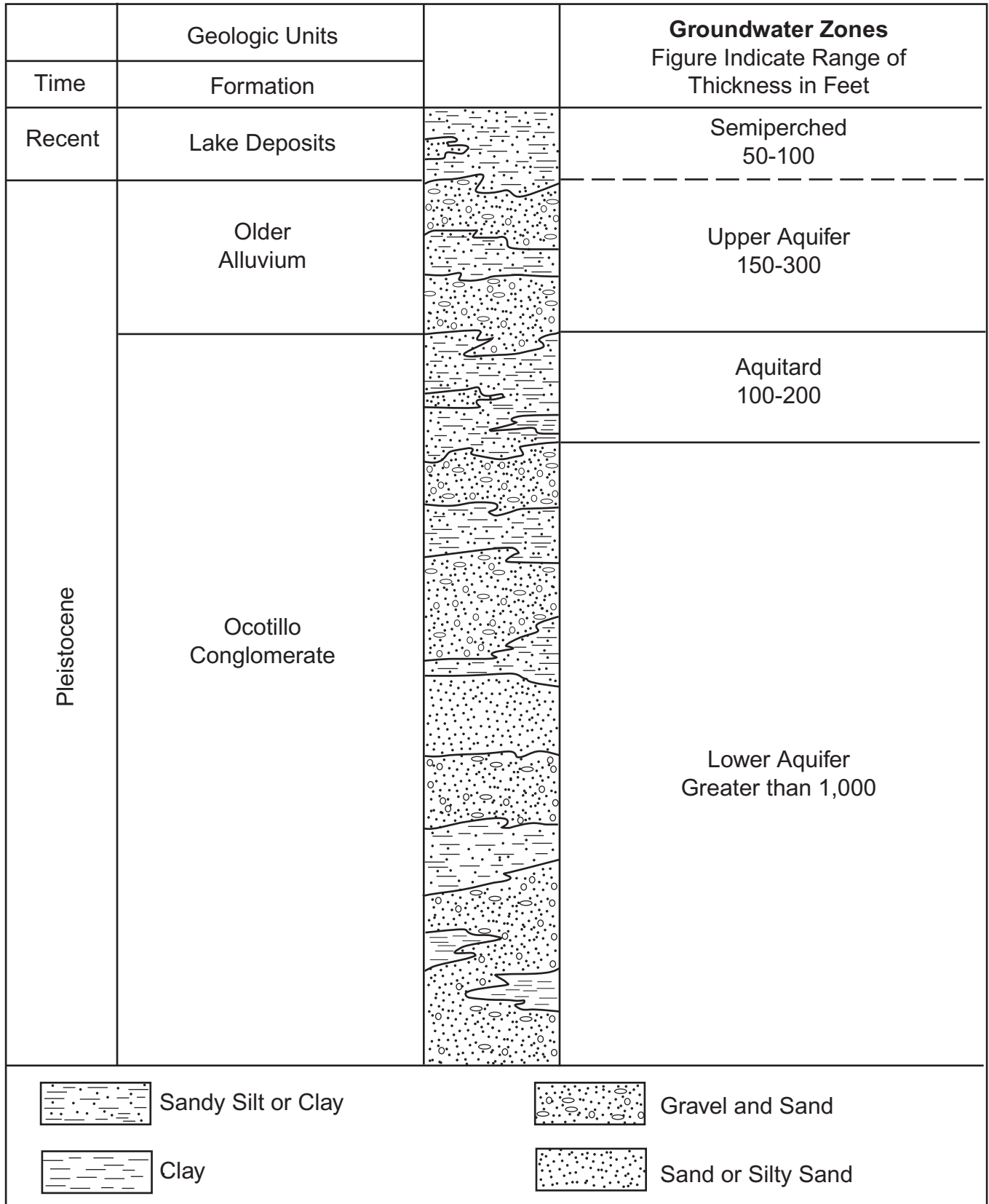
Currently, there is no replenishment assessment program in the Garnet Hill Subbasin. CVWD, MSWD and DWA are jointly developing a separate water management plan for this subbasin along with the Mission Creek Subbasin, which will have a separate CEQA compliance process. This plan is not part of the Proposed Project and is not sufficiently defined enough at this time to evaluate potential cumulative effects as a related project.

### *Desert Hot Springs Subbasin*

The Desert Hot Springs subbasin is bounded on the north by the Little San Bernardino Mountains and to the southeast by the Mission Creek and San Andreas faults. The San Andreas fault separates the Desert Hot Springs subbasin from the Whitewater River subbasin and serves as an effective barrier to groundwater flow. The subbasin, designated number 7-21.03 in DWR Bulletin 118 (2003), has been divided into three subareas: Miracle Hill, Sky Valley and Fargo Canyon. The Fargo Canyon subarea is within the 2010 WMP Update study area because this area is within the City of Indio sphere of influence [the other areas are in the Mission Creek Garnet Hill Management Plan study area. All potable water demand in the subbasin is supplied by wells in the Mission Creek Subbasin. However, wells in the Miracle Hill area produce geothermally heated groundwater that supplies spa resorts in Desert Hot Springs.

#### **6.2.2.2 Hydrostratigraphy**

As shown in **Figure 6-2**, the conceptual hydrostratigraphic section for the Coachella Valley consists of four zones (DWR, 1964) – Semi-perched aquifer, Upper aquifer, aquitard and Lower aquifer — whose characteristics, from highest to lowest, are summarized below.



BUILDING A BETTER WORLD

\*After DWR Bulletin 108

**Figure 6-2**  
**Conceptual Hydrostratigraphy for the Coachella Valley**

- **Semi-perched aquifer and intervening retarding layers.** The Semi-perched aquifer is comprised of fine grained Holocene and Recent age lake deposits and alluvium that form an effective barrier to deep percolation of surface runoff and applied water in the central portion of the East Valley, where present. This zone is not present in the West Valley. Recharge of the Semi-perched aquifer within Recent-age sediments is largely from percolation of surface runoff and return flows of applied water. Groundwater leaves the Semi-perched aquifer as surface flow into agricultural drains, evapotranspiration and vertical leakage to the Upper aquifer. The Upper aquifer is formed of Upper Pleistocene alluvium, typically coarse sand and gravel with discontinuous clay lenses in the West Valley and northern part of the East Valley. The Upper aquifer is unconfined or semi-confined in most of the West Valley and confined in most of the East Valley by the overlying Semi-perched aquifer and the aquitard, described below. Recharge to the Upper aquifer is by percolation of streamflow runoff particularly near the Valley margins, by percolation of agricultural irrigation water from the Semi-perched aquifer, and by subsurface flow from the San Gorgonio Pass to the north and to a lesser extent across the Banning fault.
- **Aquitard.** The aquitard is a layer of clay and sandy clay with discontinuous sand lenses having low permeabilities that separates the Upper and Lower aquifers in the East Valley. It is absent at the basin margins and reaches a maximum thickness of 200 feet in the center of the East Valley. In small areas near the Salton Sea, the aquitard reaches 500 feet in thickness (DWR, 1964).
- **Lower Aquifer.** The Lower aquifer, the deepest water-bearing zone, is formed from Pleistocene Ocotillo Conglomerate. In the West Valley, the northern portion of the East Valley and at basin margins, the Lower aquifer consists of coarse sand and gravel. In most of the East Valley, the Lower aquifer is composed of sandy clay, subdivided by one or two lower permeability layers. The Lower aquifer is recharged by percolation from the Upper aquifer, particularly where the two aquifers merge at the Valley margins. Outflow from the Lower aquifer is primarily through water supply wells. Historically, some groundwater migrated out of the Lower aquifer, flowing into the area beneath the Salton Sea. Basin overdraft, however, has reversed the direction of the subsurface flow in some portions of the basin.

Each of these four water-bearing zones was described further in 2002 PEIR Section 6.2.2.

### 6.2.2.3 Relationship of the Salton Sea to the Groundwater Basin

The Salton Sea plays an important role in the hydrogeology and water quality of the Coachella Valley groundwater basin. Although the current Salton Sea formed in 1905, over past geologic time, several similar lakes occupied and then retreated from this area. Therefore, much of the groundwater underlying the Salton Sea is likely to be brackish or saline from salts left behind by the evaporation of this series of ancient lakes. For example, samples of deep groundwater (about 1,400 feet depth) just north of the Salton Sea exhibit TDS concentrations in the range of 15,000 to 16,000 mg/L (CVWD, 2010c).

## Section 6 – Groundwater Resources

---

The impact of the saline water beneath the Salton Sea on the Coachella groundwater basin depends upon the location of the freshwater-saltwater boundary or interface. As long as groundwater levels are sufficiently high, freshwater flows from the Coachella Valley aquifers towards the Salton Sea. Currently, groundwater levels adjacent to the Sea are below the level of the Sea, which may induce the movement of the denser saline Sea water into the fresher groundwater aquifers. Therefore, water from the Sea can flow into the Semi-perched aquifer if water levels drop. This water could eventually migrate vertically downward into the underlying Upper and Lower aquifers. Therefore, the water level in the Sea is particularly important in controlling the intrusion of salt water into the groundwater basin.

### 6.2.3 Groundwater Use

Water users in the Coachella Valley share a common groundwater source. Groundwater users include CVWD and other public water suppliers such as DWA, MSWD, the City of Coachella, the City of Indio (Indio Water Authority, IWA) and the Myoma Dunes Mutual Water Company, Tribes, mutual water companies, individual residents, farmers, golf courses, businesses and commercial facilities. In the West Valley, groundwater is the primary source of water supply, while Coachella Canal water is the primary supply source in the East Valley.

The 2002 WMP and CVWD's and DWA's annual Engineer's Report on Water Supply and Replenishment Assessment for each of the groundwater basins reviewed the historical use of groundwater in the Coachella Valley. In 1990, groundwater use was estimated to be 340,100 AFY; it peaked at about 407,000 AFY in 2002 (CVWD, 2010c). By 2009, groundwater use decreased to about 357,600 AFY. For the period 2000-2009, groundwater production averaged 388,700 AFY.

Total production within the Upper Whitewater River Subbasin was 197,579 AFY in 2009. The groundwater production within CVWD's Upper Whitewater River Area of Benefit (so defined for application of the Replenishment Assessment Charge) for 2009 was 155,793 AF, of which CVWD pumped 96,576 AFY (CVWD, 2010a). Total production within the Lower Whitewater River Area of Benefit (also defined for the purposes of applying a Replenishment Assessment Charge) in 2009 was estimated to be 160,000 AFY, of which CVWD pumped 24,283 AFY and about 49,400 AFY is believed to be unreported production (CVWD, 2010b). Average groundwater production in the Whitewater River Subbasin was 388,700 AFY for the 2000-2009 period.

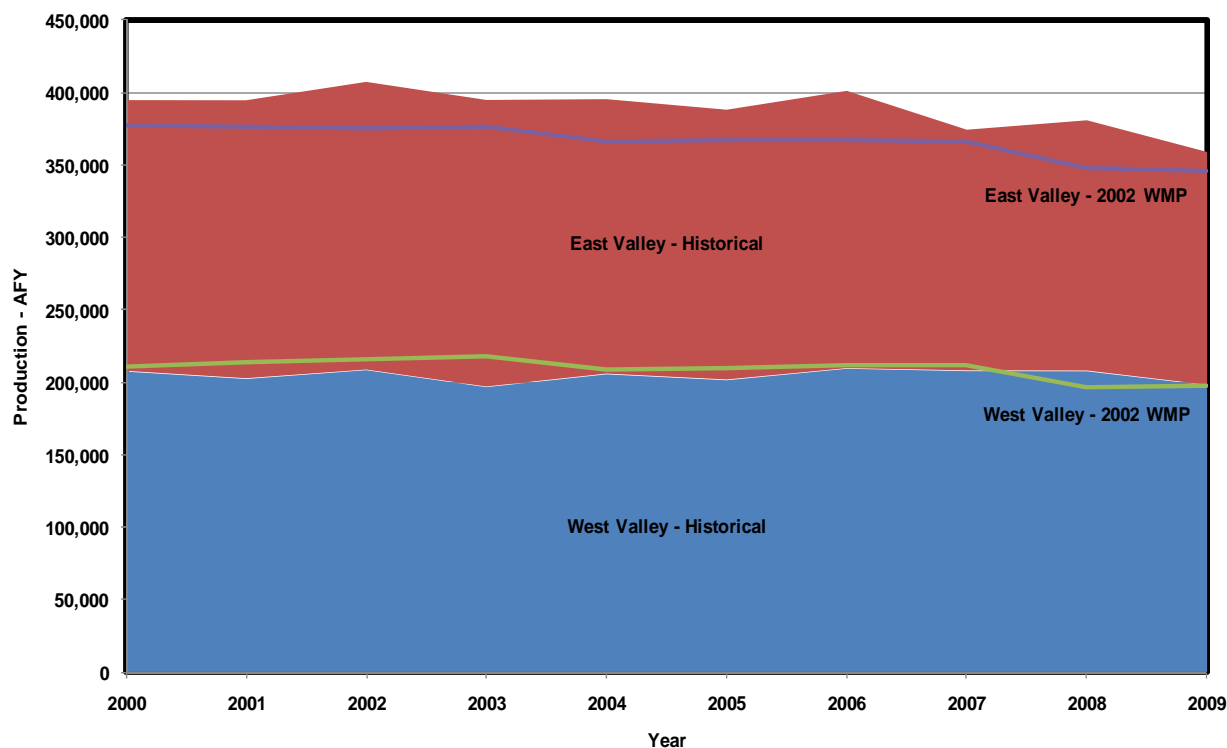
**Figure 6-3** presents a comparison of historical pumping with the amounts projected in the 2002 WMP for the period 1990-2009. Actual pumping in the East Valley exceeded the projections in the 2002 WMP and PEIR principally due to unanticipated growth. Pumping in the West Valley has generally been lower than projected in the 2002 WMP.

### 6.2.4 Groundwater Model

A three-dimensional, numerical groundwater flow model of the Coachella Valley was developed for the 2002 WMP as a scientific tool to assist in managing groundwater in the Coachella Valley (Fogg, et al., 2000). Comprehensive information had been compiled since 1936 on groundwater pumpage, natural recharge, return flows from irrigation and drain flows. In addition, aquifer data

from well records and pump tests were interpreted, together with regional geologic and hydrologic information, to define the physical system within which the groundwater flows. The period 1936 through 1996 was used for calibration, since this period represented a wide range of hydrologic conditions in the Coachella Valley. The 1997 through 1999 period was used as a verification period.

Predictive model simulations were used to estimate future hydrogeologic conditions throughout the Coachella Valley from 2000 to 2035 for 2002 model. In particular, model results were used to estimate annual drain flows, inflows from and outflows to the Salton Sea and flows between the West and East Valleys. Data presented therein were based upon model simulations and a conceptual understanding of the hydrogeology of the Coachella Valley (see Appendix D of the 2002 PEIR for a summary of the groundwater model, hereby incorporated by reference). For a more detailed discussion of the groundwater model, the reader is referred to the report Groundwater Flow Model of the Coachella Valley, California: An Overview (Fogg, et al., 2000).



**Figure 6-3**  
**Comparison of Historical and 2002 WMP Projected Pumping**

The groundwater model was also used to estimate the area of influence of groundwater recharge at the Whitewater Recharge Facility. Particle tracking using USGS MODPATH software was performed assuming only advective transport, not considering the effects of dispersion. Dispersion would likely expand the area of impact laterally with lower concentrations. Because the groundwater flow model did not include a solute transport component, the results of this

## Section 6 – Groundwater Resources

---

modeling do not indicate concentrations downgradient, but reflect the location of particles released in 1973, the initial year of SWP recharge at Whitewater.

The model has been revisited and evaluated with respect to its applicability to the 2010 WMP Update. Groundwater production, return flow and recharge data have been updated through 2009. The model was run under existing conditions and found to be sound, with no recalibration necessary. The model has been run again for the present Proposed Project, with updated water demand and supply projections through 2045 based on the population projections adopted in early 2007 by Coachella Valley Association of Governments (CVAG) and Riverside County and subsequently adopted by Southern California Association of Governments (SCAG) in 2008. The model inputs also reconsider the current and projected reliability of SWP deliveries.

### 6.2.5 Groundwater Balance and Overdraft

As discussed in **Section 3**, increased demand for limited groundwater supplies causes increased basin overdraft. A groundwater budget is helpful in assessing the extent of basin overdraft. The groundwater budget compares the inflows and outflows to the groundwater basin. The difference between inflows and outflows at a given time is defined as the change in storage for that time period. The 2002 PEIR presented information on the groundwater balance as of 1999. This Subsequent PEIR (SPEIR) presents the current groundwater balance as of 2009 along with the ten-year average for 2000-2009.

#### 6.2.5.1 Groundwater Inflows

Coachella Valley groundwater inflows consist of:

- Infiltration of natural recharge and inflows,
- Infiltration of return flows from urban and agricultural uses,
- Artificial recharge, and
- Salton Sea intrusion.

When the 2002 PEIR was prepared, basin inflows were estimated to be 392,200 AFY in 1999. As shown in **Table 6-2**, total inflows to the basin averaged 366,000 AFY for 2000-2009 and were 381,200 AFY in 2009.

#### *Natural Recharge*

Precipitation in the bordering San Jacinto and Santa Rosa Mountains produces surface runoff and subsurface inflow that are the chief natural sources of recharge to the basin. Additional recharge may be derived from precipitation in the Little San Bernardino Mountains in extremely wet years. The volume of natural recharge varies dramatically annually due to wide variations in precipitation. Perennial flow is limited to only a few streams. The long-term average historical natural recharge to the basin (based on 1936-2009) is approximately 46,000 AFY, ranging from 204,000 AFY in very wet years to 8,400 AFY in dry years. As presented in **Table 6-2**, the natural recharge component for 2009 was approximately 20,800 AFY. This is about 45 percent of the long-term average natural recharge.



**Table 6-2**  
**Summary of Current Groundwater Budget for Coachella Valley**

Component	2000-2009 Average			2009		
	West Valley	East Valley	Total	West Valley	East Valley	Total
<b>Inflows – AFY</b>						
Natural Recharge	24,900	4,100	29,000	19,100	1,700	20,800
Returns from Use	72,500	156,700	229,200	70,900	156,300	227,200
Wastewater Percolation	10,900	500	11,400	9,200	700	9,900
SWP Exchange Recharge	45,700	0	45,700	55,900	0	55,900
Canal Water Recharge	0	5,400	5,400	0	21,300	21,300
Inflow from Outside Study Area	11,200	200	11,400	11,200	200	11,400
Salton Sea Intrusion		1,500	1,500	0	1,800	1,800
Inflow from West Valley	0	32,400	32,400	0	32,900	32,900
<b>Total Inflows</b>	<b>165,200</b>	<b>200,800</b>	<b>366,000</b>	<b>166,300</b>	<b>214,900</b>	<b>381,200</b>
<b>Outflows – AFY</b>						
Groundwater Pumping	204,300	184,400	388,700	197,700	160,800	358,500
Flows to Drains	0	48,100	48,100	0	37,300	37,300
Evapotranspiration	0	4,700	4,700	0	4,300	4,300
Outflow to Salton Sea	0	700	700	0	800	800
Outflow to East Valley	32,400	0	32,400	32,900	0	32,900
<b>Total Outflows</b>	<b>236,700</b>	<b>237,900</b>	<b>474,600</b>	<b>230,600</b>	<b>203,100</b>	<b>433,700</b>
<b>Change in Storage – AFY</b>						
Annual Change in Storage	-71,500	-37,100	-108,600	-64,300	11,800	-52,500
Total Change in Storage <sup>1</sup>	-	-	-	-1,697,800	-804,600	-2,502,400
<b>Overdraft – AFY<sup>2</sup></b>						
Local Supply Adjustment	15,900	1,000	16,900	21,700	3,400	25,100
SWP Recharge Adjustment	28,500	0	28,500	61,800	0	61,800
<b>Total Overdraft</b>	<b>-27,100</b>	<b>-36,100</b>	<b>-63,200</b>	<b>19,200</b>	<b>15,200</b>	<b>34,400</b>

Notes:

1. Total change in storage since 1936 expressed in AF.
2. Annual overdraft equals change in storage plus local supply and SWP recharge adjustments to reflect long-term average conditions.

## Section 6 – Groundwater Resources

---

### *Return Flows from Use*

Return flow is the difference between the amount of water applied for irrigation (agricultural, golf course, or urban) and the amount consumed by plants to satisfy their evapotranspiration (ET) requirement. Water is also returned to the groundwater basin through percolation of treated wastewater and septic tank flow. As shown in **Table 6-2**, total return flows in 2009 were approximately 237,100 AFY. For the period 2000-2009, return flows and wastewater percolation averaged 240,900 AFY. Currently, return flows are approximately 60 percent of the total inflow budget.

Both return flows and wastewater percolation are affected by water use efficiency and overall demands. As conservation efforts increase, the amount of return flow decreases, reducing a source of inflow to the basin. Agricultural return flows have generally decreased over the past 20 years due to a combination of increased irrigation efficiency (including conversion to drip irrigation) and development of agricultural lands. For example, agricultural return flow for the period 1972 to 1976 was nearly 200,000 AFY compared to about 125,000 AFY for the 2000 – 2009 time period. During this same period, golf and urban water returns more than doubled from about 40,000 AFY in 1972 – 1975 to about 105,000 AFY for 2000 – 2009.

### *Artificial Recharge*

Artificial recharge consists of recharge in the West Valley at the Whitewater Recharge Facility using SWP Exchange water [exchanged for Colorado River Aqueduct (CRA) water] and in the East Valley at the Thomas E. Levy Recharge Facility (Levy facility), formerly the Dike 4 Recharge Facility, which began operation in 2009 using Colorado River water (Coachella Canal water).

In addition, a demonstration scale recharge facility has operated near Martinez Canyon since 2005. Recharge at Whitewater has been variable based on availability of SWP Exchange water and deliveries by the Metropolitan Water District of Southern California (Metropolitan). From 2000-2009, average SWP Exchange recharge was 46,600 AFY and ranged from about 700 AFY in 2001 to 165,600 AFY in 2005. Recharge in 2010 was significantly higher at 228,300 AFY due to a combination of increased SWP Table A Amounts from recent water transfers, slightly higher water allocations compared to 2009 and availability of additional advanced delivery water from Metropolitan. Since 1990, when CVWD's and DWA's initial Table A Amounts reached 61,200 AFY, SWP allocations have averaged 74 percent of the Table A Amount. SWP Exchange deliveries to the Coachella Valley in 2009 were about 36 percent of the Table A Amount.

Recharge at the Dike 4 demonstration facility averaged about 2,700 AFY while recharge at Martinez has averaged 2,500 AFY since 2005. About 18,600 AFY was recharged at the new Levy facility in 2009, with recharge of approximately 35,000 AFY in 2010. For groundwater balance purposes, the recharge data presented in **Table 6-2** reflect a 2 percent evaporation loss.

### *Inflows from Outside the Groundwater Basin*

Inflows from outside the basin consist of underflow from the San Geronio Pass area and flows across the Banning fault. Historically, these inflows are estimated to range from 7,000 AFY to 13,000 AFY. The 2009 estimated inflow was approximately 11,200 AFY, the long-term average. This is a relatively small component of the water balance (less than 3 percent) and does not change significantly with time.

### *Salton Sea Intrusion*

Intrusion of saline water from the Salton Sea into the shallow aquifers is possible if groundwater elevations are lower than the level of the Sea. Although no direct evidence of intrusion has been observed, monitoring wells near the Sea show elevated salinity at depth, which may be the result of ancient saline water left by previous saline lakes in the Salton Sink. Groundwater modeling performed by CVWD estimates that about 1,500 -1,800 AFY of saline water intrusion may be occurring in the Semi-perched aquifer. While this may not directly impact the deeper groundwater supplies, it does provide a potential source of water quality degradation.

### **6.2.5.2 Groundwater Outflows**

Groundwater outflows consist of:

- groundwater pumping to meet Coachella Valley demands,
- flow from the Semi-perched aquifer through the agricultural drains into the Salton Sea,
- evapotranspiration from the Semi-perched aquifer, and
- subsurface flow out of the study area, into the aquifers beneath the Salton Sea.

When the 2002 PEIR was prepared, basin outflows were estimated to be 465,700 AFY in 1999. As shown in **Table 6-2**, total outflows from the basin average 474,600 AFY for 2000-2009 and were 433,700 AFY in 2009.

### *Groundwater Pumping*

Groundwater pumping refers to the amount of groundwater pumped for agricultural, golf course, urban use and other uses. Groundwater pumping is the largest component of outflow from the basin (nearly 86 percent in the West Valley and 80 percent in the East Valley). In the 2002 PEIR, groundwater pumping was 367,100 AFY. For the period 2000 – 2009, pumping averaged 388,700 AFY but by 2009 had declined to 358,500 AFY.

### *Flow to Drains*

Semi-perched groundwater conditions in many parts of the East Valley impede the downward migration of return flows from water applied at the surface. This condition causes waterlogged soils and the accumulation of salts in the root zone, reducing agricultural productivity. Surface (open) drains were constructed in the 1930s to alleviate this condition. With the delivery of Canal water to the Valley in 1949, subsurface drainage systems were first installed in 1950 to

## Section 6 – Groundwater Resources

---

control the high water table conditions and to intercept poor quality shallow groundwater. Maintaining the water table at the level of the drains acts as a barrier to the percolation of poor quality return flows into the deeper potable aquifers. Flow in the drains increased steadily as additional drains were installed, until the early 1970s. Agricultural drainage flow remained relatively stable through the 1970s and has steadily declined since 1980. Drain flow (excluding wastewater discharges and fish farm effluent) has decreased steadily from a high of approximately 158,000 AFY in 1976 to 58,800 AFY in 1999 and about 40,000 AFY in 2009. This decline is due in part to declining groundwater levels throughout the East Valley and to the increased efficiency of agricultural irrigation. Flow in the drains currently comprises approximately 18 percent of the total outflows from the East Valley.

### *Subsurface Flow to the Salton Sea*

Historically, when groundwater levels were relatively high, groundwater naturally flowed toward the Salton Sea. Shallow semi-perched groundwater discharged into the Salton Sea and deeper groundwater left the basin as subsurface outflow. As groundwater levels in the basin declined, the rate of outflow decreased. Modeling studies indicate that both inflow and outflow from under the Sea has occurred in recent years.

Outflow to the Salton Sea from the Coachella Valley for 2000-2009 and for 2009 is presented in **Table 6-2** based on groundwater modeling results. The outflow to the Salton Sea has decreased from about 800 AFY in 1999 to outflow of about 700 AFY for 2009 conditions. This decrease appears to result from declining groundwater levels in the East Valley. Declining Salton Sea levels in the future could increase subsurface outflow.

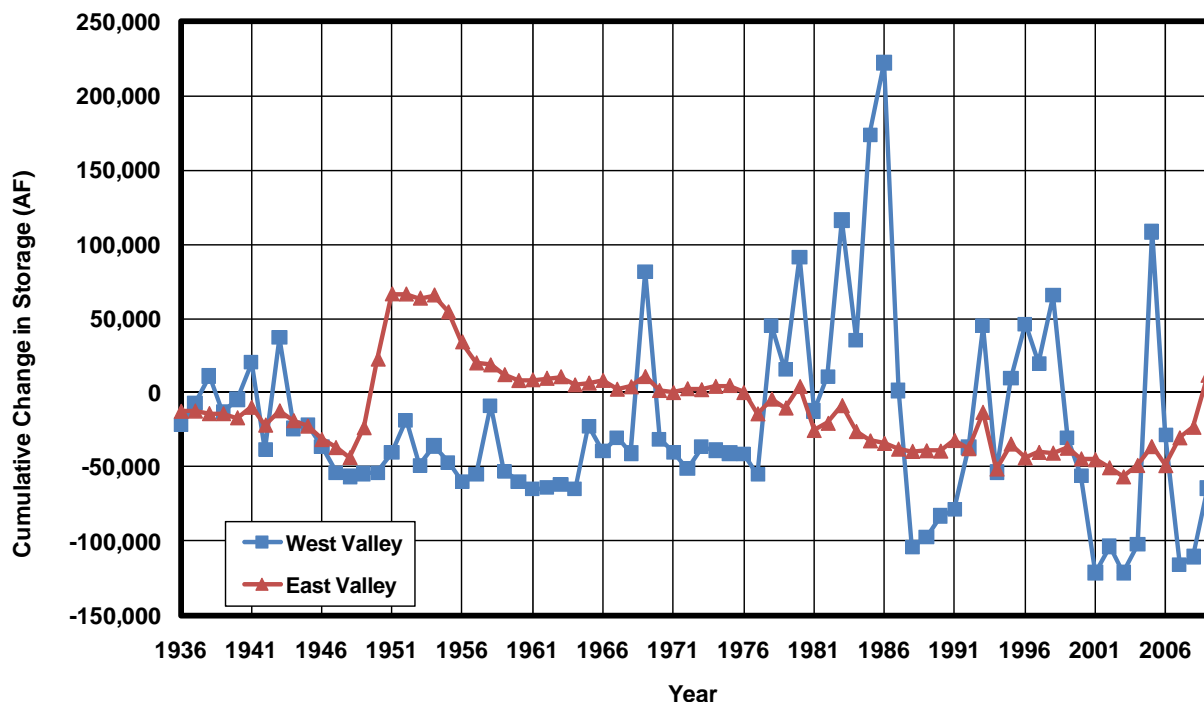
### *Evapotranspiration*

Native vegetation on undeveloped lands receives its water supply from precipitation and shallow groundwater. In the area underlain by the Semi-perched aquifer, evapotranspiration (ET) was a significant water loss component in the East Valley. As lands were developed for agricultural uses, the amount of ET from native vegetation declined. The installation of drains in the 1950s and 1960s further reduced ET as the water table was lowered. Further ET reductions occurred in the 1980s and 1990s as increased pumping reduced groundwater levels. ET estimates for 2000-2009 and 2009 are presented in **Table 6-2**. The ET component in 2009 was estimated using the groundwater model to be about 4,300 AFY, a relatively small outflow (less than 1 percent) of the total outflow.

#### **6.2.5.3 Change in Storage**

The change in storage represents the annual difference between inflows and outflows in the groundwater basin. During wet years or periods of high artificial recharge, the change in storage is positive (water in storage increases). In dry years or periods of high pumping, the change in storage is often negative (storage decreases). **Figure 6-4** shows the historical annual change in storage from 1936-2009.

In the 2002 PEIR, the change in storage for 1999 was estimated to be a loss of 73,500 AFY. For the period 2000-2009, the average annual storage loss was 108,500 AFY. This higher loss was due to lower than average recharge of SWP Exchange water during this period.



**Figure 6-4**  
**Historical Annual Change in Storage**

For 2009, the storage loss was 52,500 AFY, about half of the ten-year average. This improvement was the result of reduced groundwater pumping combined with commencement of recharge at the Levy facility.

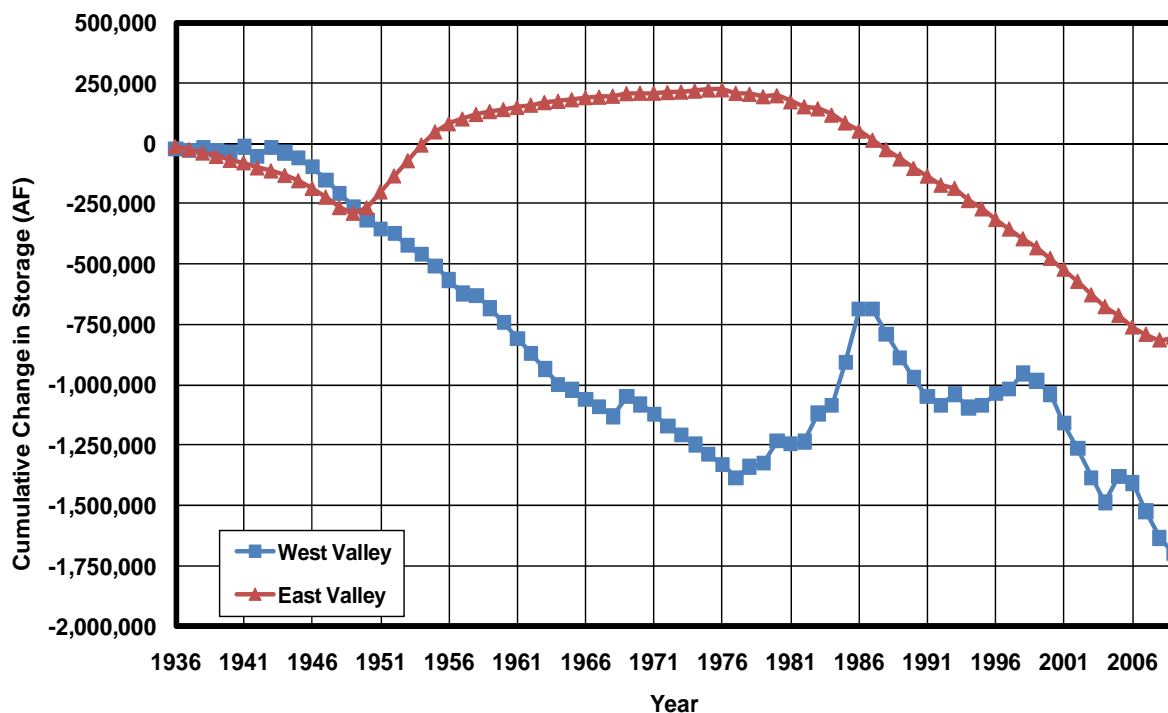
The cumulative change in storage is the running total of annual changes in storage from an established starting year. For the 2002 WMP and PEIR, the starting point was established as 1936, the year when the groundwater model calibration period commenced. **Figure 6-5** shows the cumulative annual change in storage from 1936-2009. The 2002 PEIR indicated that the cumulative change in storage for the Valley for 1999 was -1,421,400 AF. This represents the total amount of water removed from the basin in excess of supply over this 64-year period. From 2000 through 2009, an additional 1,087,000 AF was removed from storage. Of this amount, about 245,000 AF was pre-delivered SWP Exchange water that was delivered from storage in place of direct recharge delivery from Metropolitan during this period.

#### 6.2.5.4 Overdraft Status

Overdraft is the condition of a groundwater basin in which the volume of water extracted exceeds the volume of inflow to the basin over a period of time. If overdraft continues, significant adverse impacts can result, including:

## Section 6 – Groundwater Resources

- **Groundwater storage reduction** – The total volume of groundwater available in the Coachella Valley continues to decline.



**Figure 6-5**  
**Historical Cumulative Change in Storage**

- **Decline in groundwater levels** – A lower water table requires deeper wells, higher lift pumps and increased energy to pump groundwater.
- **Land subsidence** - As groundwater is removed, aquifer soils begin to compress from the weight of the ground above. At the ground surface, subsidence causes fissures in the ground and can damage buildings, homes, sidewalks, streets, and buried pipelines and drains. Once subsidence has occurred, the pore spaces no longer exist, which decreases the amount of water that the aquifer can store.
- **Degradation in groundwater quality** - With the reduction of water levels in the deeper aquifers, an upward water gradient is not maintained and poor quality water from the shallow aquifers can leak downward and degrade the water quality of underlying potable aquifers.

Continued decline in groundwater levels allows intrusion by Salton Sea water into the adjacent shallow freshwater aquifer. Eventually, this saline water can migrate vertically into deeper aquifers, causing wells near the Salton Sea to become so saline that they would no longer be usable.

The 2002 WMP and PEIR calculated the change in freshwater storage to estimate overdraft. In this calculation, all inflows and outflows having salinities of less than 1,000 mg/L were tabulated with the difference (inflow minus outflow) being the change in freshwater storage. This approach is difficult for the layperson to comprehend and may introduce bias toward recharge projects over source substitution projects. Consequently, a simpler method to estimate overdraft has been developed for this SPEIR.

This SPEIR uses a calculation of change in storage based on long-term local hydrology and imported water deliveries. Since the local hydrology varies significantly from year to year, a long term average provides a better method for estimating the local inflows, which are dampened by the large storage volume of the basin. Because imported water recharge deliveries in the West Valley also vary widely from year to year, recharge is based on estimated long-term average SWP Exchange reliability of 74 percent of Table A Amounts rather than year-to-year values. Other inflows and outflows are estimated using the groundwater model. This approach dampens the variations in the annual change in storage and gives a more accurate indication of long-term overdraft. These adjustments are shown at the bottom of **Table 6-2**. Based on these adjustments, the average annual overdraft for 2000 through 2009 was 63,200 AFY while 2009 showed a recovery of 34,400 AFY.

### 6.2.6 Groundwater Levels

Groundwater elevations in Coachella Valley wells respond to basin inflows and outflows. Groundwater level hydrographs at nine representative wells throughout the Valley are shown on **Figure 6-6**. The locations of these wells are shown on **Figure 6-1**. The historical fluctuations of groundwater levels within the Whitewater River Subbasin indicate a steady decline in the levels throughout the Subbasin prior to 1949. With the use of Colorado River water from the Coachella Canal after 1949, groundwater demand on the groundwater basin declined in the East Valley (generally east and south of Washington Street) below Point Happy and the groundwater levels rose sharply. Water levels in the deeper aquifers rose from 1950 to 1980. However, since the early 1980s, water levels in this area have again declined, at least partly due to increasing urbanization and groundwater usage.

**Figure 6-7** presents a comparison of the change in groundwater levels in the Lower Aquifer between 1999 and 2009. Groundwater levels declined throughout the basin during this period with the most substantial changes near the Whitewater Recharge Facility. Water levels in 1999 had been relatively high due to a combination of wet weather and above average replenishment activities with SWP Exchange water. The 1999 to 2009 period was characterized by below normal runoff, reduced SWP Exchange water deliveries and increased groundwater extraction due to growth. In addition, delayed implementation of 2002 WMP programs contributed to continued groundwater level reductions. Groundwater levels north of the Salton Sea showed an increase as a result of significant reductions in fish farm pumping.

### 6.2.7 Groundwater Quality

Groundwater quality is influenced by both natural and anthropogenic (human) factors. Natural factors affecting groundwater quality include the geologic nature of the tributary watershed and

## Section 6 – Groundwater Resources

---

aquifer formations, faulting and proximity of saline water bodies to name a few. Anthropogenic influences on groundwater quality include groundwater extraction patterns, water importation, return of irrigation water, fertilizer usage, release of contaminants and waste disposal practices.

In the Coachella Valley, the water quality parameters of principal concern are salinity (including TDS, chloride and sulfate), nitrate, fluoride, arsenic and perchlorate. In addition, local groundwater quality issues may occur as a result of past agricultural practices. This SPEIR focuses on these parameters as indicative of the general quality of the groundwater.

### 6.2.7.1 Salinity

The concentration of TDS in groundwater is a good general indicator of groundwater quality produced in the basin and is often used to evaluate differences in quality among different water sources and identify historical trends. The state's secondary MCL for TDS is equivalent to the Consumer Acceptance Contaminant Level range of 500 mg/L to 1,500 mg/L. The PEIR for the 2002 WMP presented a detailed discussion of historical salinity trends in the Coachella Valley including a map showing the distribution of TDS, chloride and sulfate in Valley wells. **Figure 6-8** presents updated maps of showing the distribution of TDS, chloride and sulfate for the period 2000-2009. The distribution of these parameters is similar to that observed in the 2002 WMP PEIR with some variations due to different wells being sampled.

### 6.2.7.2 Nitrate

Potential sources of elevated nitrate in Coachella Valley groundwater are natural sedimentary deposits, fertilizers, effluent from septic tanks and wastewater treatment plants, and Mesquite hummocks. The state and federal primary MCL for nitrate is 45 mg/L as nitrate. The PEIR for the 2002 WMP presented a discussion of the occurrence of nitrate in the Coachella Valley. **Figure 6-9** presents maps showing the distribution of nitrate, fluoride and arsenic for the period 2000 through 2009. As was indicated in the 2002 PEIR, cluster of wells in the Palm Desert and the Oasis areas show the highest nitrate concentrations. Elevated nitrates are typically found in the shallower wells.

### 6.2.7.3 Fluoride

Fluoride is a naturally-occurring element having a state primary MCL of 2 mg/L and a federal MCL of 4 mg/L. Consumption of water exceeding the state MCL by young children may result in teeth mottling while consumption of water exceeding the federal MCL by older children and adults may increase the risk of bone damage. Average fluoride concentrations in the Coachella Valley groundwater for the 2000 through 2009 period are shown on **Figure 6-9**. High fluoride levels are found in the East Valley near the Salton Sea and the San Andreas fault. No change in the distribution of fluoride has occurred in the past 10 years.



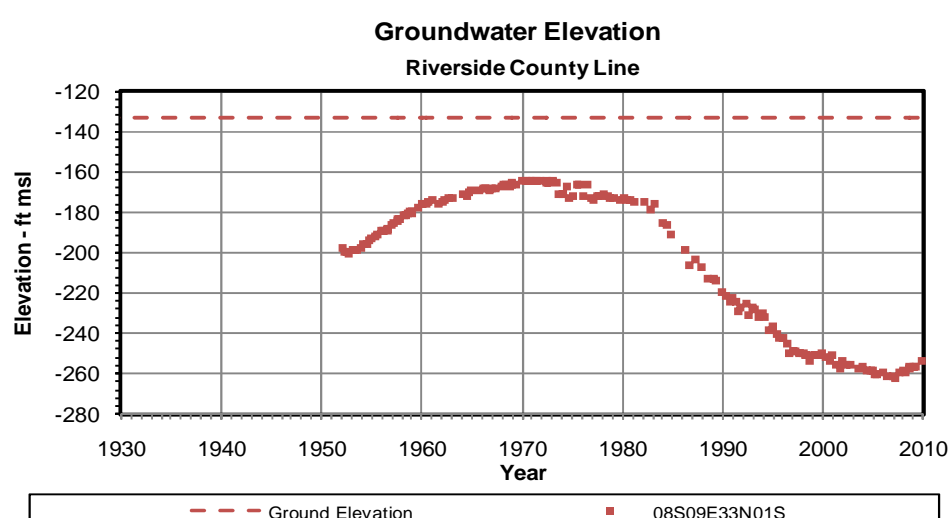
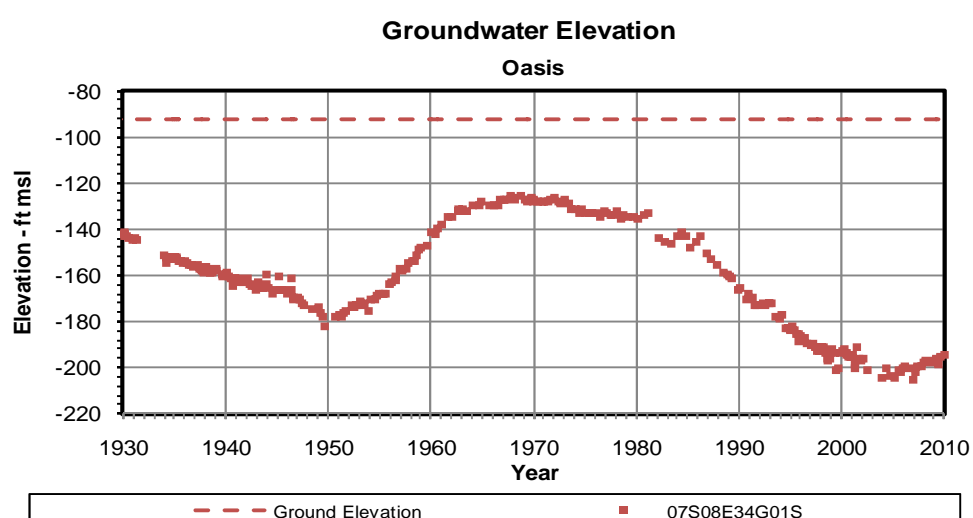
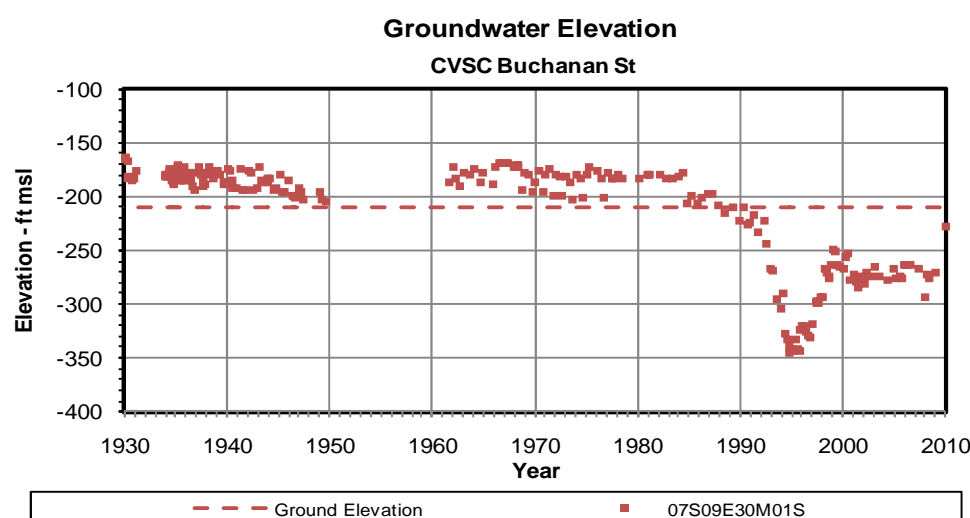
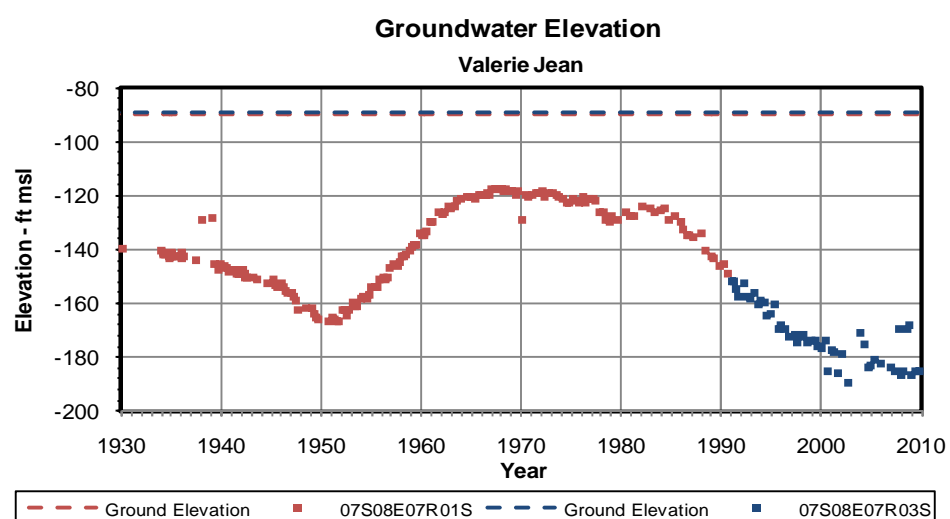
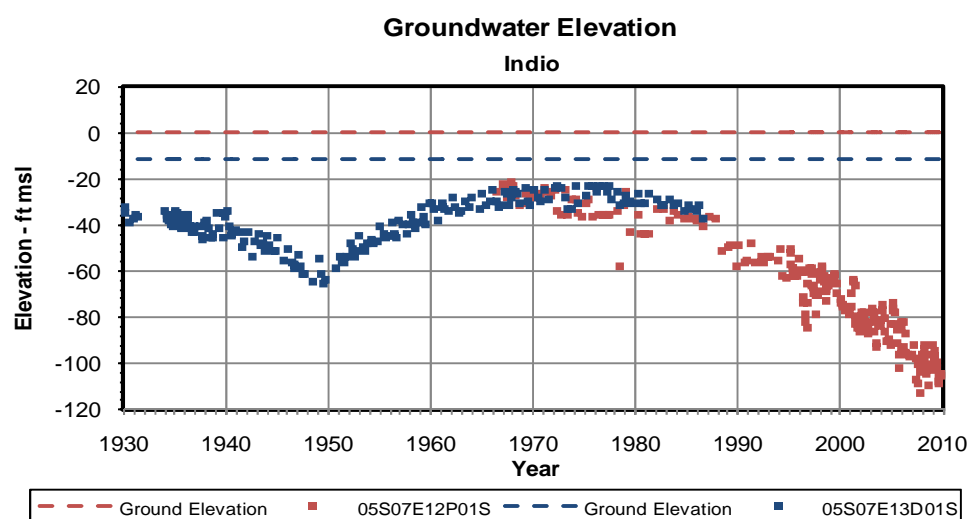
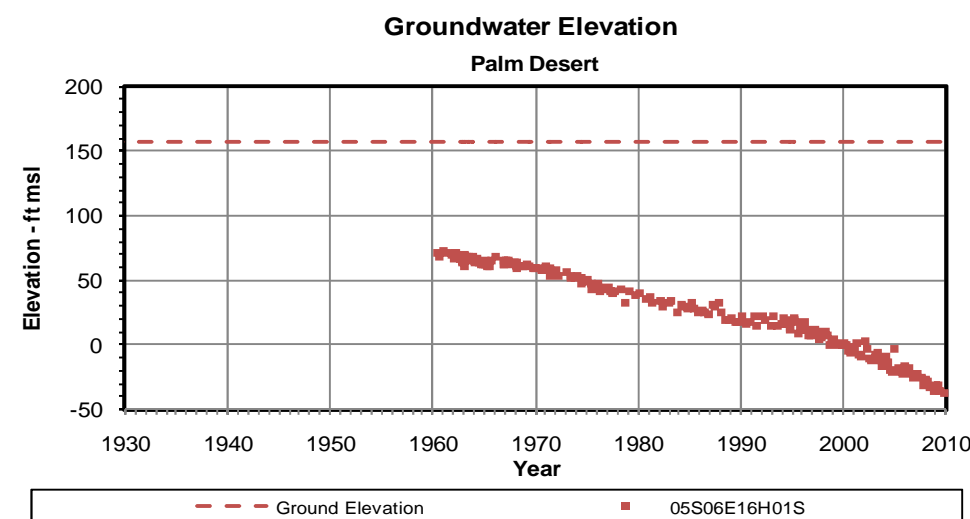
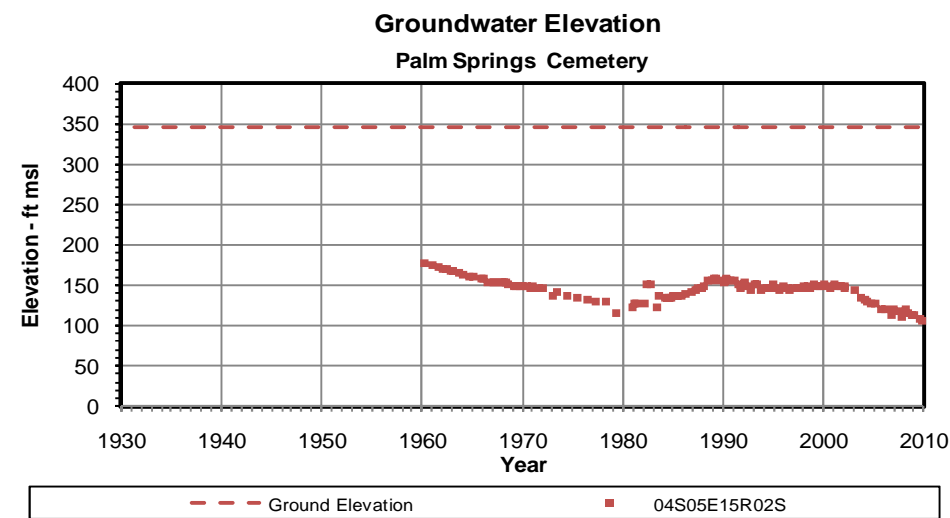
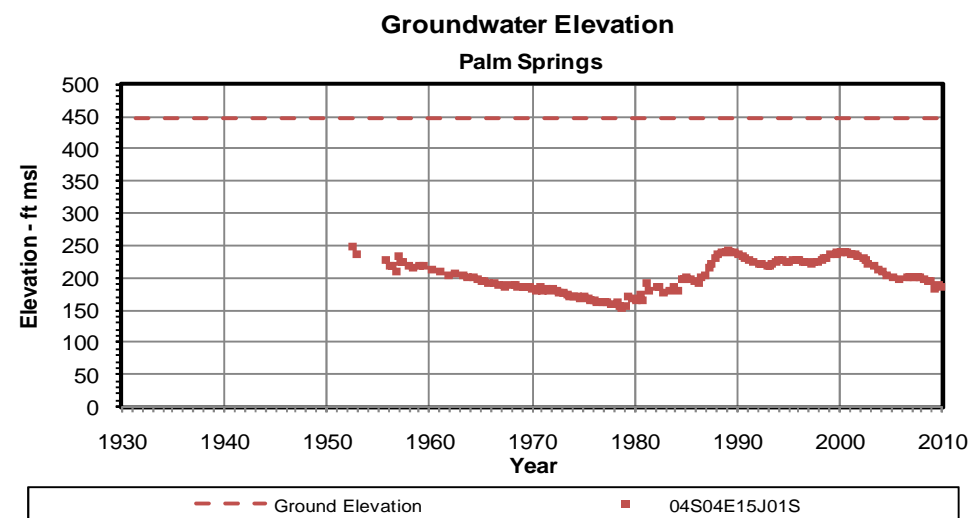
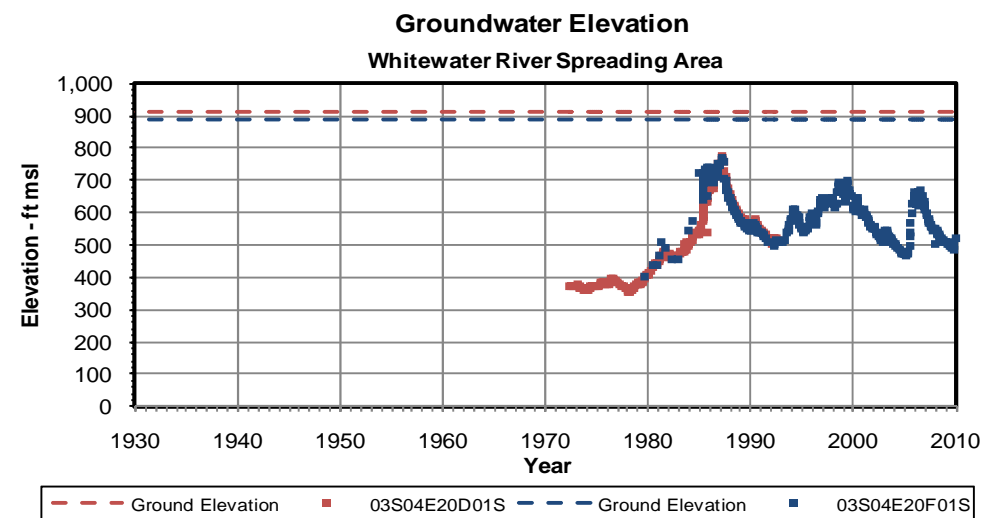
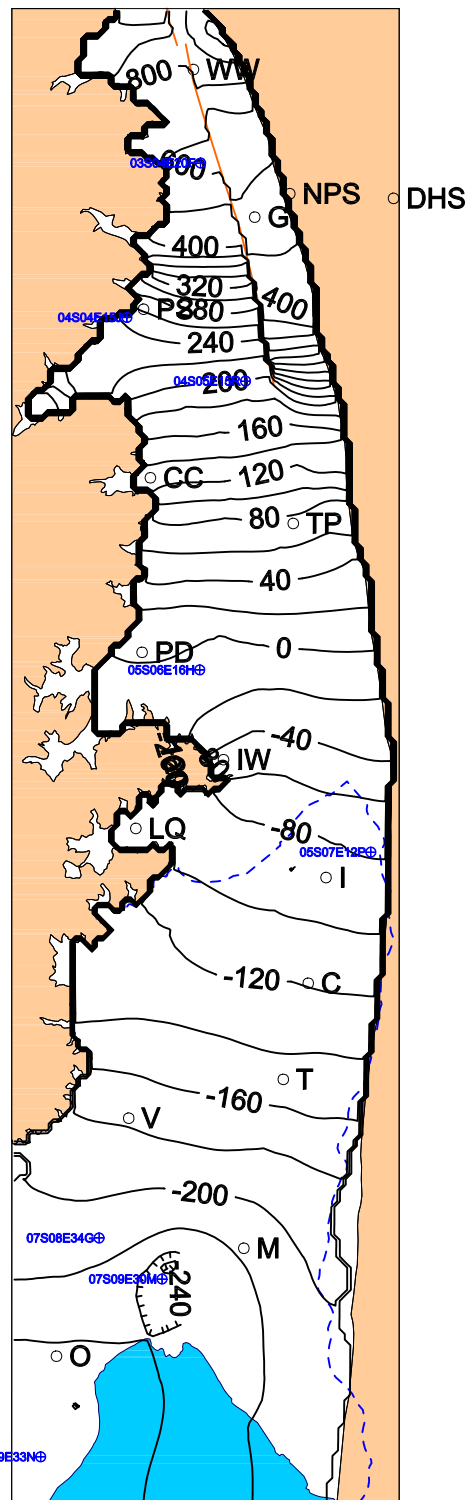


Figure 6-6  
Representative Groundwater Elevation Hydrographs

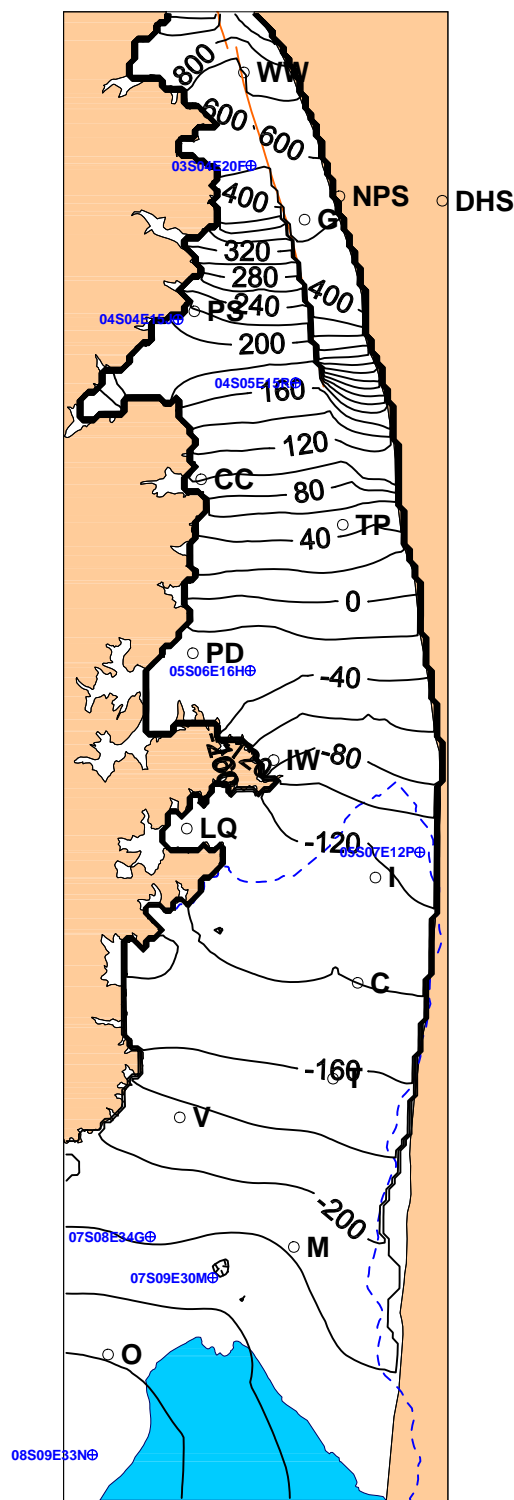


1999 Water Levels



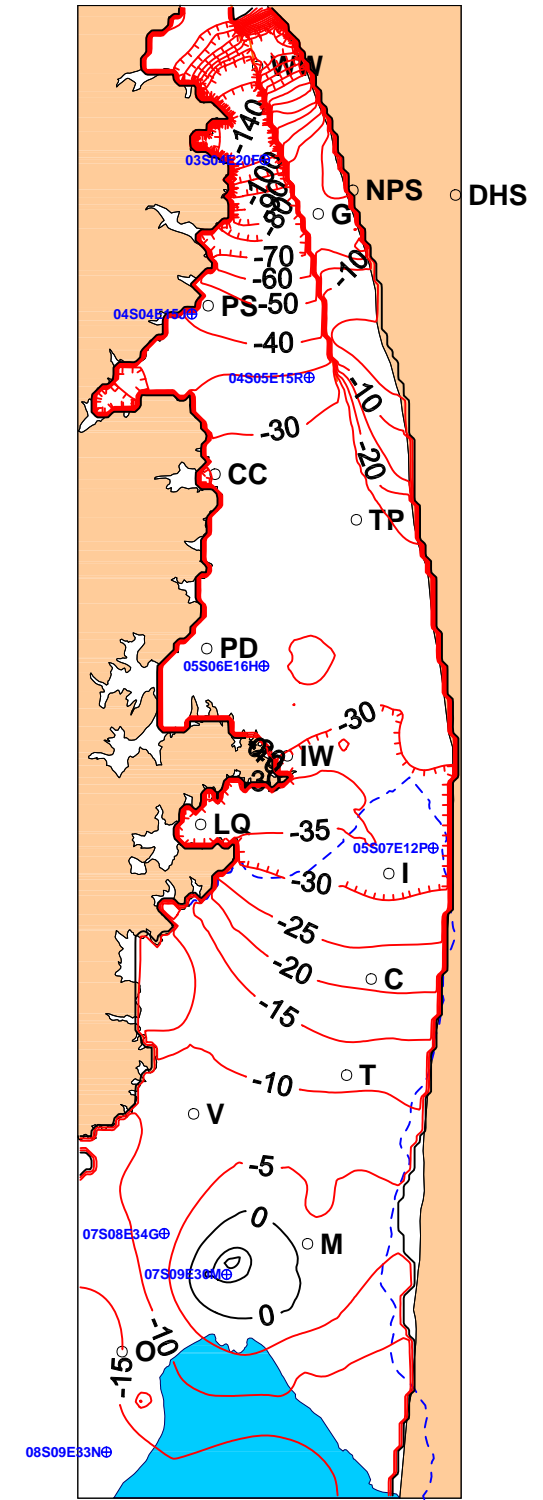
Contours represent feet above MSL

2009 Water Levels



Contours represent feet above MSL

Difference between 2009 and 1999

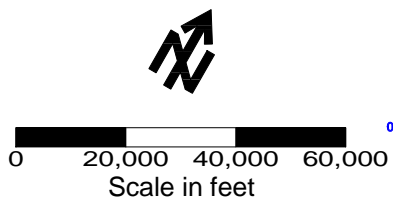


Difference in feet

City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis





	Salton Sea
	Basin Boundary
	Coachella Canal
	Faults
	Monitoring Well



- Notes:
- (1) Red lines with negative values indicate areas where water levels declined
  - (2) Black lines with positive values indicate where water levels increased

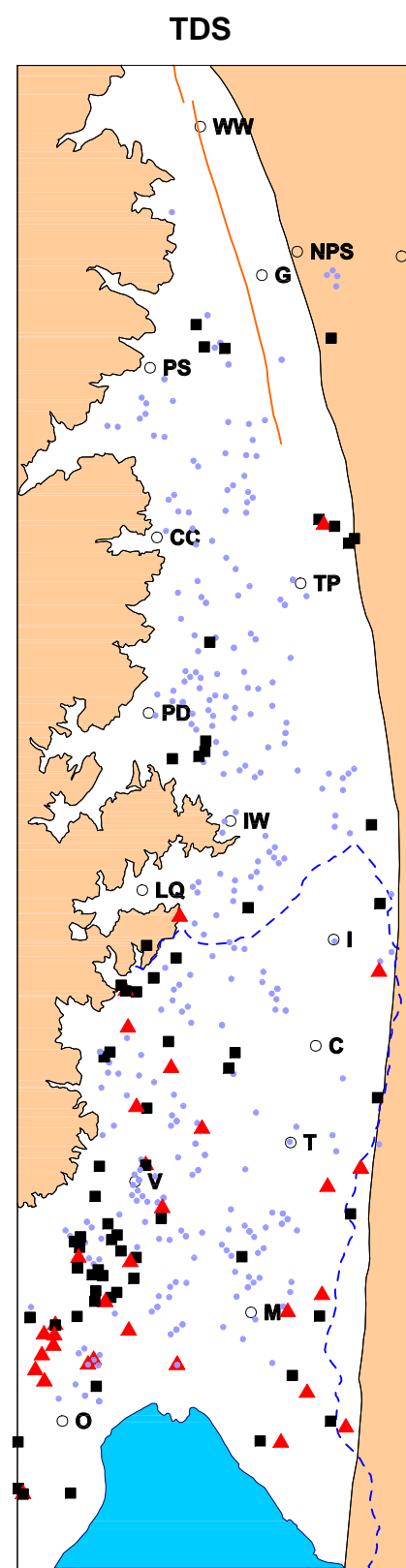


City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis

-  Salton Sea
-  Basin Boundary
-  Coachella Canal
-  Faults

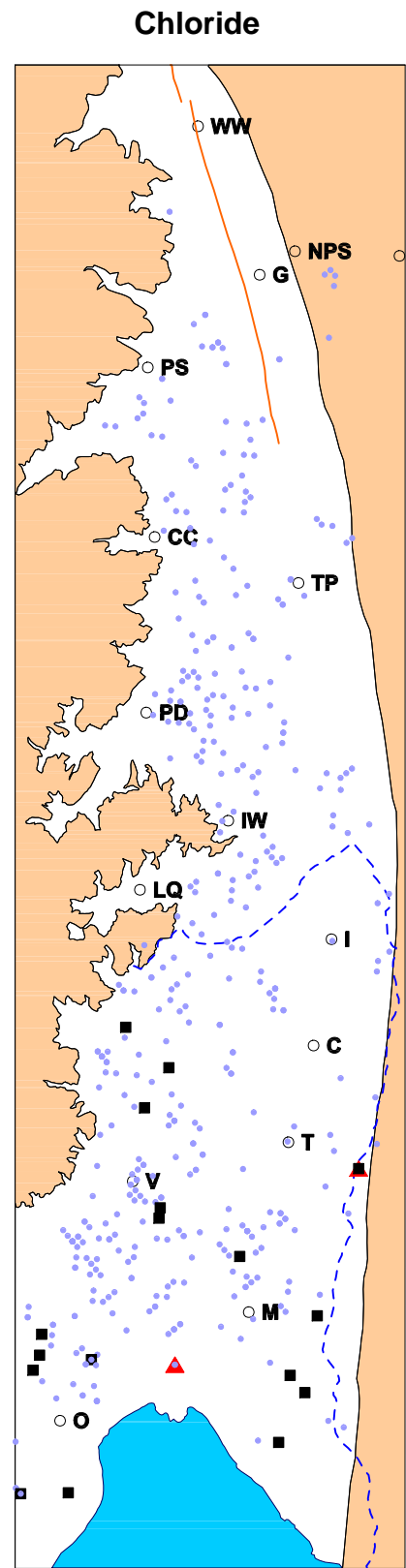


0 20000 40000 60000  
Scale in Feet



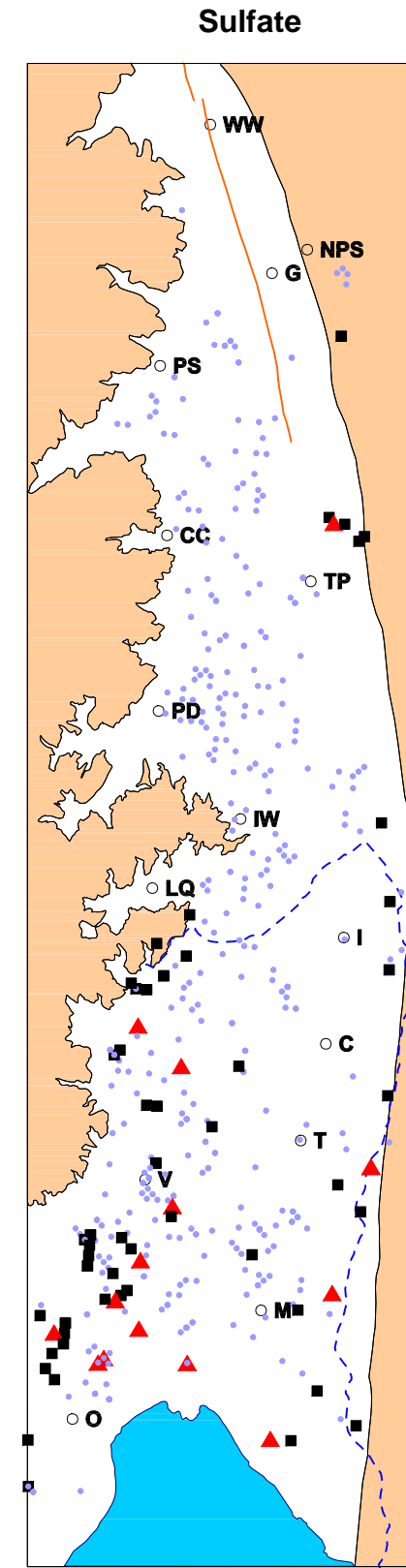
**TDS Concentrations (mg/L)**

- 0 to 500
- 500 to 1,000
- ▲ 1,000 to 16,000



**Chloride Concentrations (mg/L)**

- 0 to 250
- 250 to 500
- ▲ 500 to 6,000



**Sulfate Concentrations (mg/L)**

- 0 to 250
- 250 to 500
- ▲ 500 to 2,000

**Figure 6-8**  
**Total Dissolved Solids, Chloride and Sulfate Concentration Maps**  
**2000-2009**



**Nitrate**

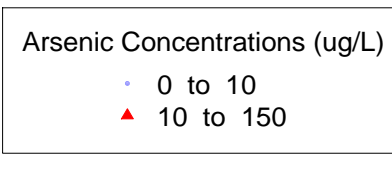
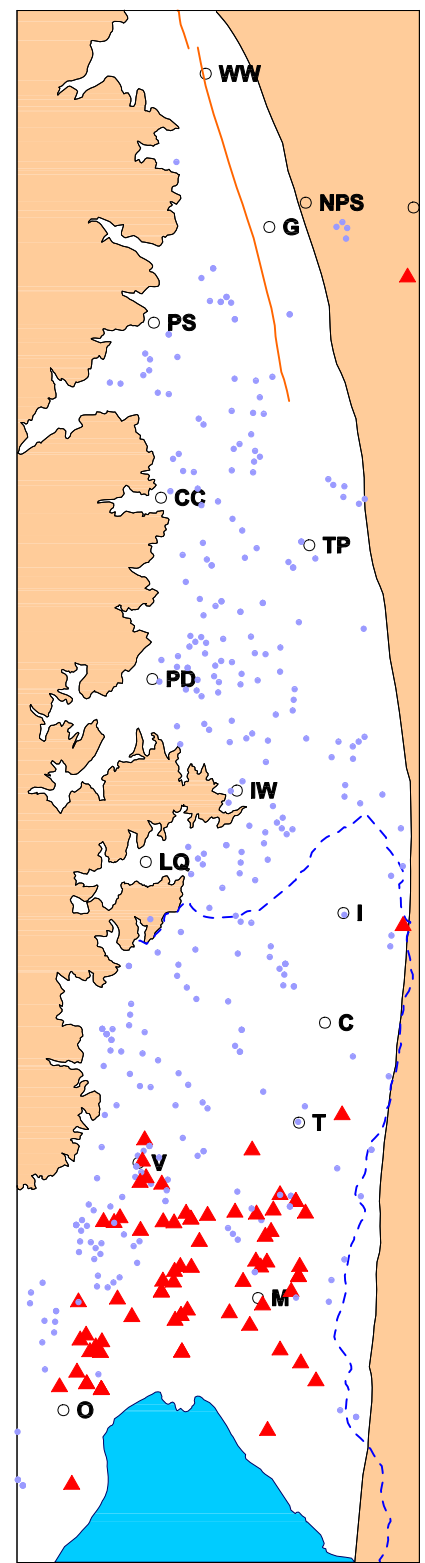
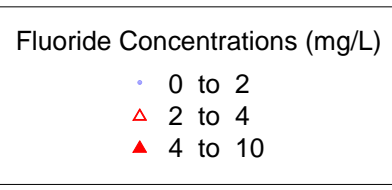
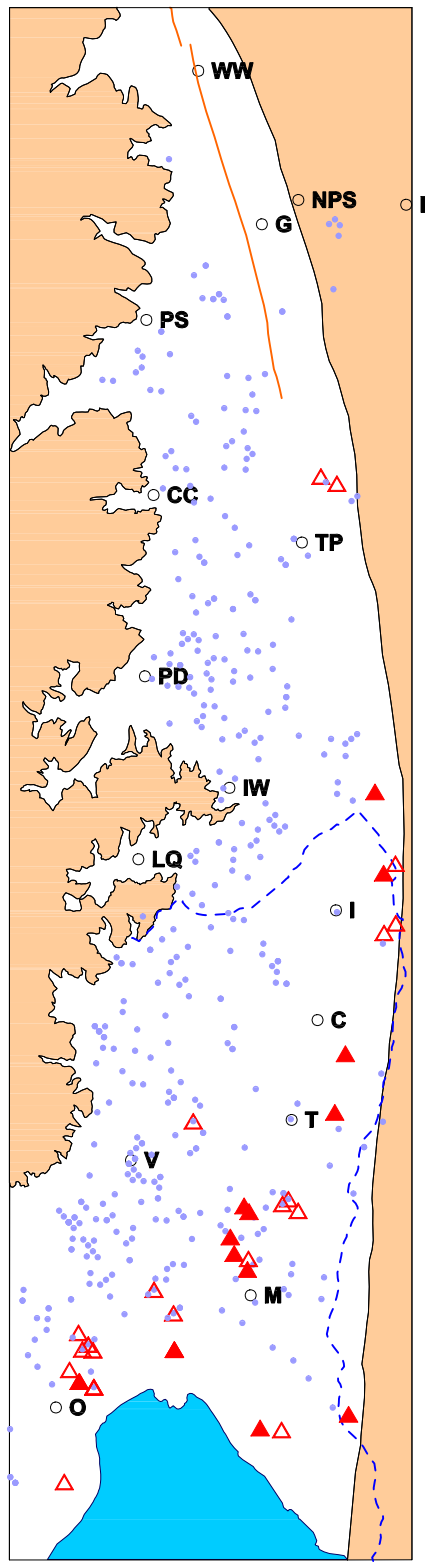
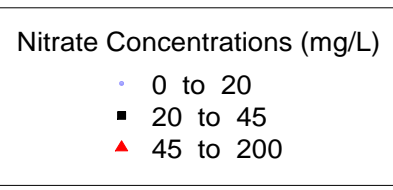
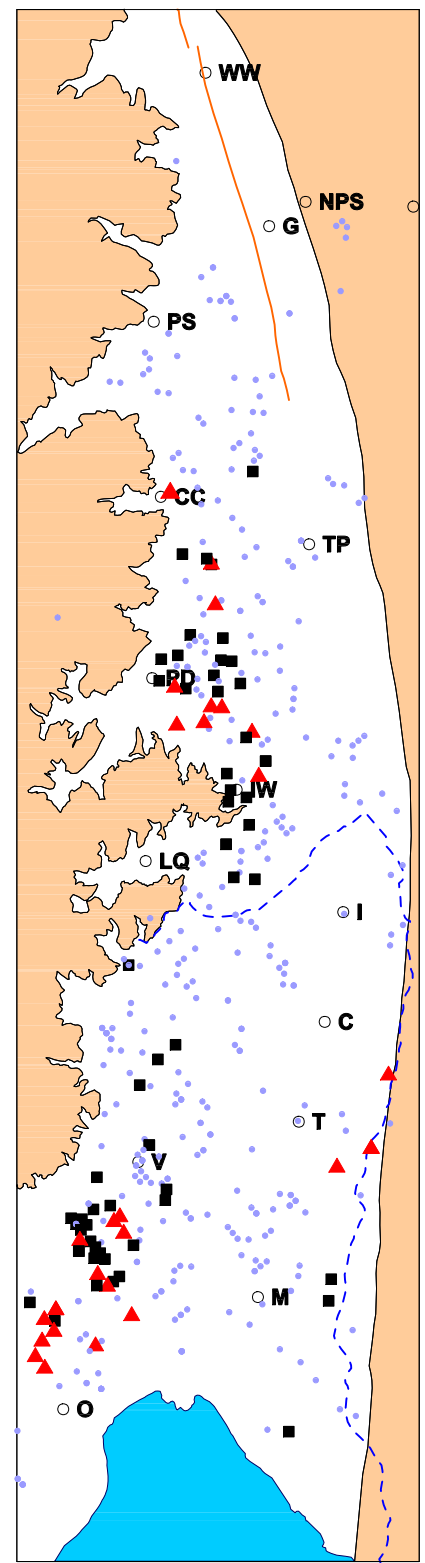
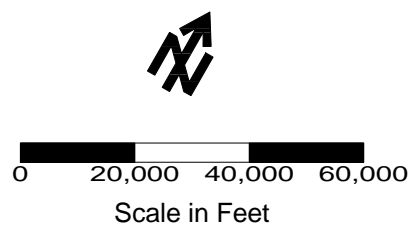
**Fluoride**

**Arsenic**

City Legend

Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis

-  Salton Sea
-  Basin Boundary
-  Coachella Canal
-  Faults



**Figure 6-9**  
Nitrate, Fluoride and Arsenic Concentration Maps  
2000-2009





### 6.2.7.4 Arsenic

Arsenic is a naturally occurring element found in the earth's crust. It is found to have carcinogenic and non-carcinogenic effects on health if ingested at high levels over a long period of time. Before 2001, the primary (health-based) drinking water standard for arsenic was 50 micrograms per liter ( $\mu\text{g/L}$ ). Under the 1996 Amendments to the Safe Drinking Water Act, the USEPA was required to publish a revised standard for arsenic by January 2001. USEPA published a final MCL for arsenic of 10  $\mu\text{g/L}$  on October 31, 2001. The new standard became enforceable on January 22, 2006. California adopted the federal MCL effective November 28, 2008.

In anticipation of the new regulations, CVWD commenced studies in 2004 to evaluate and design facilities to meet the new arsenic standard at several of its wells that exceeded the new requirements. Three groundwater treatment facilities were constructed using an ion-exchange process with a brine minimization and treatment process that produces a small volume of non-RCRA (Resource Conservation and Recovery Act) hazardous solid waste and a non-hazardous liquid waste. These facilities became operational in early 2006 and continue to operate. If needed, they can be expanded to treat additional wells in the future. The waste brine produced by the treatment process is hauled by trucks to Lakeland Processing Company located in Santa Fe Springs for final disposal.

Several mobile home and recreational vehicle (RV) parks in the East Valley that use private wells have arsenic levels exceeding the drinking water regulations. Several Tribal wells providing domestic water also have arsenic levels that exceed the MCL. In Coachella and the unincorporated East Valley communities of Mecca, Oasis and Thermal, Riverside County environmental health officials have identified wells at 19 mobile home and RV parks that recently tested positive for high levels of arsenic ranging from 12 to 91  $\mu\text{g/L}$  (Desert Sun, 2010). These parks are served by private wells and are located some distance from CVWD's potable water system. About half of the parks have installed treatment filters to reduce the arsenic levels. CVWD and other stakeholders have applied for funding to develop a regional solution for the arsenic issue.

**Figure 6-9** shows arsenic concentrations in the Valley over the past 11 years. Arsenic concentrations as high as 136  $\mu\text{g/L}$  have been observed in some East Valley municipal water supply wells (CVWD, 2000-2010 water quality data). About 20 percent of wells with reported monitoring results exceeded the arsenic MCL, all of which are in the southern portion of the East Valley.

### 6.2.7.5 Perchlorate

As discussed in **Section 5.2.1.3**, perchlorate ( $\text{ClO}_4^-$ ) is a contaminant from the solid salts of ammonium, potassium or sodium perchlorate. Perchlorate was detected in Colorado River water beginning in 1997. Since that time extensive source control at Las Vegas Wash has reduced perchlorate concentrations to less than the 4  $\mu\text{g/L}$  reporting detection limit and the 6  $\mu\text{g/L}$  California MCL.

## Section 6 – Groundwater Resources

---

In January 2011, the OEHHA released for public comment a new draft PHG of 1 µg/L for perchlorate in drinking water. The PHG is not an enforceable regulatory standard but rather is the level of a chemical contaminant in drinking water below which there is no known or expected risk to health. OEHHA's press release states that the proposed revision to the PHG is based on new research that indicates infants are more susceptible to the health effects of perchlorate. The State also released for comment its supporting documentation for the new proposed PHG (OEHHA, 2011). Once a final PHG is adopted, the DPH will commence development of a revised MCL if one is economically and technologically feasible.

CVWD monitored all its wells for perchlorate in 2000 and 2001 for the unregulated contaminant rule and additional voluntary monitoring was performed in 2003-2004. In 2008-2009, the CVWD performed two compliance tests for each well. All well measurements were less than the detection limit (<4 µg/L). Future CVWD well monitoring will consist of one sample every 9 years. DWA has detected low levels of perchlorate (below the MCL) in some wells since 2001 (DWA, 2011). Perchlorate levels in Coachella Valley groundwater over the past ten years range from less than detectable to 12 µg/L with 13 out of 647 samples being above the 6 µg/L MCL. Most of the wells where perchlorate has been detected are shallow private wells in the East Valley.

CVWD tests the Canal water for perchlorate once a year; the levels have been “non-detect.” This represents a substantial beneficial change in the environment since publication of the 2002 WMP and PEIR.

### 6.2.7.6 Other Constituents of Concern

A recent constituent of concern (COC) is hexavalent chromium (chromium-VI). Chromium-6 is currently regulated in California under the 50 µg/L MCL for total chromium. California's MCL for total chromium was established in 1977 under what was then a “National Interim Drinking Water Standard” for chromium. The total chromium MCL was established to address exposures to chromium-6, which is considered to be the more toxic form of chromium. The federal MCL for total chromium is 100 µg/L.

Since adoption of the 2002 WMP and PEIR, OEHHA released a draft PHG for public comment of 0.06 µg/L for chromium-6 in August 2009. In December 2010, OEHHA released a revised draft PHG of chromium-6 of 0.02 µg/L for public comment. The public comment period closed on February 15, 2011. Once the chromium PHG is finalized, DPH can proceed with the MCL process (DPH, 2011). In September, 2010, USEPA released a draft of the scientific assessment (Toxicological Review of Hexavalent Chromium) for public comment and external peer review. When this human health assessment is completed in 2011, USEPA will carefully review the conclusions and consider all relevant information to determine if a new standard needs to be set (USEPA, 2011).

Currently, there are no wells in the Coachella Valley that exceed the 50 µg/L MCL for total chromium. **Figure 6-10** shows the areal distribution of chromium-6 in the Valley, principally based on monitoring performed in the early 2000s. Based on that monitoring, there are over 100 wells in the Valley that have detectable levels of chromium-6. In January 2011, the USEPA recommended enhanced monitoring for chromium-6 by public water systems to: better inform their

consumers about the levels of chromium-6 in their drinking water, evaluate the degree to which other forms of chromium are transformed into chromium-6 in their drinking water and assess the degree to which existing treatment is affecting the levels of chromium-6 (USEPA, 2011).

Leaking underground storage tanks (LUSTs) in the more porous areas of the Coachella Valley can allow a significant amount of pollutants (e.g., petroleum hydrocarbons) to reach groundwater. Also, the gasoline oxygenate known as MTBE (methyl tertiary-butyl ether) has been a major problem. MTBE leaks have caused water districts within the Coachella Valley to temporarily shut down, and even abandon, drinking water wells. MTBE has been detected in monitoring wells at approximately 50 locations throughout the Coachella Valley since 1996, most of which are located in the communities of Cathedral City, Coachella and Indio (SWRCB Groundwater Ambient Monitoring and Assessment (GAMA), 2011). Since adoption of the 2002 WMP and PEIR, the use of MTBE in gasoline was banned in California beginning as of January 1, 2004. According to the SWRCB's GeoTracker website, as of March 2011, there are 36 open active LUST sites within the Whitewater River (Indio) Subbasin (SWRCB, 2011).

Tetrachloroethylene (PCE) is a dry cleaning solvent that is commonly in groundwater in urban areas. CVWD has one active well with detectable levels of PCE that are less than the MCL of 5 µg/L. Three other public supply wells have had detectable levels of PCE in the past ten years but currently are non-detect or inactive and no longer monitored.

Dibromochloropropane (DBCP), an agricultural pesticide commonly used until the 1970's, has been detected in five CVWD wells and one IWA well, all of which are less than the MCL of 0.2 µg/L. Three of the CVWD wells have been deactivated due to nitrate contamination. Some DBCP is found in groundwater in isolated areas of Palm Desert, Indian Wells and La Quinta, but has not been found in wells screened deeper than 750 feet in these areas. The source of the DBCP is believed to be grape vineyards located north of Interstate 10 in the 1960s and 1970s.

### 6.3 SIGNIFICANCE CRITERIA

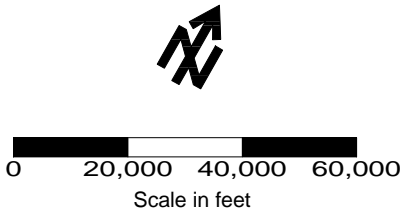
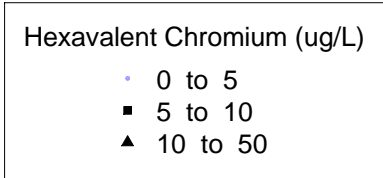
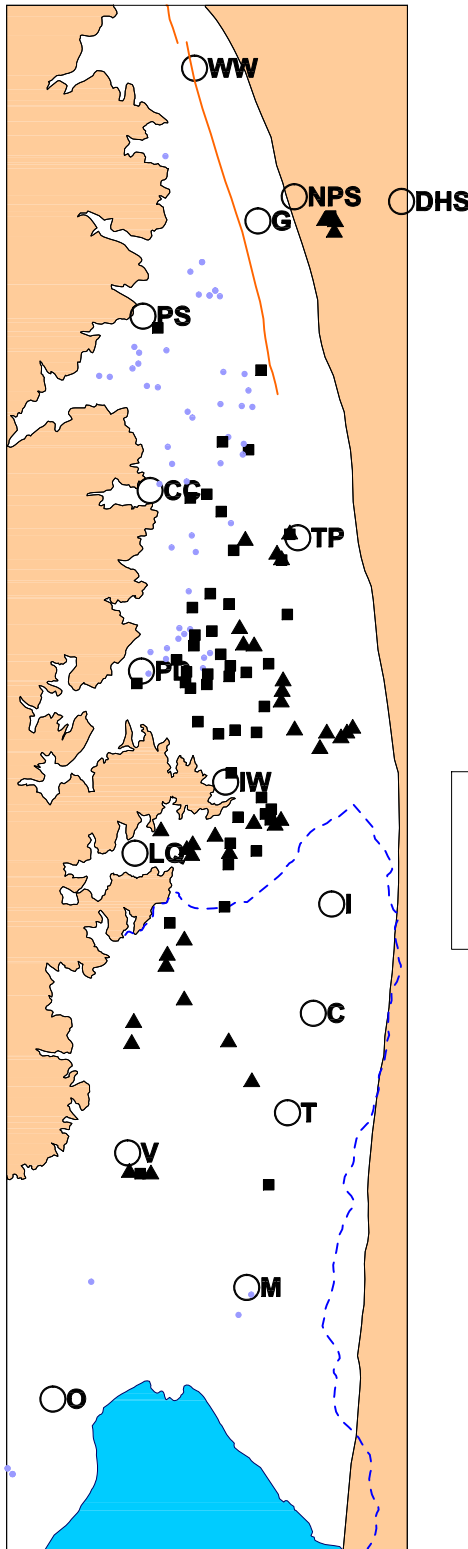
Groundwater impact significance criteria applied in the 2002 WMP PEIR Section 6.4 were the following. These criteria are applied to the 2010 WMP Update SPEIR as well, updated to the current target planning year.

#### 6.3.1 Groundwater Overdraft

Based on State CEQA Guidelines, Appendix G, the Proposed Project would have a significant impact on groundwater quantity if it:

- substantially depletes groundwater supplies or interferes 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).

- Legend
- |              |                    |
|--------------|--------------------|
| Abbreviation | City Name          |
| WW           | Whitewater         |
| G            | Garnet Hill        |
| NPS          | North Palm Springs |
| PS           | Palm Springs       |
| DHS          | Desert Hot Springs |
| CC           | Cathedral City     |
| TP           | Thousand Palms     |
| PD           | Palm Desert        |
| IW           | Indian Wells       |
| LQ           | La Quinta          |
| I            | Indio              |
| C            | Coachella          |
| T            | Thermal            |
| V            | Valerie            |
| M            | Mecca              |
| O            | Oasis              |
- 
- |                                                                                     |                 |
|-------------------------------------------------------------------------------------|-----------------|
|  | Salton Sea      |
|  | Basin Boundary  |
|  | Coachella Canal |
|  | Faults          |



**Figure 6-10**  
**Hexavalent Chromium Concentrations**  
**2000-2009**

### 6.3.2 Groundwater Levels

CVWD considers that the Proposed Project would have a significant impact if it results in a substantial increase in the rate of decline in groundwater levels in the Coachella Valley beyond seasonal variations.

### 6.3.3 Groundwater Rights

CVWD considers that the Proposed Project would have a significant impact if it reduces the ability of groundwater users to exercise their right to use groundwater for reasonable beneficial use.

### 6.3.4 Groundwater Quality

CVWD considers the Proposed Project would have a significant impact on groundwater quality if it:

- Substantially increases the rate of salt accumulation in the basin above the existing trend;
- Results in water quality that exceeded a primary or secondary drinking water standard established by the DPH; or
- Impairs a designated beneficial use of the groundwater in a particular area.

## 6.4 IMPACTS

The evaluation of groundwater impacts compares the impacts of the Proposed Project with current and projected conditions evaluated in the 2002 WMP. Predictions of future groundwater conditions are based on the output of the groundwater flow model for the Coachella Valley. Groundwater level and water balance impacts are evaluated in annual intervals through 2045. Tabular results are presented for 2009, 2020 and 2045.

### 6.4.1 Groundwater Balance and Overdraft

As discussed above, the groundwater balance accounts for basin inflows and basin outflows and estimates the annual change in storage. The following section compares the projected impacts under 2002 WMP and Proposed Project conditions through 2045 as well as under current (2009) conditions. The Coachella Valley groundwater model is used to project future changes in groundwater inputs and outputs and the resulting changes in basin storage and outflows to the drain system. The model assumes long-term average hydrologic conditions for 2010 through 2045.

The PEIR for the 2002 WMP projected that the groundwater balance for the Whitewater River Subbasin would be balanced in 2035, a substantial beneficial impact compared to conditions in the absence of the WMP. The changes in development patterns anticipated with the 2010 WMP Update required modification to some of the programs proposed in the 2002 WMP. As described in **Section 3**, these modifications consist of the addition of a recharge facility in Indio,

## Section 6 – Groundwater Resources

---

potential reductions in the amount of recharge at the proposed Martinez Canyon facility, substantial increases in the amount of treated Canal water used for urban water supply, development of a non-potable urban water system for outdoor irrigation and increased desalination of drain water.

**Table 6-3** presents the current (2009) and projected (2020 and 2045) water budget for the Valley with implementation of the Proposed Project for average hydrologic conditions. **Figure 6-11** shows the historical and projected change in groundwater storage for the West and East Valleys and the annual groundwater overdraft. The annual change in storage for the West Valley remains slightly negative for 2011 through 2018, becoming positive thereafter. Annual change in storage in the East Valley is projected to be positive throughout the planning period. Groundwater overdraft for the Valley is computed as described in **Section 6.2.5.4** and is positive for the duration of the planning period, varying from about 11,000 AFY to almost 40,000 AFY.

### 6.4.2 Groundwater Levels

The groundwater model results are also used to project groundwater level trends for the Proposed Project. The 2002 PEIR evaluated groundwater level changes in 2015 and 2035. This SPEIR evaluates groundwater level changes in 2020 and 2045. Since the groundwater model assumes considered long-term average hydrologic conditions in the future, the groundwater level changes should be considered trends; actual levels in any particular year could be above or below these trends depending on hydrologic conditions and availability of imported water supplies.

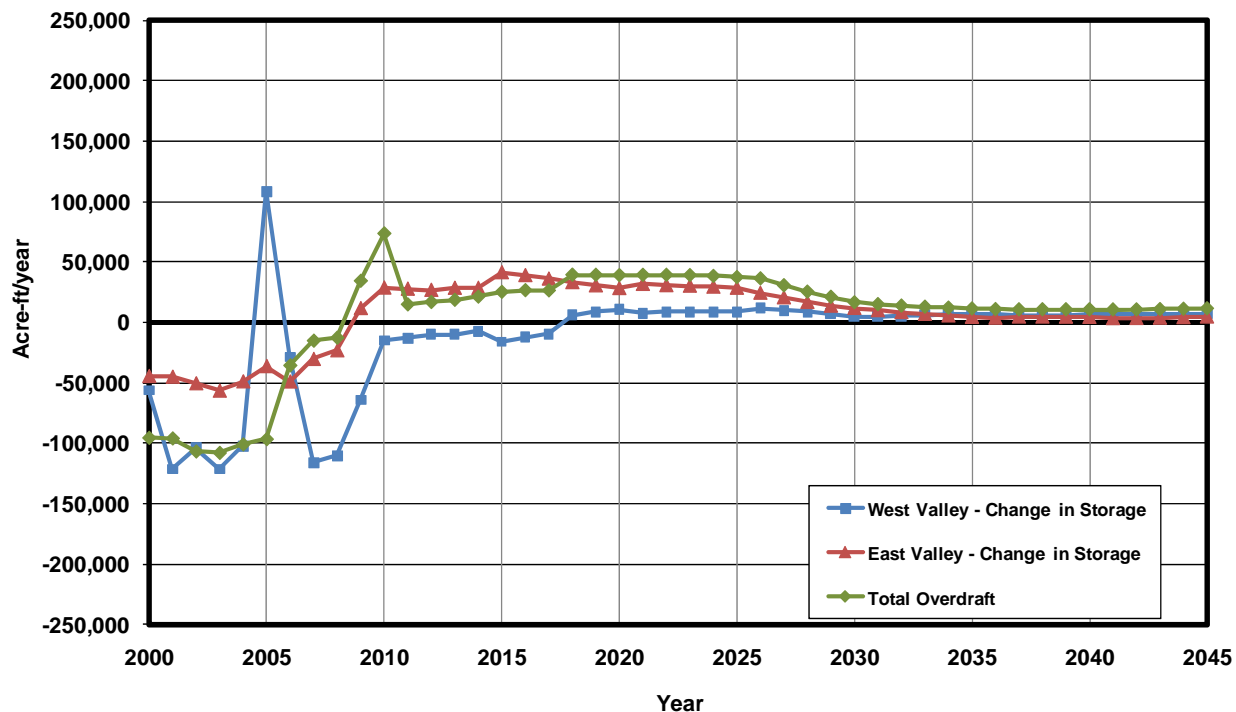
**Table 6-3  
Summary of Coachella Valley Water Budget for Proposed Project**

	2009			2020			2045		
	West Valley	East Valley	Total	West Valley	East Valley	Total	West Valley	East Valley	Total
<b>Inflows – AFY</b>									
Natural Recharge	19,100	1,700	20,800	40,800	5,100	45,900	40,800	5,100	45,900
Returns from Use	70,900	156,300	227,200	46,700	104,800	151,500	54,600	114,300	168,900
Wastewater Percolation	9,200	700	9,900	2,800	600	3,400	3,700	1,100	4,800
SWP Exchange Recharge	55,900	0	55,900	65,800	0	65,800	57,200	0	57,200
Canal Water Recharge	0	21,300	21,300	21,200	48,000	69,200	29,300	68,600	97,900
Inflow from Outside Study Area	11,200	200	11,400	11,200	200	11,400	11,200	200	11,400
Salton Sea Intrusion	0	1,800	1,800	0	1,400	1,400	0	500	500
Inflow from West Valley	0	32,900	32,900	0	18,400	18,400	0	11,900	11,900
<b>Total Inflows</b>	<b>166,300</b>	<b>214,900</b>	<b>381,200</b>	<b>188,500</b>	<b>178,500</b>	<b>367,000</b>	<b>196,800</b>	<b>201,700</b>	<b>398,500</b>
<b>Outflows – AFY</b>									
Groundwater Pumping	197,700	160,800	358,500	159,000	97,200	256,200	177,800	82,900	260,700
Flows to Drains <sup>1</sup>	0	37,300	37,300	0	47,300	47,300	0	104,200	104,200
Evapotranspiration	0	4,300	4,300	0	5,200	5,200	0	8,100	8,100
Outflow to Salton Sea	0	700	700	0	700	700	0	1,600	1,600
Outflow to East Valley	32,900	0	32,900	18,400	0	18,400	11,900	0	11,900
<b>Total Outflows</b>	<b>230,600</b>	<b>203,100</b>	<b>433,700</b>	<b>177,400</b>	<b>150,400</b>	<b>327,800</b>	<b>189,700</b>	<b>196,800</b>	<b>386,500</b>
<b>Change in Storage</b>									
Annual Change in Storage - AFY	-64,300	11,800	-52,500	11,100	28,100	39,200	7,100	4,900	12,000
<b>Annual Overdraft – AFY<sup>2</sup></b>									
Local Supply Adjustment	21,700	3,400	25,100	0	0	0	0	0	0
SWP Recharge Adjustment	61,800	0	61,800	0	0	0	0	0	0
<b>Total Overdraft</b>	<b>19,200</b>	<b>15,200</b>	<b>34,400</b>	<b>11,100</b>	<b>28,100</b>	<b>39,200</b>	<b>7,100</b>	<b>4,900</b>	<b>12,000</b>

**Note:**

1. Flows for 2009 are actual and projected for 2020 and 2045.
2. Annual overdraft equals change in storage plus local supply and SWP recharge adjustments to reflect long-term average conditions. Since long-term averages are used for 2011 and beyond, no adjustments are required.

## Section 6 – Groundwater Resources



**Figure 6-11**  
**Historical and Projected Change in Storage and Overdraft**  
**Proposed Project**

### 6.4.2.1 Lower Aquifer Levels

**Figure 6-12** presents a comparison of groundwater elevations between 2009 and 2020 and the anticipated change in groundwater levels between these years. This figure shows that groundwater levels in the West Valley in the vicinity of the Whitewater Recharge Facility are expected to increase by up to 80 feet (ft). This increase is primarily the result of the resumption of average SWP Exchange water deliveries for recharge compared to the relatively dry conditions that preceded 2009 and depressed the 2009 groundwater elevations. Groundwater levels could be much higher than shown during wet periods, when SWP Exchange water deliveries are higher. Groundwater levels could be lower than shown during dry periods. It is not unusual for groundwater levels near the replenishment facility to vary over 200 ft within a ten-year period.

Groundwater levels from about Palm Springs to the vicinity of Indian Wells and Indio are expected to decline by up to 20 ft and up to 30 ft near Thousand Palms. This decline is the result of continued pumping for urban and golf course use and the timing of completion of the Mid-Valley Pipeline (MVP) project, which would bring in-lieu replenishment water to this area. Groundwater level declines in the Garnet Hill Subbasin are being evaluated as part of the ongoing water management plan for the Mission Creek and Garnet Hill Subbasins. Groundwater levels in the East Valley are expected to rise by up to 60 ft near the Levy facility and between 0 and 40 ft in the rest of the East Valley.



**Figure 6-13** presents the projected groundwater level changes between 2009 and 2045. This figure shows that, with the exception of the Garnet Hill Subbasin, groundwater levels throughout the Valley are expected to increase by 10 to over 90 ft. The most pronounced increases are expected to occur near the replenishment facilities while the least increase is expected in the area between Cathedral City and Palm Desert/Indian Wells which are farthest from the replenishment facilities. Increased levels in these areas are the result of converting golf courses from groundwater pumping to imported water delivered through the MVP system, which is an element of the Proposed Project. Groundwater level changes in the East Valley are expected to range from 20 to over 90 feet.

A comparison was made between anticipated groundwater elevation in 2015 and 2035 for the Proposed Project and the 2002 WMP and PEIR. This comparison indicated that groundwater elevations from about Thermal to the Whitewater Recharge Facility would be between 5 and 110 ft lower with the 2010 WMP Update than with the 2002 WMP. This decline is a result of delayed implementation of the MVP and Levy facility projects, coupled with reduced SWP Exchange water availability as a result of drought and delivery issues in the Delta.

**Figure 6-14** presents groundwater elevation hydrographs for the same selected wells in the Valley as presented in **Figure 6-6**. In the northern portion of the West Valley, these hydrographs show a gradual increase of about 50 ft in 35 years. In the Palm Desert area, the hydrograph shows an increase of 20-30 ft in this period. The Indio area is expected to experience an increase of nearly 60 ft while other portions of the East Valley show a relatively rapid increase until about 2030, followed by a more gradual increase thereafter. Based upon the groundwater modeling results, the Proposed Project would initially have a slight adverse impact on water levels until about 2020 and would have a beneficial effect on water levels as a whole over the 35-year planning period.

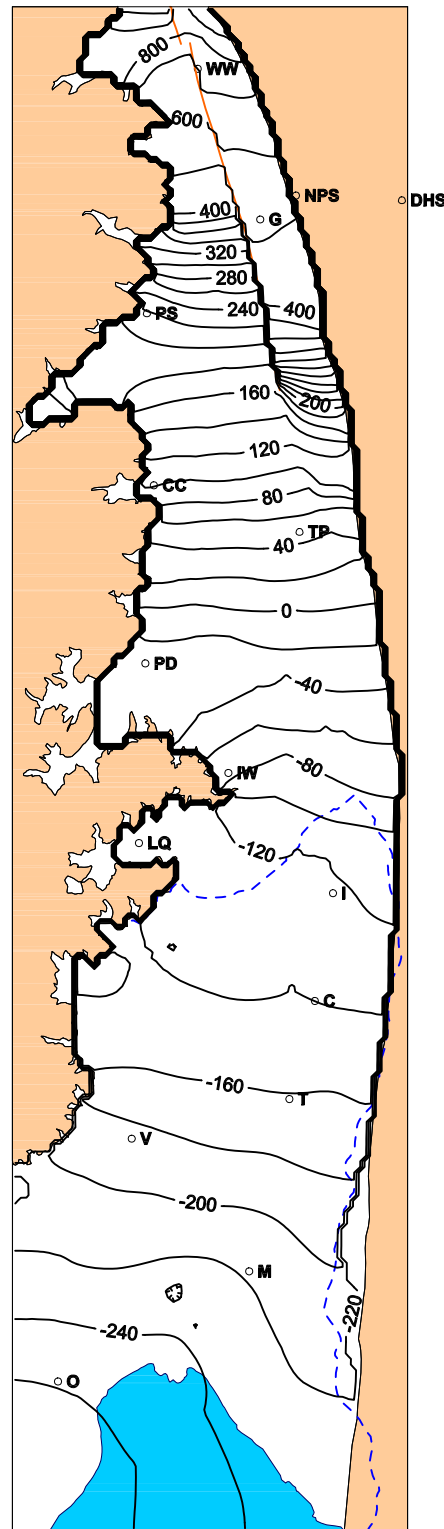
Historically, the East Valley experienced artesian flowing conditions. However, since the early 1990s, groundwater overdraft reduced water levels to the extent that flowing conditions were unusual. By reducing and eliminating overdraft, the Proposed Project would partially restore groundwater levels to levels approaching historical conditions. This could result in a significant number of wells experiencing artesian conditions. Since 2009, CVWD has observed a number of wells that have static groundwater levels above the ground surface and some of these wells were leaking water due to insufficient construction.

**Figure 6-15** shows projected Lower aquifer groundwater levels in the East Valley relative to ground surface. The areas shown in shades of red have water levels that are at or above the ground surface and indicate the potential for artesian-flowing conditions in groundwater wells.

In 2009, there were very few areas with Lower aquifer groundwater levels at or above the ground observed surface. However, by 2020, the area that could experience artesian conditions has enlarged, with pressure heads reaching about 20 ft above ground surface because of upward water pressure. By 2045, the area of artesian conditions has enlarged further with heads reaching as much as 80 ft above ground surface. Due to the geological conditions of the basin, it is not possible to control overdraft without restoring water levels in the basin and an associated resumption of artesian well conditions.

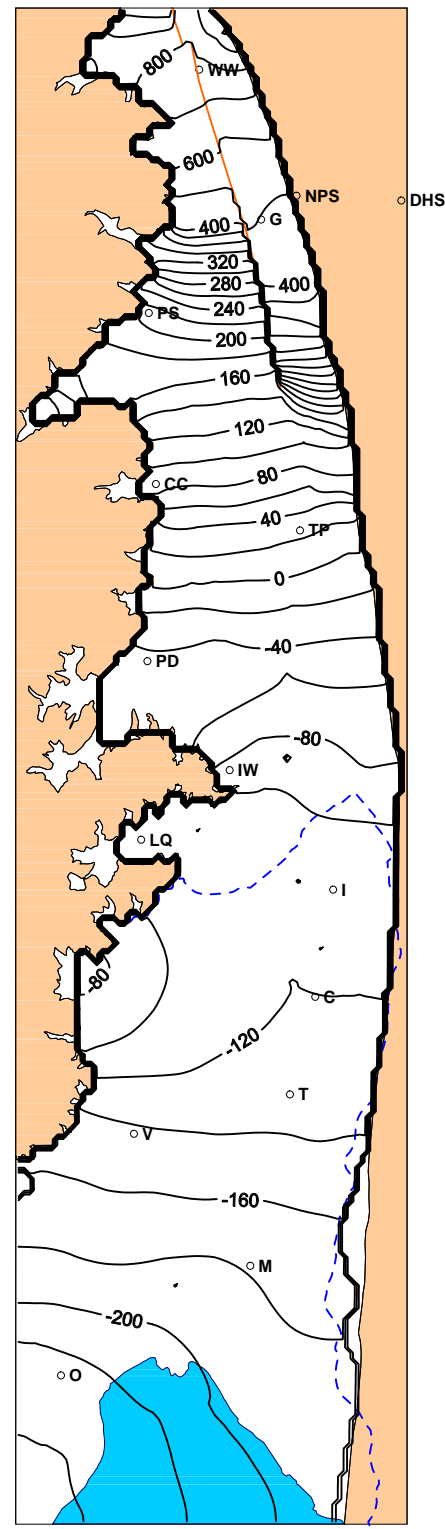
This Page Is Blank Intentionally

2009 Water Levels



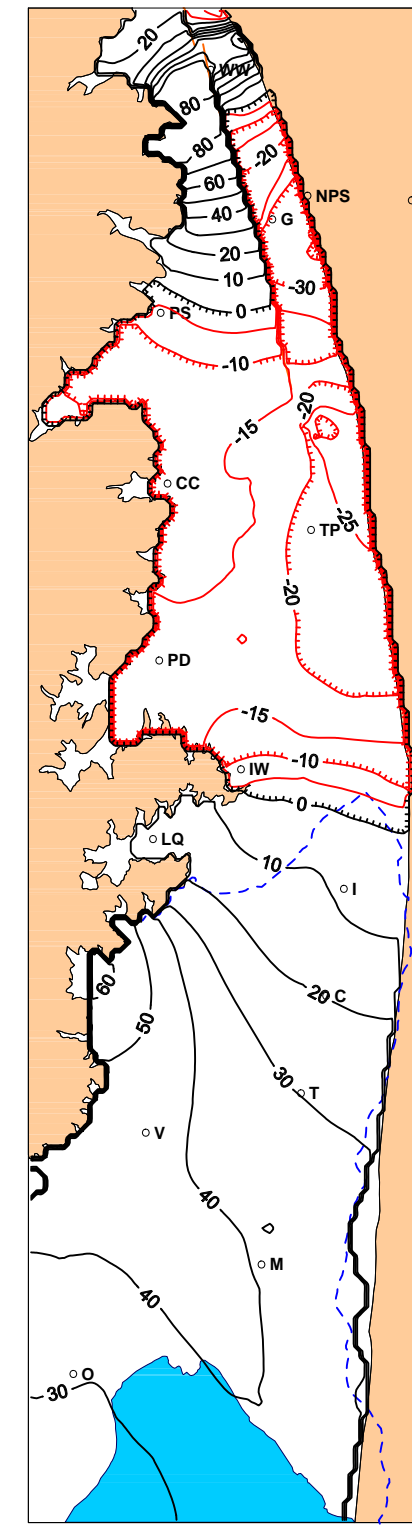
Contours represent feet above MSL

2020 Water Levels



Contours represent feet above MSL

Difference between 2009 and 2020

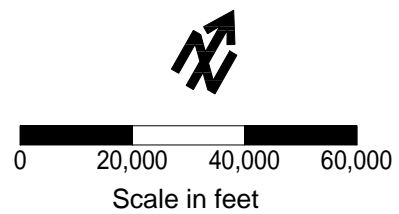


Difference in feet

- Notes:
- (1) Red lines with negative values indicate where water levels declined
  - (2) Black lines with positive values indicate where water levels increased

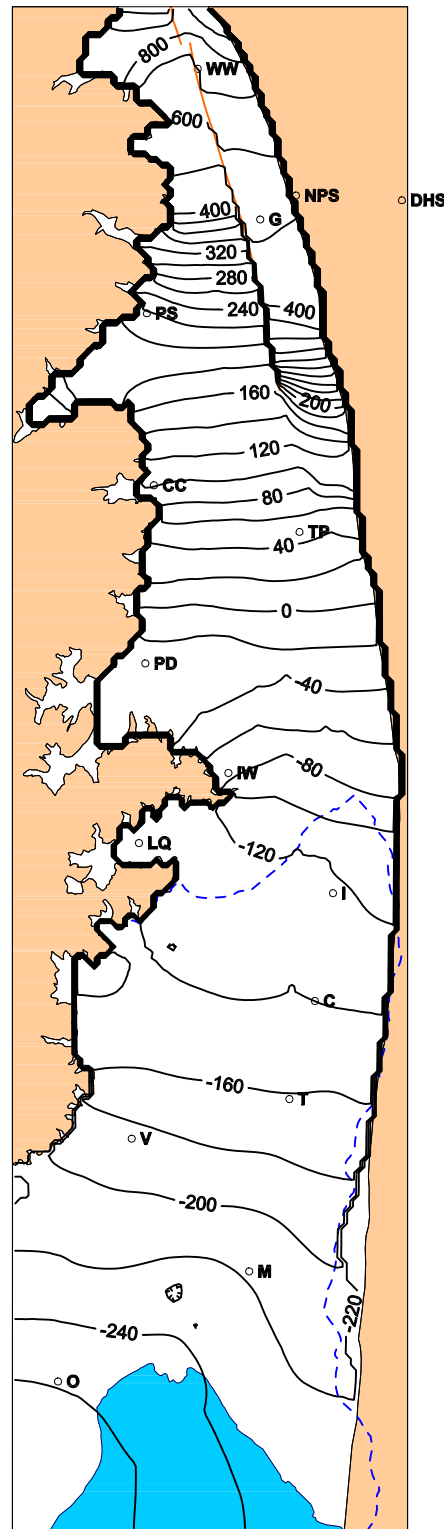
City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis

- Salton Sea
- Basin Boundary
- Coachella Canal
- Faults



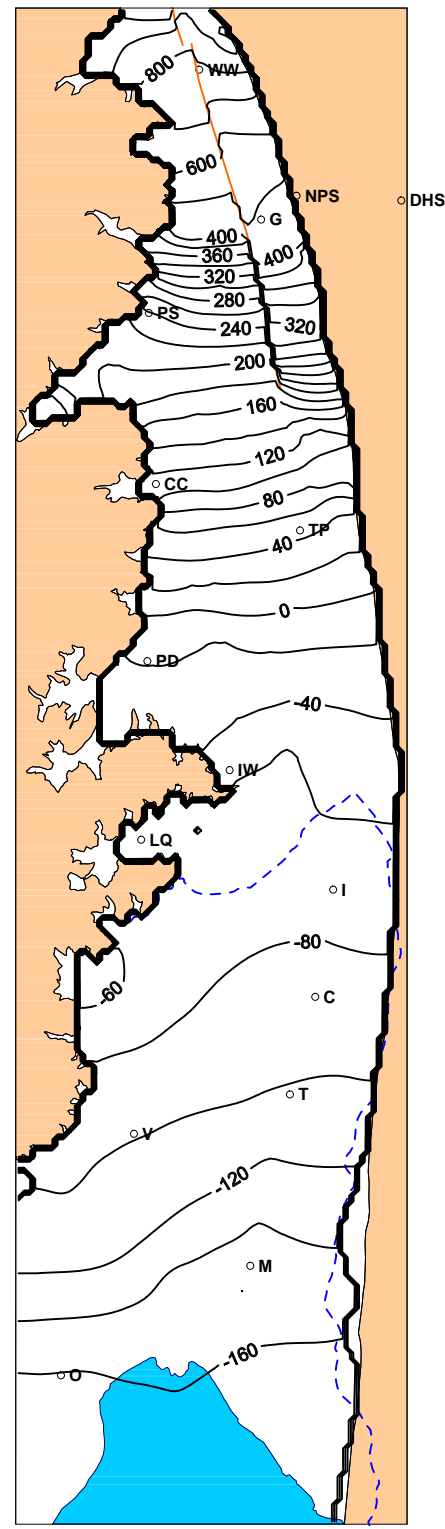


2009 Water Levels



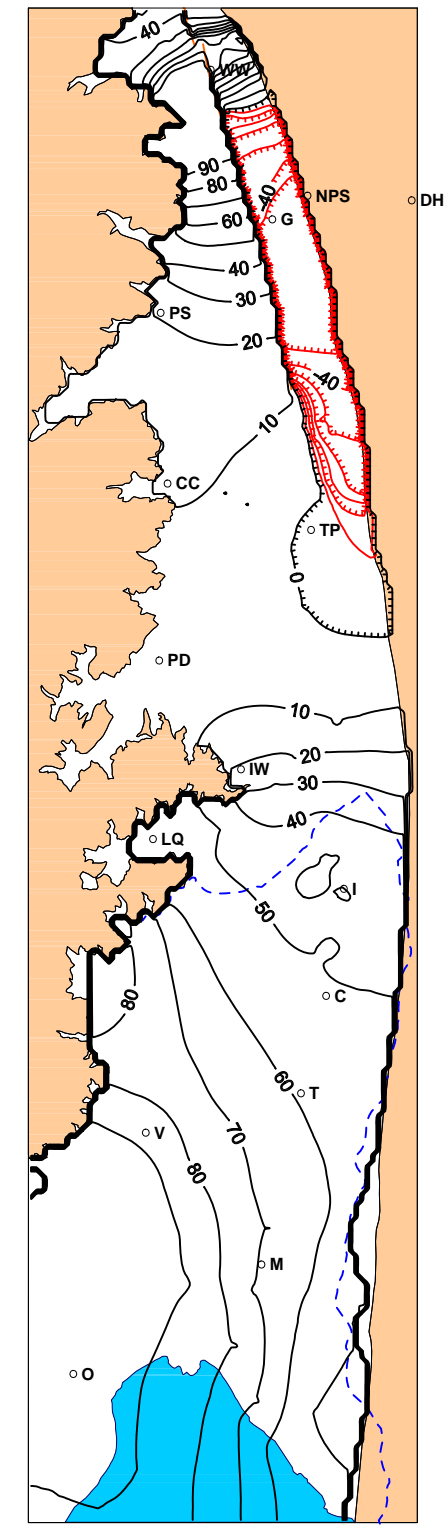
Contours represent feet above MSL

2045 Water Levels



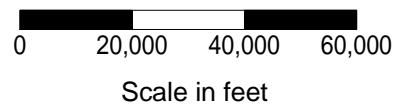
Contours represent feet above MSL

Difference between 2009 and 2045



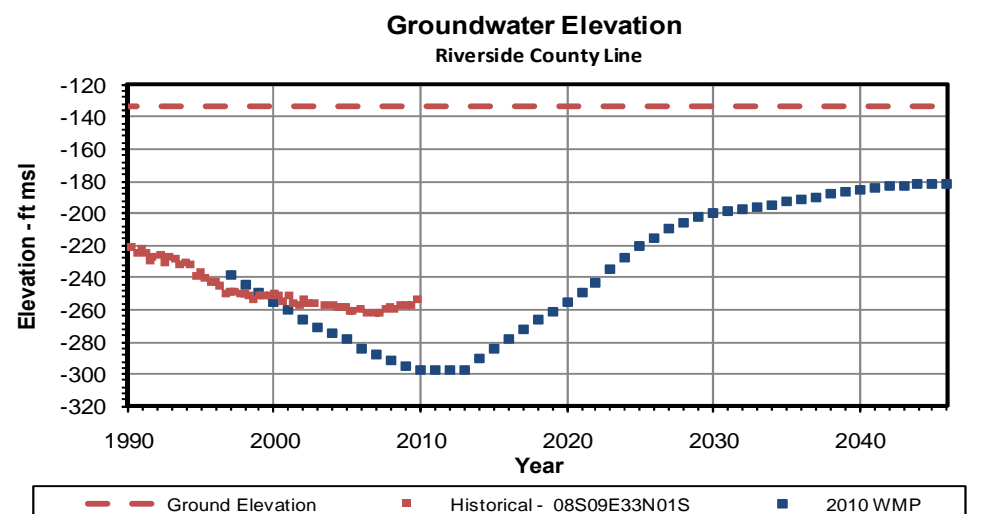
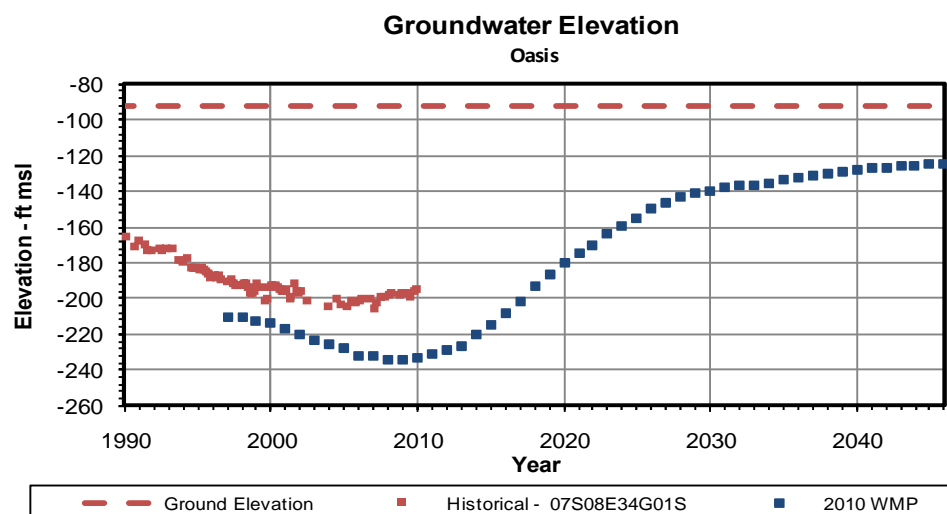
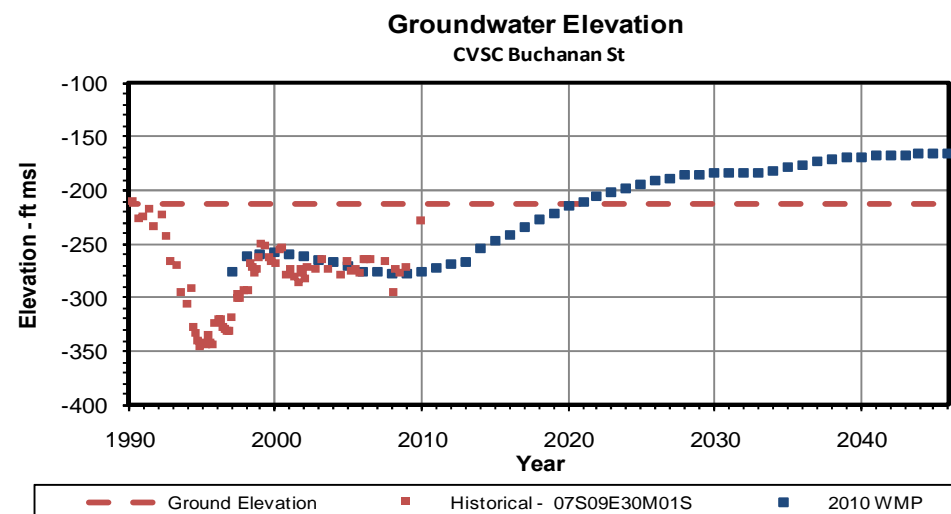
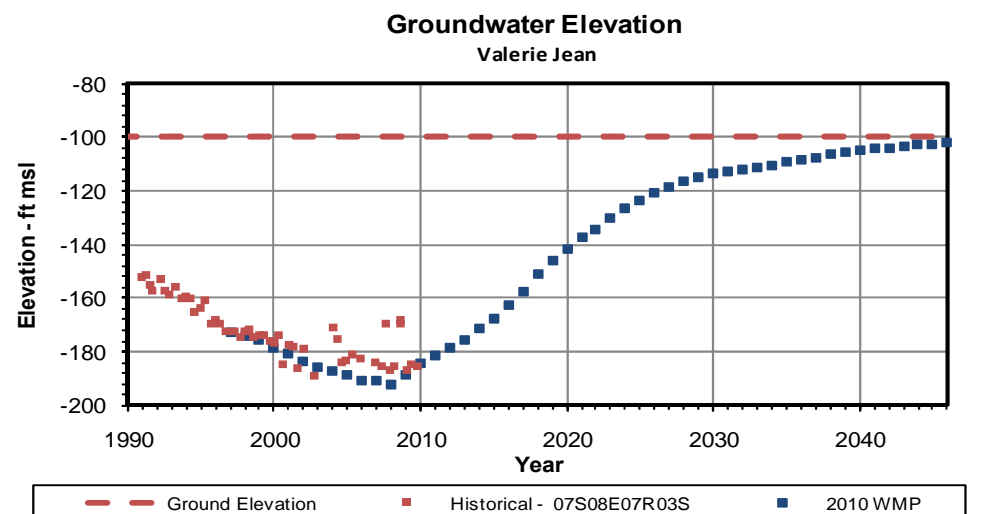
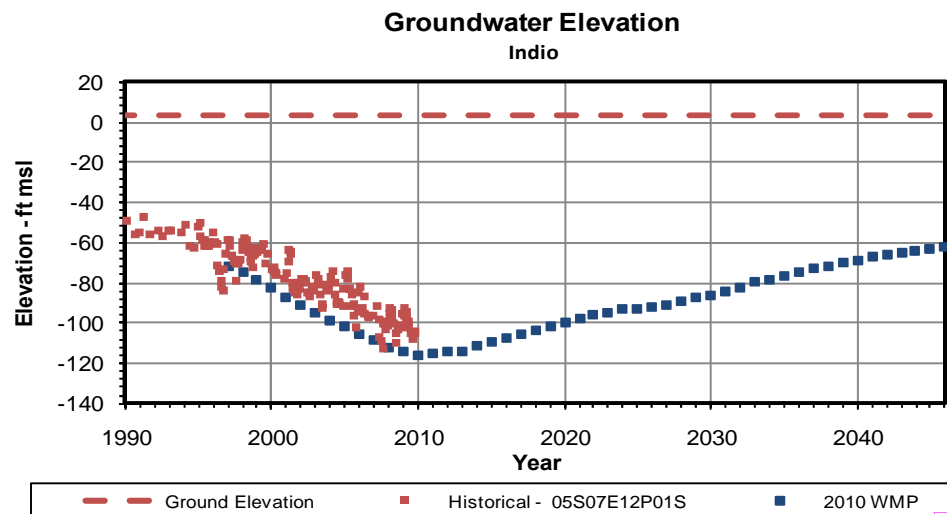
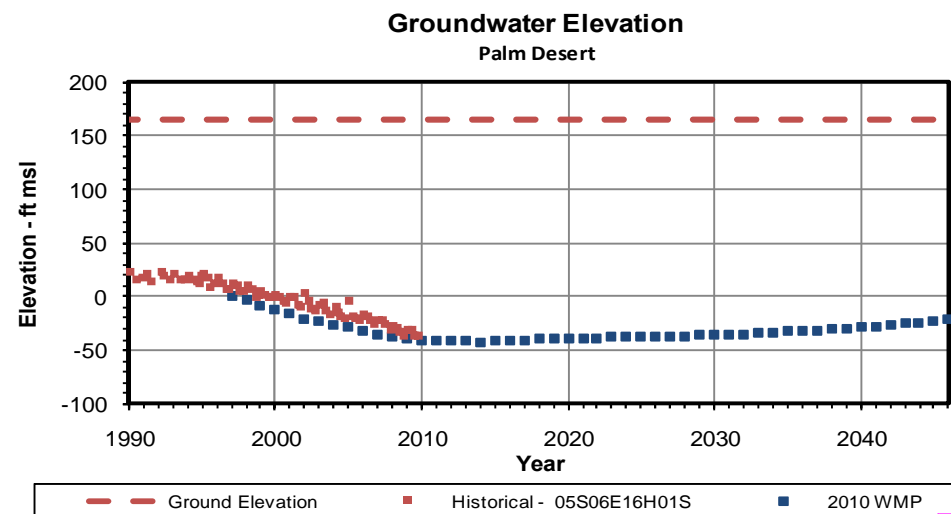
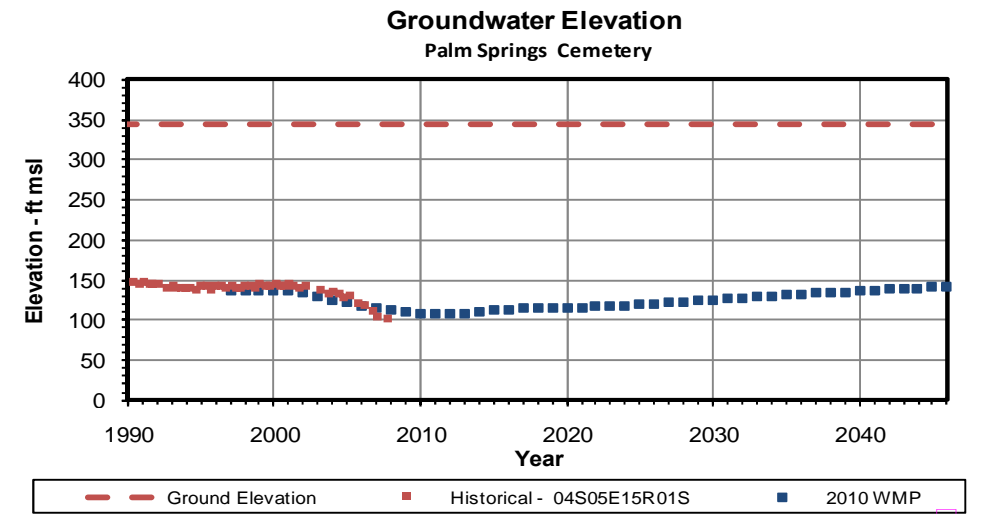
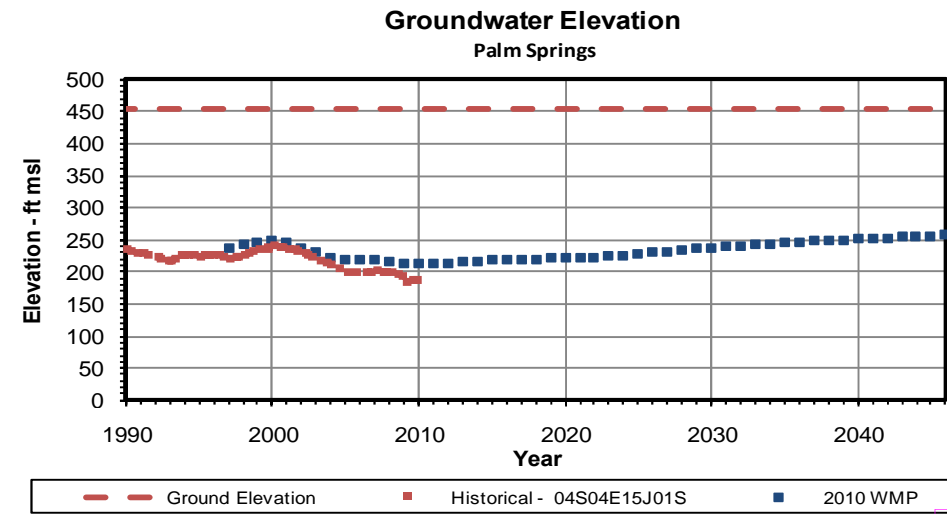
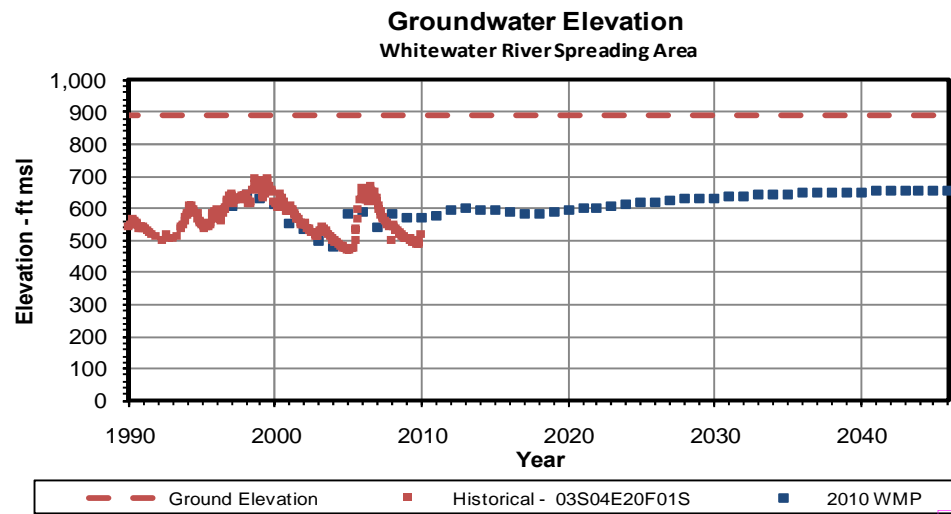
Difference in feet

City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis
	Salton Sea
	Basin Boundary
	Coachella Canal
	Faults



Notes:  
 (1) Red lines with negative values indicate where water levels declined  
 (2) Black lines with positive values indicate where water levels increased





**Figure 6-14**  
**Projected Groundwater Elevation Hydrographs for Proposed Project**  
**2009 - 2045**





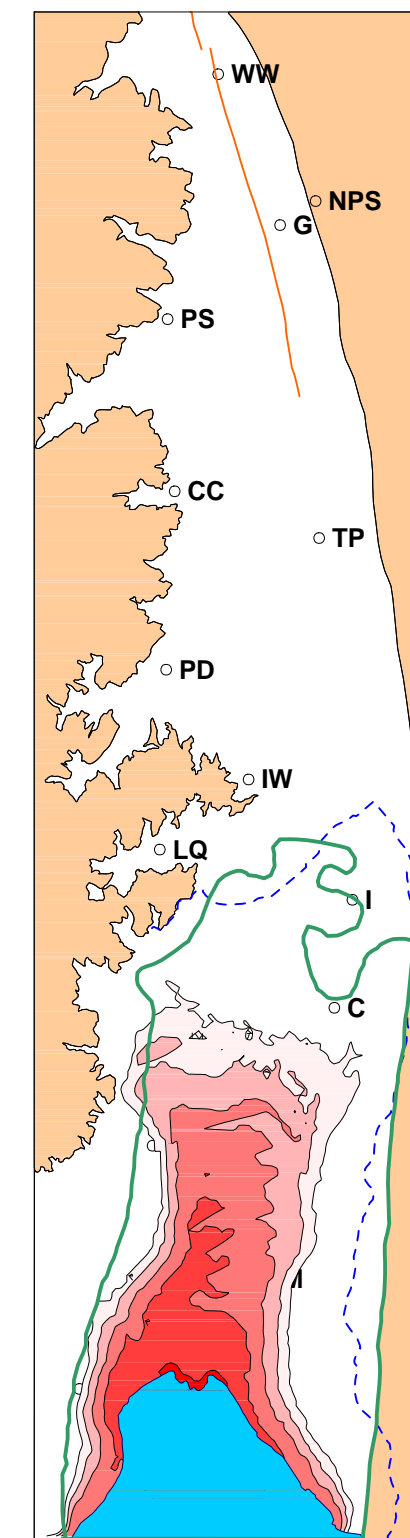
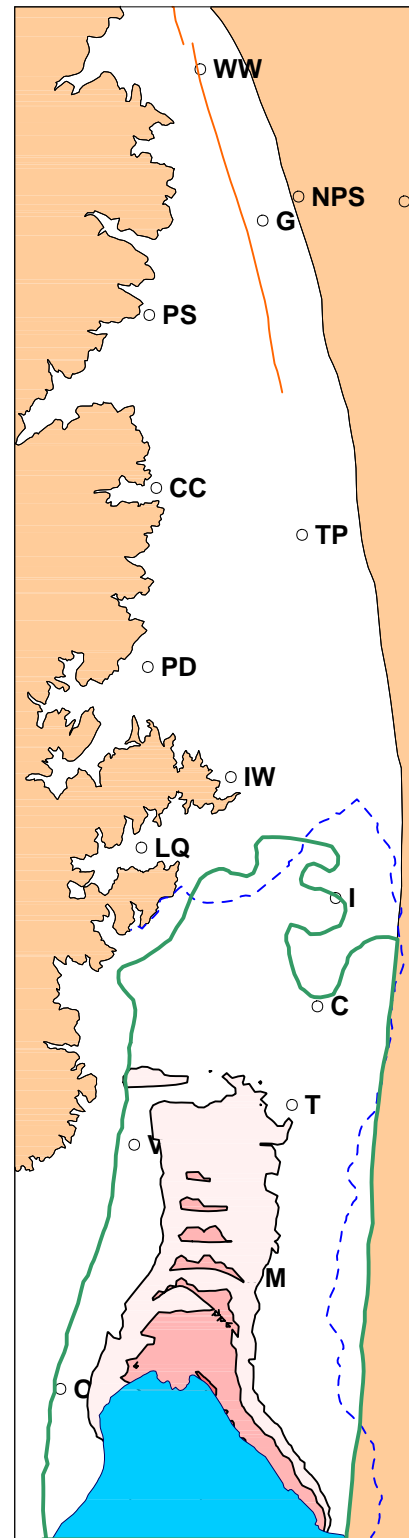
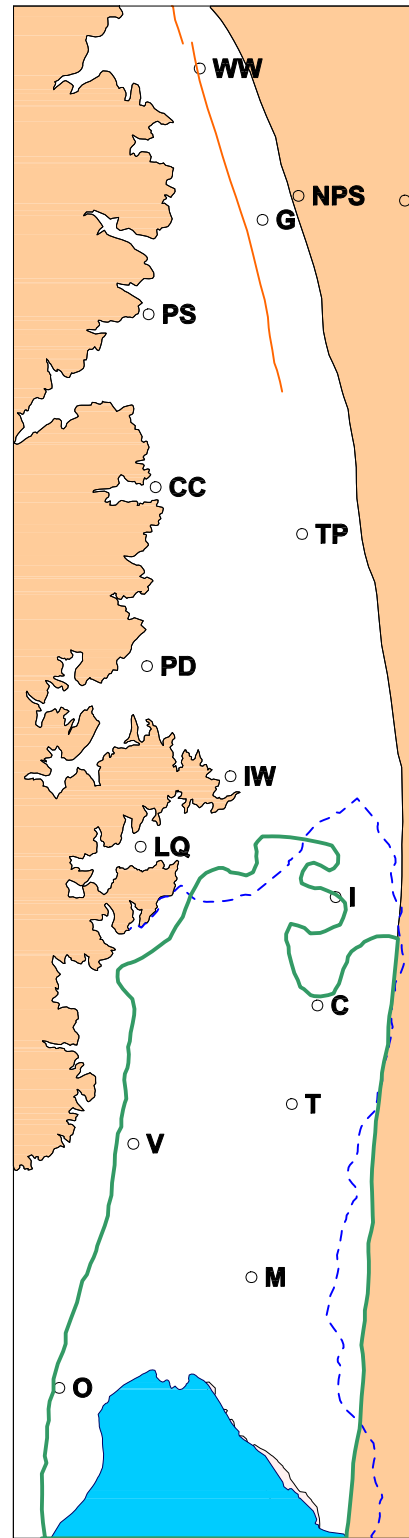
2009 Lower Aquifer

2020 Lower Aquifer

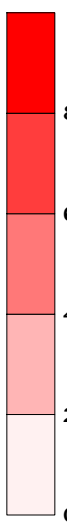
2025 Lower Aquifer

- City Legend
- | Abbreviation | City Name          |
|--------------|--------------------|
| WW           | Whitewater         |
| G            | Garnet             |
| NPS          | North Palm Springs |
| PS           | Palm Springs       |
| DHS          | Desert Hot Springs |
| CC           | Cathedral City     |
| TP           | Thousand Palms     |
| PD           | Palm Desert        |
| IW           | Indian Wells       |
| LQ           | La Quinta          |
| I            | Indio              |
| C            | Coachella          |
| T            | Thermal            |
| V            | Valerie            |
| M            | Mecca              |
| O            | Oasis              |
- Salton Sea
  - Basin Boundary
  - Coachella Canal
  - Faults
  - Approx. Extent of Aquitard

0 20,000 40,000 60,000  
Scale in feet



Groundwater Pressure  
above Ground Surface  
(ft)



Notes:  
Areas shown in shades of red have Lower Aquifer pressure levels at or above ground surface

Figure 6-15  
Projected Lower Aquifer Groundwater Levels Relative to  
Ground Surface for Proposed Project - 2009 - 2045



The resumption of artesian conditions produces a beneficial effect in terms of reduced pumping lift. In addition, the return to artesian conditions is necessary to reduce the overall overdraft. Also, the return to artesian conditions is beneficial to the Proposed Project goals as it improves water quality by keeping saline water out of the lower aquifer and it increases drain flows by creating upward pressure on the aquitard.

A return to artesian conditions can also create an adverse impact by increasing the potential for water waste if wells are not properly controlled. As indicated in **Section 6.1.3**, California law requires well owners to control the flow of water from artesian wells to prevent waste. Section 6.8.1.2 of the WMP identifies an Artesian Well Management Program as an element of the 2010 WMP Update. CVWD installs sealed and locking caps on its inactive wells used for monitoring and is currently notifying private wells owners of their responsibility when leaking wells are identified.

Although artesian flowing conditions can reduce the amount of pumping energy required to extract groundwater, most wells are not properly equipped to deal with artesian pressure. This can result in loss of water from improperly controlled wells. Water from flowing wells could also cause property damage if not routed to drainage channels. Under State Law, allowing an artesian well to flow uncontrolled without putting the water to beneficial use is considered a waste. Any artesian well which is not capped or equipped with a mechanical appliance which will effectively arrest and prevent the flow of any water from the well is a public nuisance, a misdemeanor under California law. To avoid unnecessary waste of water and the potential for property damage, CVWD is currently notifying well owners of their responsibility when leaking wells are identified. The California Groundwater Association has prepared standards of practice for management of artesian wells which are made available to affected well owners.

### 6.4.2.2 Shallow Groundwater Levels

**Figure 6-16** shows projected Semi-perched aquifer groundwater levels in the East Valley relative to ground surface. As discussed in **Section 4**, areas having susceptible soils where shallow groundwater levels are less than 60 feet below ground surface (ft bgs) could have increased risk of seismically-induced liquefaction, which could cause foundation damage and structural failures during an earthquake. Areas shown in pink have shallow groundwater levels that are less than 60 ft bgs. In 2009, a significant portion of the East Valley, which is underlain by fine-grained semi-perched sediments, had groundwater levels of less than 60 ft bgs. With implementation of the Proposed Project, this area expands. Impacts associated with liquefaction are discussed in **Section 4**.

In addition to liquefaction risks, a portion of the East Valley does not currently have a subsurface tile drainage system to help control shallow groundwater levels. As a result, increasing water levels in the Semi-perched aquifer may result in water levels that reach the ground surface. **Figure 6-16** shows areas where groundwater levels are at or above the ground surface in red. Because the groundwater model is only sufficiently accurate to predict general areas of surfacing groundwater, this map represents general trends and cannot be applied to individual parcels. Areas where water levels are at the ground surface may adversely impact the operation of

## Section 6 – Groundwater Resources

---

individual and small community wastewater disposal systems that use septic tanks and leach fields. This is a potentially significant impact.

### 6.4.3 Groundwater Rights

The Proposed Project seeks to provide sufficient water to meet the current and future needs of the Coachella Valley without limiting any party's ability to produce groundwater for their reasonable, beneficial use. Instead, a goal of the Proposed Project is to meet current and future demands while eliminating groundwater overdraft. This will be accomplished through a combination of water conservation, source substitution and increased groundwater recharge.

Participation in source substitution projects is voluntary. Pumpers can keep pumping groundwater without any effect on their rights, but they will continue to pay a water replenishment assessment charge that will likely increase in the future as more water management programs are implemented. It is expected that economic incentives will result in a shift from groundwater pumping to other water sources. No actions are proposed which would adversely impact groundwater pumping rights. Therefore, this impact is less than significant.

### 6.4.4 Groundwater Quality

The impacts of the Proposed Project on groundwater quality are evaluated in terms of the basin salt budget and the anticipated effects on water quality parameters. In addition, water quality impacts of the proposed recharge activities in the 2010 WMP Update are evaluated. This section compares the impacts of the Proposed Project to existing (2009) and 2002 WMP under updated projected conditions.

#### 6.4.4.1 Salt Balance and Salinity

##### *Salt Balance for the Coachella Basin*

Like a water balance, salt balance evaluates the annual amounts of salt being brought into and leaving the groundwater basin. The salt balance provides an indication of trends rather than a precise estimate of water quality changes. Salt is added to the basin through natural runoff, percolation of wastewater, addition of fertilizer and other salts during water use, importation and recharge of water from outside the basin and intrusion from beneath the Salton Sea. Salt is removed from the basin by the agricultural drains, wastewater discharged to the Coachella Valley Stormwater Channel (CVSC), brine disposal from water treatment facilities and subsurface outflow to the Salton Sea.

The 2002 PEIR provided a salt balance analysis to evaluate the long-term trends of the WMP on groundwater salinity. This analysis indicated that principal source of salt to the basin is imported water from the Colorado River either through the SWP Exchange with Metropolitan or through Coachella Canal water deliveries. The principal mechanism for salt export is flow to the CVSC. The analysis indicated that there would be a net addition of salt to the basin of up to 504,000 tons/yr in the absence of a water management plan. With implementation of the 2002 WMP, the net salt addition to the basin would be 139,000 tons/yr.

2009 Semi-perched Aquifer Depth to Groundwater

2020 Semi-perched Aquifer Depth to Groundwater

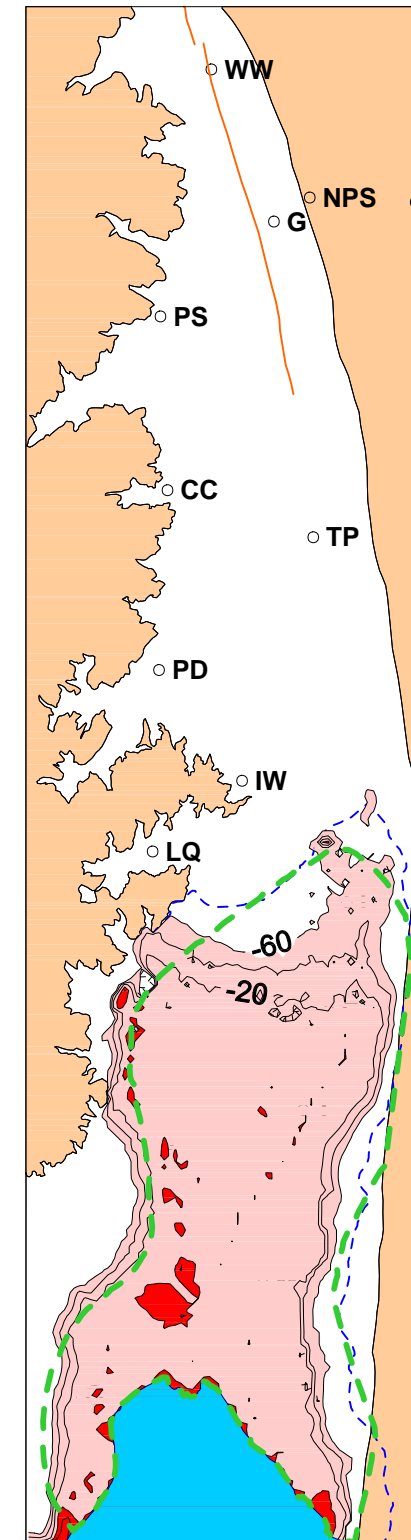
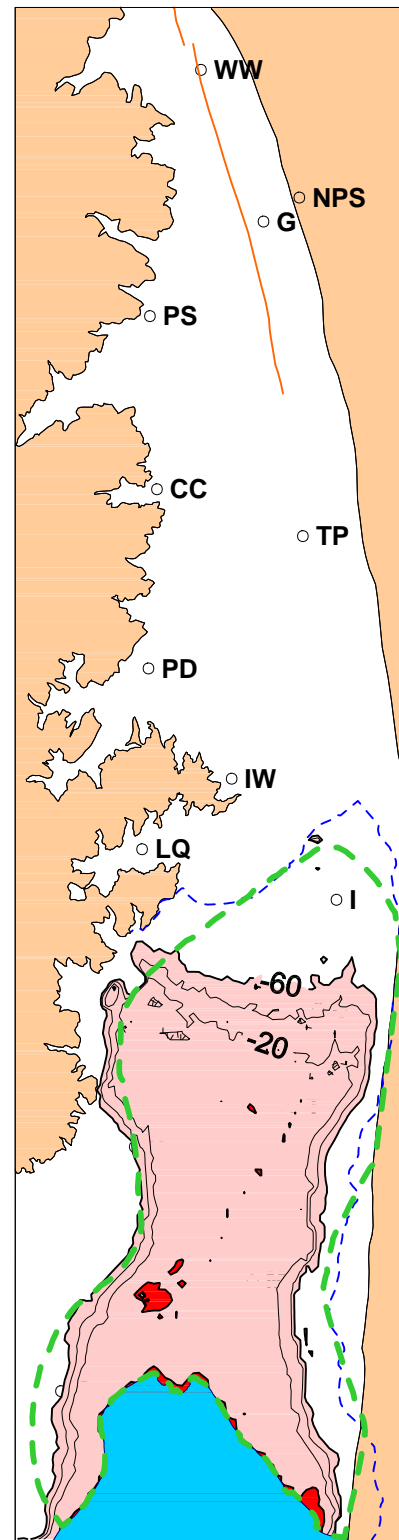
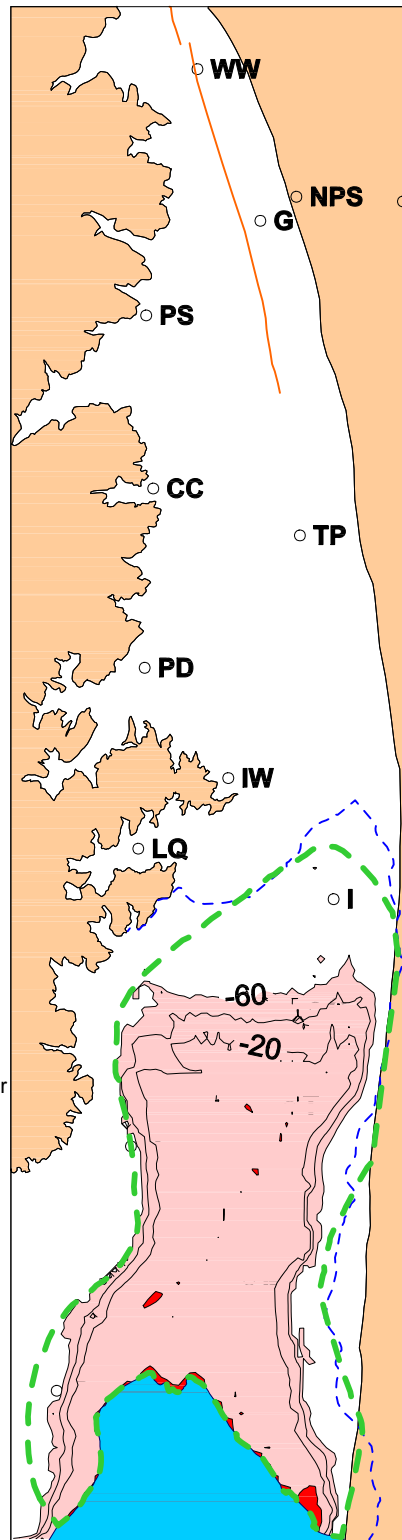
2045 Semi-perched Aquifer Depth to Groundwater

City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis

-  Salton Sea
-  Basin Boundary
-  Coachella Canal
-  Faults
-  Semi-perched Aquifer



0 20,000 40,000 60,000  
Scale in feet



Notes:

- (1) Areas shown in red have water levels at or above ground surface
- (2) Areas shown in pink have water levels at or up to 60 ft below ground surface

Figure 6-16  
Projected Semi-perched Aquifer Groundwater Levels Relative to  
Ground Surface for Proposed Project - 2009 - 2045



A salt balance analysis was performed to evaluate the future impact of the 2010 WMP Update on salt loading to the groundwater basin. In performing this analysis, the underlying assumptions in the 2002 PEIR were revisited based on updated information. As a result, the following changes in assumptions were made:

- Reduced salinity for SWP Exchange water deliveries from CRA and Colorado River deliveries from Imperial Dam based on the U. S. Bureau of Reclamation (Reclamation) analysis of salinity impacts associated with the 2007 Final Environmental Impact Statement (FEIS) for the Colorado River Interim Guidelines.
- Inclusion of desalinated drain water salt loading which reduces the amount of salt exported from the drains,
- Reduced drain flows as a result of groundwater modeling that reflected reduced imported water deliveries and increased conservation,
- Improved estimates of delivered water quality based on revised mix of groundwater and Canal water deliveries,
- Treatment of Canal water for urban use assumes desalination to 500 mg/L TDS based on the recommended based on the recommended state secondary MCL, and
- Revised return flow salinity based on delivered water quality including the effects of water conservation.

**Table 6-4** presents the revised salt balance for the 2010 WMP Update. This analysis indicates the net salt loading to the groundwater basin in 2009 was approximately 391,000 tons/yr, of which 85 percent occurred in the East Valley. With implementation of the 2010 WMP Update, the net salt addition to the basin in 2020 would decrease slightly to 384,000 tons/yr. However, the salt loading to the West Valley would more than double to 120,000 tons/yr, while the loading to the East Valley would decrease by 20 percent to 264,000 tons/yr. By 2045, the net salt addition to the basin would decrease to 184,000 tons/yr. The salt loading to the West Valley would increase to 134,000 tons/yr while the loading to the East Valley would decrease to 50,000 tons/yr principally due to increased drain flows to the Salton Sea. **Figure 6-17** presents the salt balance trends for the Valley with implementation of the 2010 WMP Update. This figure shows the net salt addition to the West Valley will increase at a relatively uniform rate through the planning period. Net salt addition to the East Valley is expected to be constant for the next five years and then decline after 2015 as drain flows increase, taking an increasing amount of salt out of the Valley. This impact is potentially significant for the West Valley and beneficial for the East Valley.

### *Salinity Changes*

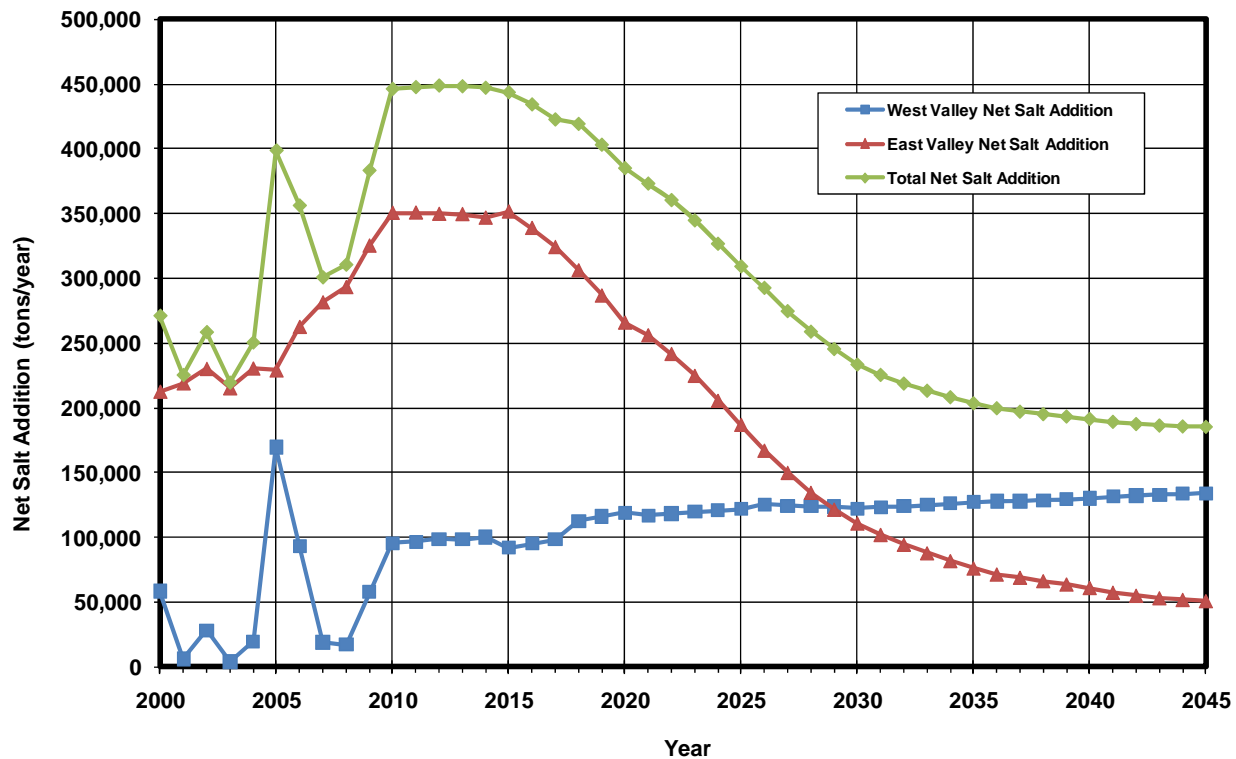
The annual TDS increment is the estimated average annual amount that groundwater salinity might change as a result of the salt balance and the change in basin storage. Because this increment assumes complete mixing in the basin, it is only a general estimate of water quality change. The annual TDS increment is computed by dividing the net salt loading to the West and East Valley areas by the corresponding amount of water in storage. For 2009, the estimated TDS

Section 6 – Groundwater Resources

**Table 6-4  
Existing and Projected Salt Balance for Coachella Valley – 2010 WMP Update**

Inputs (tons/yr)	2009			2020			2045		
	West Valley	East Valley	Total	West Valley	East Valley	Total	West Valley	East Valley	Total
Natural Recharge	9,000	2,000	11,000	15,000	2,000	17,000	15,000	2,000	17,000
SWP Exchange Recharge	51,000	0	51,000	57,000	0	57,000	51,000	0	51,000
SWP Exchange Deliveries via Canal	0	0	0	0	0	0	2,000	0	2,000
Canal Recharge via Exchange	0	0	0	18,000	0	18,000	25,000	0	25,000
Canal Deliveries	3,000	286,000	289,000	29,000	300,000	329,000	39,000	303,000	342,000
Canal Recharge	0	23,000	23,000	0	49,000	49,000	0	73,000	73,000
Desalinated Drain Water	0	0	0	0	6,000	6,000	0	58,000	58,000
Domestic Indoor Use Increment	7,000	3,000	10,000	10,000	7,000	17,000	11,000	16,000	27,000
Ag Fertilizer	0	3,000	3,000	0	2,000	2,000	0	1,000	1,000
Golf Course Fertilizer	0	0	0	0	0	0	0	0	0
Domestic Fertilizer	0	0	0	0	0	0	0	1,000	1,000
Inflow from Upper Valley	0	13,000	13,000	0	9,000	9,000	0	9,000	9,000
Inflow from Salton Sea	0	107,000	107,000	0	84,000	84,000	0	31,000	31,000
<b>Total Salt Addition</b>	<b>70,000</b>	<b>437,000</b>	<b>507,000</b>	<b>129,000</b>	<b>459,000</b>	<b>588,000</b>	<b>143,000</b>	<b>494,000</b>	<b>637,000</b>
<b>Outputs (tons/yr)</b>									
Drain Flows	0	86,000	86,000	0	165,000	165,000	0	386,000	386,000
Subsurface Outflows to SS	0	2,000	2,000	0	2,000	2,000	0	6,000	6,000
Fish Farm/Duck Club Pumping	0	4,000	4,000	0	3,000	3,000	0	3,000	3,000
Municipal Wastewater Discharge	0	11,000	11,000	0	15,000	15,000	0	16,000	16,000
CR Domestic Brine Discharge	0	0	0	0	10,000	10,000	0	33,000	33,000
Outflow to Lower Valley	13,000	0	13,000	9,000	0	9,000	9,000	0	9,000
<b>Total Salt Removal</b>	<b>13,000</b>	<b>103,000</b>	<b>116,000</b>	<b>9,000</b>	<b>195,000</b>	<b>204,000</b>	<b>9,000</b>	<b>444,000</b>	<b>453,000</b>
<b>Net Salt Addition (tons/yr)</b>	<b>57,000</b>	<b>334,000</b>	<b>391,000</b>	<b>120,000</b>	<b>264,000</b>	<b>384,000</b>	<b>134,000</b>	<b>50,000</b>	<b>184,000</b>
<b>Average TDS Increment (mg/L/yr)</b>	<b>4.1</b>	<b>14.0</b>		<b>8.6</b>	<b>11.1</b>		<b>9.5</b>	<b>2.1</b>	





**Figure 6-17**  
**Projected Salt Balance – Proposed Project**

increment for the West Valley was 4.1 mg/L per year (averaged over the entire West Valley) while the average increment for the entire East Valley was 14.0 mg/L per year.

By 2020, implementation of the 2010 WMP would increase the average West Valley TDS increment to 8.6 mg/L per year and reduce the East Valley increment to 11.1 mg/L per year. This is a potentially significant interim impact for the West Valley and a small benefit to the East Valley, but still an increase in overall salinity.

By 2045, the West Valley TDS increment would increase to 9.5 mg/L per year while the East Valley TDS increment would drop to 2.1 mg/L per year. Therefore, the impact is potentially significant in the West Valley. The rate of increase would fall in the East Valley, which is a beneficial effect in the East Valley compared to existing conditions, but still represents an increase in salt concentration over time, a significant impact because it represents a gradual degradation in water quality.

As described in the PEIR for the 2002 WMP, the changes in groundwater TDS will not occur uniformly throughout the Valley either in areal extent or time. Those portions of the basin underlain by the Semi-perched aquifer or aquitards (notably the East Valley) may experience much less to little change in groundwater quality. In the West Valley and the margins of the East Valley, TDS increases may be comparable to these estimates. Salinity is expected to increase more in the vicinity of the recharge projects and in areas where Canal water is delivered to replace groundwater pumping.

## Section 6 – Groundwater Resources

---

In the PEIR for the 2002 WMP, two alternatives were considered for reduction of the salt load to the basin: desalination of Canal water prior to recharge and direct importation of SWP water for recharge. Both alternatives were found to be infeasible at that time. The potentially significant impacts are the same for the 2010 WMP Update relative to this issue. A further evaluation of alternatives to reduce potentially significant effects is discussed in **Section 10 –Alternatives**.

### 6.4.4.2 Perchlorate

As discussed in **Section 5 – Surface Water Resources**, since publication of the 2002 WMP and PEIR, perchlorate concentrations in Colorado River water have fallen below the reporting detection limit and the California State MCL. While no longer detected in imported water, perchlorate may be present in the groundwater basin from fertilizer, past irrigation practices, natural sources (including atmospheric deposition), or a combination of these sources.

Since the anthropogenic source of perchlorate in Colorado River water has been controlled, no detectable amounts of perchlorate are expected to be in the water delivered to the Coachella Valley. Therefore, the Proposed Project would have no impacts on perchlorate loading to the groundwater basin. The potential effect that future drinking regulations may have on perchlorate cannot be determined at this time. While implementation of the 2010 WMP Update will change groundwater flow directions in the future, data on the occurrence and movement of perchlorate in the groundwater are insufficient to determine whether these future changes will result in the migration of perchlorate to others wells in the basin. It is not known whether and how the perchlorate will disperse in the groundwater. Some wells already exceed the perchlorate MCL.

### 6.4.4.3 Selenium

Selenium is present in the Semi-perched aquifer from irrigation use of Colorado River water. Rising groundwater levels in the deeper aquifers will create an upward hydraulic gradient that will prevent the downward percolation of selenium into the deeper aquifers. This will direct the selenium in the shallow groundwater to the agricultural drains and CVSC. Therefore, the impact upon groundwater quality is beneficial. Whether the selenium concentration changes over time is speculative. In the 2002 PEIR, however, it was assumed that the concentration would increase, and mitigation was provided and subsequently adopted for impacts on habitat and sensitive species in the drains and CVSC. This mitigation was later incorporated into the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), is considered to be sufficient mitigation, and is in progress. While the biological impact of increased selenium is considered to be fully mitigated, the water quality impact, *per se*, is still considered to be potentially significant. As discussed in **Section 10 –Alternatives**, selenium mitigation measures in agricultural drains have been revisited for this SPEIR. No feasible measures for reducing low selenium concentrations in geographically extensive agricultural drains are currently available.

### 6.4.4.4 Arsenic

**Figure 6-9** showed the approximate location of wells having arsenic concentrations exceeding the drinking water MCL of 10 µg/L. Arsenic is a naturally-occurring element often found in rocks associated with geothermal conditions. The Proposed Project includes potential expansion of groundwater treatment facilities to remove arsenic from wells that exceed the MCL. Such

expansion would be based on water needs and the economics of treatment versus the use of other water sources such as Canal water, which has a low arsenic concentration. Other programs such as groundwater recharge that use Canal water would not increase arsenic concentrations or cause arsenic to migrate and could have a beneficial effect of reducing naturally arsenic levels in East Valley groundwater.. Therefore, the Proposed Project would have no impact on arsenic levels in groundwater and could have a beneficial effect if additional treatment facilities are constructed.

### 6.4.4.5 Impact of Recharge with Imported Water

The PEIR for the 2002 WMP evaluated the potential impact of groundwater recharge with imported water on the groundwater through the use of a particle-tracking model. This model uses the results of the groundwater flow model and introduces particles whose movement can be tracked over time. The evaluation of the 2010 WMP Update uses the particle tracking model to project the migration of imported water from the recharge areas. The particle tracking model indicates the potential areal extent of imported water movement based on the groundwater gradients created by recharge activities.

**Figure 6-18** shows the approximate area where groundwater quality may be affected by imported water recharge for current conditions, and in 2020 and 2045, assuming average recharge amounts at the Whitewater, Levy, Martinez Canyon and Indio locations. Since particle track modeling does not reflect mixing with the surrounding groundwater, the affected area may be larger or smaller than indicated by the particle tracks. Based on water quality observations in wells near the Whitewater Recharge Facility, the TDS changes gradually over time as the recharge water migrates. Wells nearest the recharge basins (1 to 3 miles) experience relatively rapid increases in TDS following years of high imported water recharge, with the TDS levels declining during low imported water recharge years. Wells located 10 miles or more from the recharge basins exhibited a more gradual TDS increase, taking 20 years or more for the TDS to increase from background levels (200-300 mg/L) to values approaching the recharge water quality (500-600 mg/L). Some wells located 20 or more miles from the recharge facility are beginning to exhibit increasing TDS after almost 40 years of imported water recharge.

Historically, imported water recharge at Whitewater has averaged about 58,000 AFY. With the Proposed Project, recharge would increase to average 90,000 to 100,000 AFY, slightly less than proposed in the 2002 WMP. Continued recharge at the Whitewater facility will result in expansion of the area affected by imported water. No adverse impacts are expected as a result of this expansion other than increased salinity. Other water quality parameters for SWP Exchange water meet drinking water standards. Since the salinity (TDS) of SWP Exchange water is expected to average about 630 mg/L over the Proposed Project planning period, it is anticipated that groundwater within the area influenced by recharge activities could reach this level of salinity. This is a potentially significant impact.

In the 2002 WMP, recharge at the Levy facility site in La Quinta was planned to commence operations in 2003 and gradually reach 40,000 AFY by 2015. The facility went on line in 2009 and currently is recharging approximately 35,000 AFY. The maximum recharge would not change with the Proposed Project, but the date of full re charge may move further into the future. As discussed in **Section 5 – Surface Water Resources**, the TDS concentration of Canal water is expected to average 752 mg/L over the 35-year planning period, a concentration about 15

## Section 6 – Groundwater Resources

---

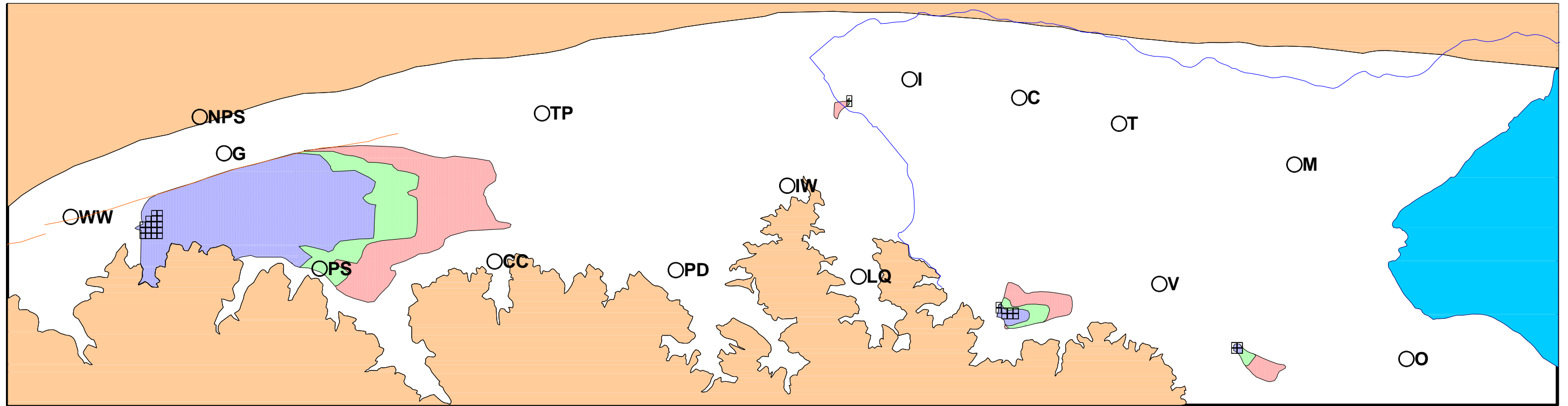
percent less than projected in the 2002 WMP. The area affected by recharge would be similar to that projected in the 2002 PEIR. Based on the foregoing, there would be no additional impact on water quality as a result of the operation of the Levy facility beyond the extension of the planning period.

The 2002 WMP and PEIR anticipated that operation of the Martinez Canyon recharge facility would commence in 2014 and gradually increase to 40,000 AFY over a ten-year period based on Canal water availability. The Proposed Project retains the 40,000 AFY maximum potential for this facility, but uses a 20,000 AFY expected planning level based on a change in expected water use patterns in the East Valley as urban development occurs. Implementation of the higher level would occur only if other indirect recharge programs are not successful. Such a change would be evaluated in a future WMP update, if required. Based on the proposed changes in the 2010 WMP, the Martinez Canyon project would have a reduced impact on water quality compared to the 2002 WMP, however, the impact on groundwater salinity would continue to be potentially significant.






The 2010 WMP Update includes a new recharge facility located in or near the City of Indio. For purposes of evaluating potential environmental impacts, the proposed facility is assumed to be capable of recharging 10,000 AFY and would commence operations in 2015 at half this capacity, reaching full capacity by 2021. A final site and capacity for this facility has not been selected, but the City is currently proposing Posse Park, near the crossing of the Coachella Canal and the CVSC. Using this location, a relatively small area near the recharge site is expected to be affected by Canal water salinity. Since the current TDS of wells in the area of the proposed recharge facility is less than that of Canal water, this impact is potentially significant.




### 6.4.4.6 Impact of Recycled Water Use

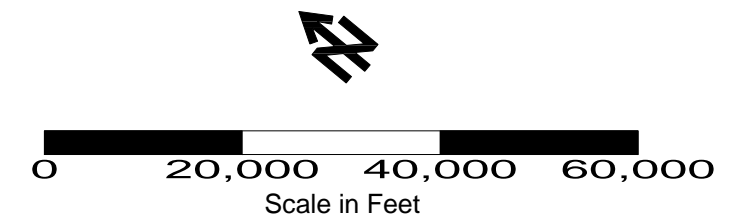
The 2002 WMP proposed increased use of recycled water for golf course and greenbelt irrigation in the West Valley (30,000 AFY by 2035). The Proposed Project anticipates about 28,000 AFY of recycled water use in the West Valley by 2045. This reduction in projected use is primarily due to the effects of water conservation on wastewater generation. Irrigation with recycled water results in plant uptake of nitrogen present in the wastewater, reducing the amount of nitrogen reaching the groundwater. A reduction in the amount of wastewater generated could increase the nitrogen loading. However, since plant uptake exceeds the amount of nitrogen in the wastewater, no change in water quality impact would result. Because recycled water has a relatively low salinity (450-500 mg/L), the impact of recycled water use on groundwater salinity is less than significant.



City Legend	
Abbreviation	City Name
WW	Whitewater
G	Garnet
NPS	North Palm Springs
PS	Palm Springs
DHS	Desert Hot Springs
CC	Cathedral City
TP	Thousand Palms
PD	Palm Desert
IW	Indian Wells
LQ	La Quinta
I	Indio
C	Coachella
T	Thermal
V	Valerie
M	Mecca
O	Oasis

-  Salton Sea
-  Basin Boundary
-  Coachella Canal
-  Faults
-  Semi-perched Aquifer

2010 WMP Update	
	1973 to 2009
	2009 to 2020
	2020 to 2045





The 2002 WMP also proposed up to 8,000 AFY of recycled water use by 2035 for agricultural irrigation in the East Valley. Anticipated growth in the East Valley will result in the generation of additional wastewater. The 2010 WMP Update anticipates the reuse of all wastewater generated by projected growth (about 31,000 AFY by 2045) with the existing volume of treated wastewater effluent being discharged to the CVSC. This recycled water would be used for a combination of agricultural, golf course and urban irrigation. As in the West Valley, plants irrigated with recycled water would take up much of the nitrogen, leaving little nitrogen to return to the groundwater. The TDS of wastewater in the East Valley is expected to increase as additional Colorado River water is used to supply urban water uses. However, since much of the East Valley is underlain by the Semi-perched aquifer and has tile drains, essentially none of the return flow from recycled water irrigation would reach the deep aquifer. Therefore, there would be no impact from recycled water use on groundwater quality in the East Valley.

### **6.4.4.7 Summary of Water Quality Impacts**

The principal sources of imported water used for both direct and indirect groundwater recharge in the Valley are Coachella Canal water and SWP Exchange water. Although SWP water originates in Northern California, the lack of facilities to convey this water to the Coachella Valley requires an exchange with Metropolitan for Colorado River water. This exchange results in higher salinity water being delivered to the Valley. Since the Colorado River water, whether from the exchange or from the Coachella Canal, has a higher TDS than the existing groundwater, the use of this water results in additional salt being imported to the basin, which has an adverse impact on groundwater quality. Other constituents of concern in groundwater include perchlorate, arsenic, and chromium-6. Because these constituents' concentrations are less than the drinking water standards and in many cases less than the detection limit, no adverse impact would result from the proposed use of Colorado River water for direct delivery or groundwater recharge for these parameters.

The use of Colorado River water for direct use and groundwater recharge will initially have an adverse impact on the salt balance of the groundwater basin. However, as drain flows from the East Valley increase in response to rising groundwater levels, additional salt will be exported from the basin, reducing the adverse salt balance. While this reduction is a beneficial effect, the basin will continue to experience a net adverse salt balance. This will be more pronounced in the West Valley. Therefore, the impact is potentially significant.

Areas near existing and proposed recharge facilities would continue to experience increasing TDS concentrations; however, the TDS would not exceed that of the Colorado River water used for recharge. The effects of the recharge water on groundwater quality would continue to expand in the future but the magnitude of the effect is expected to decrease with distance from the recharge basins.

Although the groundwater salinity is expected to increase, no designated beneficial uses of groundwater would be compromised; that is, the groundwater would continue to meet quality requirements for agricultural, industrial and municipal uses, the Basin Plan identified designated beneficial uses for Valley groundwater. The Basin Plan identifies no specific numerical groundwater quality objectives for Coachella Valley groundwater basins. Much agriculture and many golf courses in the Coachella Valley already use and have used Colorado River water

## Section 6 – Groundwater Resources

---

successfully as their sole source for irrigation water. There is no industrial use in the Valley, except aggregate mining; salinity at the concentration of Colorado River water is not an issue for gravel washing uses.

With respect to municipal use, there are no primary or health-based standards for total dissolved solids or salinity in drinking water (DPH, 2008). National secondary (cosmetic or aesthetic — taste and odor) standards are unenforceable guidelines. Secondary California Consumer Acceptance Contaminant Level ranges for salinity or total dissolved solids are a recommended level of 500 mg/L, an upper level of 1000 mg/L, and short-term of 1,500 mg/L (DPH, 2006), however, no fixed consumer acceptance contaminant level has been established in California. Constituent concentrations ranging to the Upper contaminant level of 1,000 mg/L are acceptable “if it is neither reasonable nor feasible to provide more suitable waters.” Colorado River water would exceed the 500 mg/L level but would not reach the 1,000 mg/L level. Under the Proposed Project, groundwater quality affected by groundwater recharge would meet water quality standards for municipal, agricultural and industrial uses, and health-based standards for drinking water.

Nevertheless, the impact of increasing salinity is considered to be potentially significant as a reflection of water quality degradation.

### 6.5 MITIGATION MEASURES

The following discusses mitigation for those impacts considered potentially significant.

#### 6.5.1 Groundwater Overdraft

The Proposed Project has a beneficial effect in reducing or eliminating long-term groundwater overdraft in the Coachella Valley. Therefore, no mitigation measures are necessary.

#### 6.5.2 Groundwater Levels

The Proposed Project would raise the existing groundwater levels, a beneficial effect with respect to subsidence, salt balance and groundwater pumping energy. However, filling the basin in the East Valley to overcome overdraft would also restore historical artesian conditions in the East Valley. Artesian conditions have already returned in portions of the East Valley near Mecca in the absence of the Proposed Project. This was equally true under the 2002 WMP, but at that time East Valley land use was projected to remain in agriculture, where high groundwater, largely controlled by subsurface drains, was not a significant issue and where there were few existing or proposed structures.

At present, however, the East Valley is projected to convert to large scale urban development during the planning period, so high groundwater with the possibility of seismically-induced liquefaction and subsidence must be addressed. Therefore, it will be the responsibility of Riverside County. A high potential for liquefaction has always existed in the Valley, as shown in Riverside County General Plan and Safety Element, because of Valley soil and groundwater conditions. This high potential will not be significantly worsened by the Proposed Project. Therefore, it will continue to be the responsibility of the County’s and the cities’ building and



safety departments to evaluate foundation analyses for proposed developments to ensure that high groundwater and potential liquefaction conditions are taken into account and addressed as part of project design, as it is at present.

In the East Valley, the existing subsurface tile agricultural drainage system, buried 5 to 10 feet below ground surface, intercepts shallow groundwater in the Semi-Perched aquifer and conveys it to the Salton Sea, either directly or to the CVSC. Since most of the original drainage system was constructed more than 50 years ago, it is approaching the end of its useful life. Significant maintenance and replacement will be required. The anticipated land use transition from agriculture to urban will not eliminate this need because the underlying fine-grained sediments will continue to impede the percolation of irrigation water.

As development occurs in locations susceptible to shallow perched groundwater, the existing drainage system will need to be replaced and new drains constructed to control the shallow groundwater. Funding sources will be needed to replace, expand, enhance and maintain the system for urban development in the future. CVWD is currently working on legislation to form urban drainage districts in the East Valley. The drainage districts would be constructed and funded as development occurs, so that the infrastructure cost would be the responsibility of new development, similar to the ways water and sewer service are expanded.

The programmatic effect is considered to be less than significant with mitigation incorporated.

### **Mitigation Measures**

**GW-1:** CVWD will replace and rehabilitate its existing agricultural drains as part of its ongoing operation and maintenance responsibilities.

**GW-2:** Developers will be responsible for the construction of new drains in urbanizing areas through funding the operation of drainage districts.

### **6.5.3 Artesian Flowing Wells**

As stated in **Section 6.4.2.1**, the Proposed Project would raise existing groundwater levels in the Lower aquifer, resulting in the restoration of historical artesian conditions in the East Valley. As described above, historical artesian conditions have already been restored in portions of the East Valley. California law (California Water Code §300-311) requires well owners to control the flow of water from artesian wells to prevent waste of water. Although well owners may contain flow water on land or store the water in a pond or reservoir, the flow is limited to 9 gallons per minute (14.5 AFY continuous flow) per acre and must be put to beneficial use. California Water Code §305 requires that artesian wells be capped or equipped with a mechanical controlling device that will readily and effectively arrest and prevent the flow of any water from the well and provides that any person who permits such a public nuisance to exist or permits water to flow unnecessarily to waste is punishable by a fine, or imprisonment, or both. This is mitigation that can and should be implemented by others than the Lead Agency. CVWD will inform the owner, occupant or tenant of a property with a flowing artesian well of their legal responsibilities.

## Section 6 – Groundwater Resources

---

### 6.5.4 Groundwater Quality

#### 6.5.4.1 Salinity and Salt Balance

The 2002 PEIR alternatives to the Proposed Project that reduced significant groundwater quality impacts from basin recharge with Colorado River water were: use of lower TDS water sources and demineralization of the current and future sources. These alternatives were evaluated in 2002 PEIR Section 10 – Alternatives to the Proposed Project. Neither approach was found to be environmentally or economically feasible at that time; CVWD therefore adopted a Statement of Overriding Considerations for the water quality impact.

At present, there is still no source of lower TDS water available for basin recharge. The possibility of a future SWP extension into the Coachella Valley is being examined again by a group of potential partnering agencies including CVWD and DWA, but its technical, financial, institutional and environmental feasibility are still highly uncertain and it is not part of the 2010 WMP Update considerations. Desalination of Colorado River water prior to recharge remains a costly and energy-intensive proposition that requires additional investigation, especially with regard to the impact of desalination on the Valley economy. Desalination also has other environmental impacts of concern, particularly impacts of brine disposal, by a method yet to be identified, and energy use and greenhouse gas emissions from generation of that energy.

Treatment of Colorado River water is discussed in the 2010 WMP Update for anticipated outdoor residential /commercial development use in the East Valley. Demineralization is proposed for drain flows for agricultural use in the Valley, if lower cost sources of water such as transfers or leases on the SWP are not available and sufficient. Demineralization is not proposed for Colorado River water exchanged for SWP water in preparation for recharge.

The proposed amount of groundwater basin recharge with Colorado River water included in the 2002 WMP was 140,000 AFY in the West Valley and 80,000 AFY in the East Valley. Under the 2010 WMP Update, proposed direct recharge is 90,000–100,000 AFY in the West Valley at Whitewater and 70,000 AFY in the East Valley (at Levy, Martinez Canyon and Indio). The reduction in recharge would reduce the amount of higher TDS water introduced into the basin annually for the 2010 WMP Update compared to the 2002 WMP. Even with these modifications, the impact on groundwater salinity would still be significant and mitigation to below a level of significance is not feasible. Therefore, CVWD would have to adopt a Statement of Overriding Considerations for this adverse impact prior to approval of the Proposed Project.

#### 6.5.4.2 Other Water Quality Constituents

As discussed previously, other constituents of concern in groundwater would not be adversely affected by the Proposed Project. In the 2002 PEIR, the potential for potable wells being impacted by perchlorate concentrations was identified. As discussed previously in this section and in **Section 5**, the level of perchlorate in Colorado River water has been reduced by source control to a level that is less than the reporting detection limit and well under the current MCL of 6 µg/L. Since perchlorate in the recharge water is no longer expected to exceed drinking water standards, no mitigation is required. Perchlorate levels that exceed the state MCL because of past irrigation practices would not be affected by the Proposed Project.

As in the 2002 PEIR, CVWD and DWA commit to the following mitigation measures:

- monitoring the quality of groundwater produced from drinking water wells located near the groundwater recharge areas to ensure that all recognized health-based drinking water standards are met.
- If monitoring shows that the groundwater pumped from these wells exceeds any health-based drinking water standard attributable to recharge activities, CVWD and DWA will work with the well owners to bring the drinking water supply into compliance by either providing domestic water service from the domestic water system or by providing appropriate well-head treatment within their respective service areas.

This mitigation, as presented above, is proposed for the 2010 WMP Update as well. The impact remains potentially significant after mitigation.

This Page is Blank Intentionally

# Section 7

## Biological Resources

---

Biological resources impacts were evaluated in Section 7 of the 2002 Program Environmental Impact Report (PEIR). This section of the 2010 Water Management Plan (WMP) Update Subsequent PEIR (SPEIR) revisits and updates that information to address potential impacts of new or modified facilities:

- recharge basins,
- wastewater treatment plants,
- water treatment plants,
- desalination plants, and
- pipelines, pumping stations, and tanks.

**Recharge Basins.** The general locations of two new recharge facilities are known. The 2010 WMP Update includes a full-scale, 20,000 to 40,000 acre-foot per year (AFY) recharge facility at Martinez Canyon and a new recharge facility in Indio on a 60- to 70-acre park site assumed to recharge 10,000 AFY. The site boundaries and layouts have not been developed and the implementation schedules and recharge capacities are tentative. The Martinez Canyon site is located on a bajada (alluvial fan) in the East Valley, and the Indio Posse Park site is flat terrain with desert habitat, some disturbed, adjacent to the Coachella Canal. With respect to existing recharge facilities, no construction will be required: the WMP includes increases in average recharge rates at the Whitewater Recharge Facility with transfers and leases and Quantification Settlement Agreement (QSA) implementation within existing facilities. Recharge at the existing Levy facility would increase when additional water conveyance facilities (pumping station and pipeline) are constructed to bring additional water south from Lake Cahuilla.

**Wastewater Treatment Plants.** Tertiary wastewater treatment is proposed as part of increased off-site recycling and reuse. The effluent to be treated would come from the three existing plants that discharge to the Coachella Valley Stormwater Channel (CVSC) — Coachella Valley Water District (CVWD) Water Reclamation Plant No. 4 (WRP-4), Coachella Sanitary District (CSD), and Valley Sanitary District (VSD). The new treatment units would be constructed within the existing wastewater plant sites, which are completely disturbed. Off-site ground disturbance would be for recycled water distribution pipelines, assumed to be constructed in streets.

**Desalination Plant.** A desalination plant, if implemented, would likely be constructed at or adjacent to WRP-4 on property owned by CVWD. The desalination plant itself would occupy a site of not more than approximately 20 acres within the area bounded by Avenue 62 on the north, Avenue 64 on the south, Fillmore Street on the west and the CVSC on the east. WRP-4 occupies most of the eastern half of this area. Half of the remaining area is or was in agriculture and therefore is highly disturbed. Areas of native vegetation are present along Avenue 63. The reconnaissance survey performed by CVWD environmental and biological staff on May 18 and 19, 2011 was conducted at the appropriate time of year to observe and identify sensitive species. The surveyors observed no sensitive plant or animal species. The portions of the site with

## Section 7 – Biological Resources

---

vegetation were characterized by Atriplex (saltbush) scrub with evidence of refuse dumping. A concrete-lined agricultural drain channel traverses the site, with cattails and bulrush present in the channel bottom.

**Other Proposed Facilities.** Sites for other proposed facilities — water treatment plants, pumping stations, tanks and associated pipelines — are not yet identified, but would not be large. The water treatment plants are anticipated to occupy sites of no more than 20 acres each, the pumping stations each less than 1 acre, and the tanks less than 2 acres. Pipelines would be installed in existing paved streets or unpaved roads to the maximum extent feasible to minimize habitat disruption. Desalination brine disposal to ponds could be land intensive depending on the amount of brine flow and disposal method. However; the disposal method will be the subject of a future feasibility study. The following describes the biological resources setting and background of the study area, but focuses on sensitive species and habitats.

### 7.1 REGULATORY FRAMEWORK – SENSITIVE SPECIES AND HABITATS

Sensitive species are classified in a variety of ways, both formally (e.g. State or Federal Threatened and Endangered Species) and informally (e.g. CDFG “Species of Special Concern”). Species may be formally listed and protected as Threatened or Endangered by either the CDFG or USFWS (Federal status abbreviations: FT, FE; State: ST, SE). The State also has State-Listed Rare (SR) species. A few species are listed as California Fully Protected (CFP). Numerous lists of species thought to be in jeopardy within the State have been compiled by other agencies and special interest groups, and while such lists generally are considered informal (in the sense that they are not created by, or linked to, any formal regulatory action), species included therein usually are given due consideration within California Environmental Quality Act (CEQA) documentation.

Additionally, the USFWS, CDFG, and other governmental agencies may recognize lists developed by special interest groups, if properly reviewed and published (i.e., Audubon Society “Blue List,” for birds, with subunits for special concern (SC) and local concern (LC); California Native Plant Society (CNPS) “Rare and Endangered Plants of California;” Partners in Flight, bird Watch List (WL). All of these species as well as federal and state-listed species also are considered “CEQA species.”

Terrestrial vegetation in California has been accorded sensitivity rankings within a synthesis (of the floristic association concepts of Sawyer and Keeler-Wolf (1995) and Sawyer, Keeler-Wolf and Evens (2009), combined with older community classification from Holland (1986) (CDFG, 2010).

Impacts to wetland and riparian habitat types may be regulated by Section 400 statutes of the Clean Water Act (CWA) and Section 1600 statutes of the California Fish and Game Code, as administered by the USACE and CDFG. Projects in such areas also may be subject to review by the California Regional Water Quality Control Board (Regional Board).

### 7.1.1 Federal Status

The Federal Endangered Species Act (FESA) defines an Endangered species (FE) as “any species which is in danger of extinction throughout all or a significant portion of its range . . . .” Threatened species (FT) are defined as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”

Actions which have the potential to directly and adversely affect individuals or essential habitat of FT or FE species may be considered as “taking” that species, and are prohibited by provisions of the FESA, although plants do not receive the same level of protection as wildlife. For entirely private actions, permission to take a species or its habitat is governed by the FESA Section 10 (a)(1)(B), involving formal consultation with the USFWS and (usually) preparation of a Habitat Conservation Plan (HCP). Projects having any nexus with agencies, policies or funding sources of the Federal government may require formal consultation and mitigation under Section 7 of the FESA.

Where the USFWS has designated areas of Critical Habitat (CH) for a particular listed species, that habitat may be protected through the provisions of FESA Section 7. Section 3 of FESA defines critical habitat as specific areas within the geographic ranges of a species, at the time it is listed, on which are found those specific resources and features essential to the conservation of the species, and which may require special management considerations or protections.

The Migratory Bird Treaty Act (MBTA) of 1918 protects nesting birds of all native and migratory species from disturbance or harm. If the sole intent and purpose of an action is specifically to harm the birds (as in clearing active cliff swallow nests from beneath building eaves) the MBTA may be clearly invoked.

### 7.1.2 State Status

CDFG, through the California Endangered Species Act (CESA, Fish and Game Code Sections 2050-2068) defines its various categories of sensitive species as follows:

- **Endangered (SE):** A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- **Threatened (ST):** A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts.
- **Rare (SR):** A species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.
- **Candidate (SC):** 1) A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the California Fish and Game Commission has formally noticed as

## Section 7 – Biological Resources

---

being under review by the CDFG for addition to either the list of endangered species or the list of threatened species (SCE, SCT), or 2) a species for which the commission has published a notice of proposed regulation to add the species to either list.

- **Species of Special Concern (SSC – CSC):** species of special concern status applies to animals not listed under the FESA or the CESA, but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and know threats to their persistence currently exist.

State Threatened or Endangered species may not be disturbed, relocated, harmed, or otherwise interfered with (as in disruption of movement corridors) (the functional definition of “taking” in CESA) except as negotiated through consultations and permitting from appropriate agencies. Actions that alter or destroy habitat for listed species may be considered a taking of that species. Senate Bill (SB) 879, amended Section 2081 and effective January 1, 1998, now allows incidental take if the taking is incidental to an otherwise lawful activity. Impacts of the taking must be minimized and fully mitigated. No permit may be issued if there would be jeopardy to the continued existence of the species (SB 879, 1997).

### 7.1.3 Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan

At a time when Riverside County was experiencing rapid growth, the Coachella Valley Mountains Conservancy (CVMC, a state agency within the California Resources Agency) and the Coachella Valley Association of Governments (CVAG), together with CDFG and USFWS, developed the Coachella Valley Multiple Species Habitat Conservation Plan/ Natural Community Conservation Plan (CVMSHCP or plan). The plan received final permit approval from the USFWS in October 2008. The plan balances environmental protection and economic development objectives in the plan area and simplifies compliance with federal and state endangered species related laws.

The Coachella Valley Conservation Commission (CVCC) is a joint powers authority formed by the Local Permittees (capitalization follows CVMSHCP) to provide primary policy direction for implementation of the CVMSHCP. The CVCC has no regulatory powers and no land use authority; rather, its primary purpose is to buy land from willing sellers in the conservation areas and to manage that land. CVCC consists of the members of the Riverside County Board of Supervisors and an elected official from each of the Coachella Valley signatory cities, CVWD and Imperial Irrigation District (IID).

The CVMSHCP is a Valley-wide conservation plan that protects over 240,000 acres of open space in the Coachella Valley. The plan protects 27 species: five plants, two insects, one fish, one amphibian, three reptiles, eleven birds, and four mammals (see **Table 7-1**). Section 9 of the CVMSHCP contains background accounts of covered species, their characteristics, ecological requirements and distribution, potential threats and conservation measures. Under the plan, the USFWS and CDFG delegate their authority over these species to the local authority, so incidental take of covered species requires one coordinated permit rather than permits from both agencies. The permits are valid for 75 years.



**Table 7-1  
Sensitive Biological Elements in the Proposed Project Study Area**

CVMSHCP or Wildlife Agencies Sensitive Biological Element	Listing
<b>PLANTS</b>	
Mecca aster ( <i>Xylorhiza cognata</i> )	CVMSHCP Footnote 1
Orocopia sage ( <i>Salvia greatae</i> )	CVMSHCP Footnote 1
Little San Bernardino Mountains linanthus ( <i>Linanthus maculatus</i> or <i>Gilia maculata</i> )	CVMSHCP Footnote 1
Triple-ribbed milk-vetch ( <i>Astragalus tricarinatus</i> )	CVMSHCP; FE / CNPS List 1B.2
Coachella Valley milk-vetch ( <i>Astragalus lentiginosus</i> var. <i>coachellae</i> )	CVMSHCP; FE / CNPS List 1B.2
<b>INSECTS</b>	
Coachella Valley Jerusalem cricket ( <i>Stenopelmatus cahuilensis</i> )	CVMSHCP
Coachella giant sand treader cricket ( <i>Macrobaenetes valgum</i> )	CVMSHCP; FSC
<b>FISHES</b>	
Desert pupfish ( <i>Cyprinodon macularius</i> )	CVMSHCP; FE / SE
<b>REPTILES AND AMPHIBIANS</b>	
Arroyo toad ( <i>Bufo californicus</i> )	CVMSHCP; FE / CSC
Desert tortoise ( <i>Gopherus agassizii</i> )	CVMSHCP; FT / ST
Flat-tailed horned lizard ( <i>Phrynosoma mcallii</i> )	CVMSHCP; CSC/FTP
Coachella Valley fringe-toed lizard ( <i>Uma inornata</i> )	CVMSHCP; FT / SE
<b>BIRDS</b>	
California Brown pelican ( <i>Pelecanus occidentalis californicus</i> )	FE / SE
California least tern ( <i>Sterna antillarum browni</i> )	FE/ SE
Yuma clapper rail ( <i>Rallus longirostris yumanensis</i> )	CVMSHCP; FE / ST / SFP
California black rail ( <i>Laterallus jamaicensis</i> )	CVMSHCP; ST / SFP
Swainson's hawk ( <i>Buteo swainsoni</i> )	ST
American peregrine falcon ( <i>Falco peregrinus anatum</i> )	SE
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	SE
Burrowing owl ( <i>Athene cunicularia</i> )	CVMSHCP; CSC
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	CVMSHCP; SE / FE
LeConte's thrasher ( <i>Toxostoma lecontei</i> )	CVMSHCP; BCC / CSC
Crissal thrasher ( <i>Toxosoma dorsale</i> )	CVMSHCP; BCC / CSC
Western yellow-billed cuckoo ( <i>Coccyzus americanus occidentalis</i> )	SE
Arizona Bell's vireo ( <i>Vireo bellii arizonae</i> )	SE
Least Bell's vireo ( <i>Vireo bellii pusillus</i> )	CVMSHCP; FE / SE
Gray vireo ( <i>Vireo vicinior</i> )	CVMSHCP; CSC
Yellow warbler ( <i>Dendroica petechia brewsteri</i> )	CVMSHCP; CSC
Yellow-breasted chat ( <i>Icteria virens</i> )	CVMSHCP; CSC
Summer tanager ( <i>Piranga rubra</i> )	CVMSHCP Footnote 1
<b>MAMMALS</b>	
Southern yellow bat ( <i>Lasiurus ega</i> or <i>xanthinus</i> )	CVMSHCP Footnote 1

**Table 7-1  
Sensitive Biological Elements in the Proposed Project Study Area  
(Continued)**

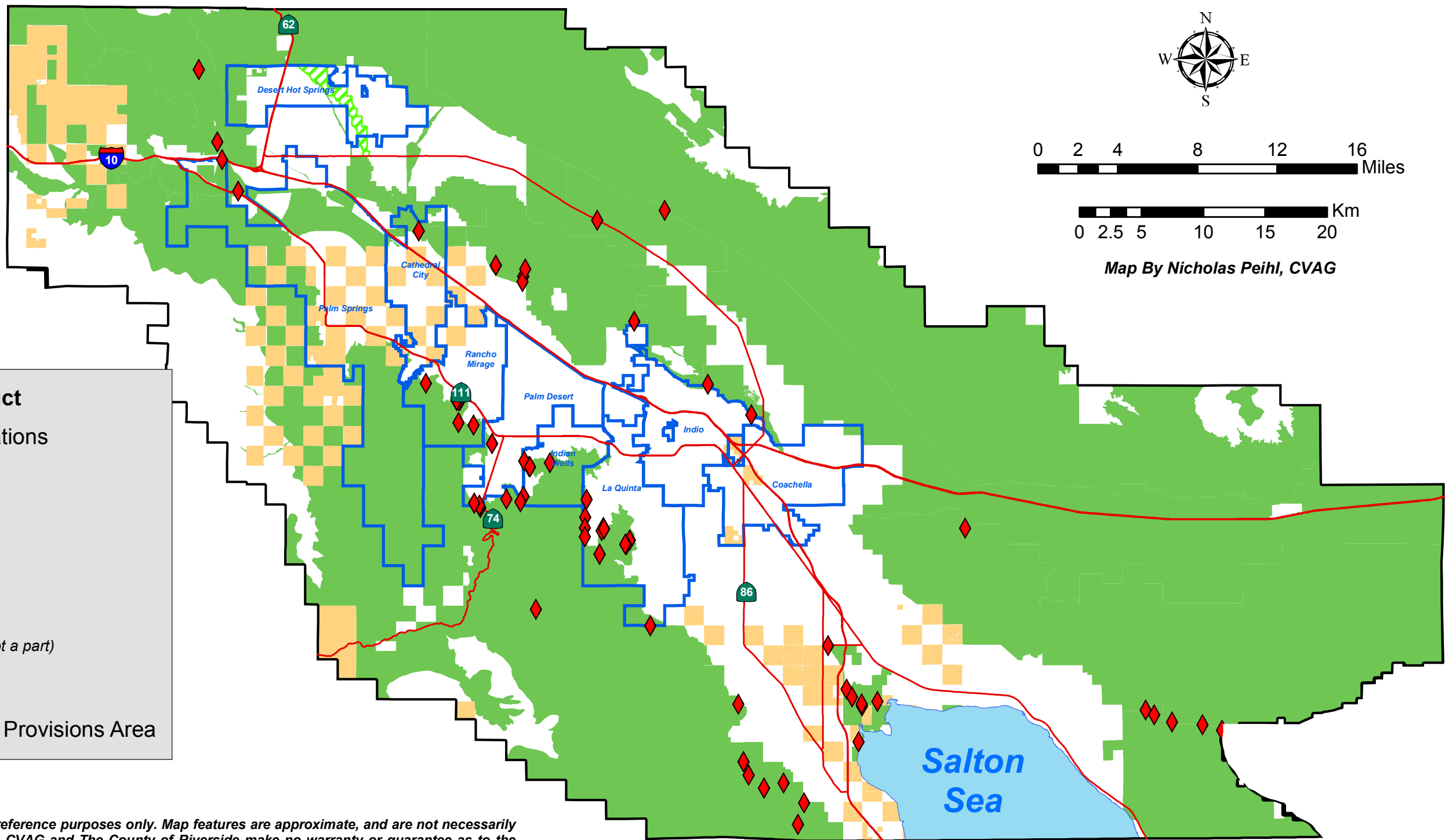
CVMSHCP or Wildlife Agencies Sensitive Biological Element	Listing
Palm Springs (Coachella Valley) round-tailed ground squirrel ( <i>Spermophilus tereticaudus chlorus</i> )	CVMSHCP; FSC / CSC
Palm Springs pocket mouse ( <i>Perognathus longimembris bangsi</i> )	CVMSHCP; CSC
Peninsular bighorn sheep ( <i>Ovis canadensis nelsoni</i> )	CVMSHCP; FE / ST / SFP
CVMSHCP AND CNDDDB NATIVE PLANT COMMUNITIES	
Creosote bush scrub	Red shank chaparral
Active desert dunes	Semi-desert chaparral
Stabilized and partially stabilized desert dunes	Interior live oak chaparral
Active desert sand fields	Cismontane alkali marsh
Ephemeral desert sand fields	Coastal and valley freshwater marsh
Stabilized and partially stabilized desert sand fields	Southern arroyo willow riparian forest
Stabilized shielded desert sand fields	Sonoran cottonwood-willow riparian forest
Mesquite hummocks	Mesquite bosque
Sonoran creosote bush scrub	Desert dry wash woodland
Sonoran mixed woody and succulent scrub	Desert fan palm oasis woodland
Mojave mixed woody scrub	Southern sycamore-alder riparian woodland
Desert saltbush scrub	Arrowweed scrub
Desert sink scrub	Mojavean pinyon and juniper woodland
Chamise chaparral	Peninsular juniper woodland and scrub

BCC = (federal) Birds of Conservation Concern; CNDDDB = California Natural Diversity Data Base; CNPS = California Native Plant Society; CVMSHCP = Coachella Valley Multiple Species Habitat Conservation Plan; CSC = California Species of Concern; FE = Federal Endangered; FT = Federal Threatened; FSC = Federal Species of Concern; FTP = Federal Threatened Proposed; SE = State Endangered; ST = State Threatened; SFP = State Fully Protected; CVMSHCP Footnote 1: These species have no official status at this time; however, USFWS, CDFG, and the (CVMSHCP) Scientific Advisory Committee (SAC) recommended inclusion of the species in the CVMSHCP because of the likelihood of their being elevated to listing status in the coming years due to their rarity and decline.

Within its boundaries, the CVMSHCP delineates Core Habitat Areas, Essential Ecological Process Areas, Biological Corridors and Linkages, and 21 Conservation Areas, within which Covered Species and Natural Communities are identified. Definitions of additional terms found in the following discussion of CVWD obligations and activities are provided here for clarification (CVMC and CVAG, 2008).

- **Biological Corridor:** Wildlife movement area that is constrained by existing development, freeways or other impediments.
- **Changed Circumstances:** changes in circumstances affecting a Covered species or geographic area covered by the CVMSHCP which can reasonably be anticipated by the parties and that can reasonably be planned for in the CVMSHCP.

# Recirculated Final Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan



### Coachella Valley Water District

- ◆ Covered Activities Locations
- Major Roads
- CVMSHCP Boundary
- City Boundaries
- Salton Sea
- Indian Reservations *(Not a part)*
- Preferred Alternative
- Morongo Wash Special Provisions Area

See Table 7-7 for specific locations

**DISCLAIMER:** Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. CVAG and The County of Riverside make no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.



## Figure 7-1: Coachella Valley Water District Covered Activities



- **Conservation:** application of methods and procedures in the Reserve System necessary to bring any species to the point at which the FESA and Fish and Game Code measures are no longer necessary. Permittees have no duty to enhance, restore or revegetate Reserve System lands unless required by the CVMSHCP, the Implementing Agreement (IA), or agreed to through implementation of the plan.
- **Conservation Area:** a system of lands that provide core habitat and other conserved habitat for the covered species, conserves natural communities, conserves Essential Ecological Processes and secure biological Corridors and Linkages between major Habitat Areas. There are 21 conservation areas from which the CVMSHCP Reserve System is assembled.
- **Core Habitat:** The areas identified in the Plan for a given species that are composed of a Habitat patch or aggregation of Habitat patches that (1) are of sufficient size to support a self-sustaining population of that species, (2) are not fragmented in a way to cause separation into isolated populations, (3) have functional Essential Ecological Processes, and (4) have effective Biological Corridors and/or Linkages to other Habitats, where feasible, to allow gene flow among populations and to promote movement of large predators.
- **Covered Activities:** certain lawful activities carried out or conducted by Permittees and others within the CVMSHCP Plan Area that will receive take authorization under the plan's FESA section 10a Permit and the state Natural Communities Conservation Planning (NCCP) permit.
- **Covered Species:** the species for which take authorization is provided through the Permits.
- **Critical Habitat:** Habitat for species listed under FESA that has been designated pursuant to "Section 4 of FESA.
- **Feasible:** capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.
- **Habitat:** The combination of environmental conditions of a specific place providing for the needs of a species or a population of such species.
- **Linkage:** habitat that provides for the occupancy of Covered Species and their movement between larger blocks of habitat over time.
- **Minor Amendments:** minor changes to the CVMSHCP and the CVMSHCP IA, as defined in Section 20.4 of the IA and Section 6.12.3 of the CVMSHCP.
- **CVMSHCP Reserve System:** a reserve that will total approximately 745,900 acres and will provide for the Conservation of the Covered Species.
- **Permittees:** CVCC, CVAG, CVWD, IID, Riverside County, Riverside County Flood Control and Water Conservation District, Riverside County Regional Park and Open Space District, Riverside County Waste Resource Management District, Caltrans, and the

## Section 7 – Biological Resources

cities of Cathedral City, Coachella, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs and Rancho Mirage.

- Reserve Management Oversight Committee (RMOC): a committee established by the CVCC to provide technical expertise for CVMSHCP implementation, including oversight of the Reserve System.

CVWD is a signatory to the CVMSHCP, a Permittee, and a member of the CVCC. A number of CVWD operations and maintenance actions as well as projects are already Covered Activities (**Table 7-2**) (CVMSHCP Section 7.3 and Figure 7-1).

**Table 7-2  
CVWD Covered Activities in CVMSHCP Conservation Areas**

Facility	Conservation Area Where Located	Avoidance/Minimization Measures Required
ALERT <sup>1</sup> stations, all except Upper Bear Creek	Santa Rosa & San Jacinto Mts.; Whitewater Canyon Whitewater Floodplain; Thousand Palms; CVSC and Delta; Desert Tortoise CH and linkage.	None <sup>2</sup>
CVSC, including increased flows from the WMP	CVSC and Delta	Provision of replacement habitat; burrowing owl
East Valley drains, including increased flows from the WMP	CVSC and Delta	Desert pupfish, Yuma clapper rail, California black rail
Oasis area drains, including increased flows from the WMP	CVSC and Delta	Desert pupfish, Yuma clapper rail, California black rail
Coachella Canal; canal siphons & overshoots; East Side dike & evacuation channels	Dos Palmas, Mecca Hills/Orocopia Mountains; East Indio Hills	None <sup>2</sup>
WRP-7 recharge facility (construction and O&M)	East Indio Hills	Tamarisk removal; mesquite restoration
ALERT Station, Upper Bear Creek	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Deep Canyon training dikes & channel	Santa Rosa & San Jacinto Mts.	None <sup>2</sup>
Dead Indian Canyon debris basin	Santa Rosa & San Jacinto Mts.	Bighorn sheep
East La Quinta detention basins, channels & dikes	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Magnesia Canyon detention basin	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Stormwater drain inlets	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Dike No. 4 recharge facility [Levy facility] (construction and O&M)	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Martinez Recharge Facility, (construction and O&M)	Santa Rosa & San Jacinto Mts.	Minor Amendment with criteria; Bighorn sheep
Reservoirs & associated booster stations & transmission mains (existing)	Santa Rosa & San Jacinto Mts.	Bighorn sheep
Reservoirs & associated booster stations & transmission mains (construction and O&M)	Santa Rosa & San Jacinto Mts.	Minor Amendment with criteria; Bighorn sheep

**Table 7-2  
CVWD Covered Activities in CVMSHCP Conservation Areas  
(Continued)**

<b>Facility</b>	<b>Conservation Area Where Located</b>	<b>Avoidance/Minimization Measures Required</b>
Reservoirs & associated booster stations & transmission mains (existing)	Thousand Palms	Fluvial sand transport
Reservoirs & associated booster stations & transmission mains (construction and O&M)	Thousand Palms	Fluvial sand transport
Transmission water mains	Thousand Palms; West Deception Canyon	None <sup>2</sup>
Whitewater River flood control levees (construction and O&M)	Thousand Palms	Subject to terms & conditions of FESA Section 7 consultation
CRA turnout & recharge channel (O&M)	Whitewater Canyon; Whitewater Floodplain	None <sup>2</sup>
Spreading area for CRA water (O&M)	Whitewater Floodplain	Sediment removal & placement in deposition area
Cathedral City transmission mains	Santa Rosa & San Jacinto Mts.	Bighorn sheep

Source: CVMSHCP, 2008. Table 7-6. O&M = Operation and maintenance

Notes:

1 ALERT = Automated Local Evaluation in Real Time

2 These projects have no impact requiring specific avoidance and minimization measures. The projects are mitigated through CVWD's mitigation obligations, as described in CVMSHCP Section 6.6.1.

### 7.1.3.1 CVWD Mitigation Obligations

Under the CVMSHCP, CVWD existing mitigation obligations are as follows:

Of the approximately 7,000 acres that CVWD owns in the Conservation Areas, CVWD shall cooperate with CVCC toward the conservation of those lands, as follows:

- Approximately 1,200 acres of the 7,000 acres are in the Whitewater Floodplain Conservation Area and are currently conserved pursuant to the CVFTL [Coachella Valley fringe-toed lizard] HCP. These lands are permanently committed to conservation under the CVMSHCP.
- Lands on which CVWD has take authorization for O&M [Operation and Maintenance] of facilities that are Covered Activities will be conserved only to the extent compatible with the O&M of the facilities.
- Future facilities (Martinez Canyon recharge basins and future water- related facilities) that are Covered Activities requiring a Minor Plan Amendment with criteria will be mitigated by commitment of CVWD lands within Essential Peninsular bighorn sheep Habitat to conservation at a 1:1 ratio of Conservation to Development. If, in addition to these Covered Activities, CVWD develops any of its land in a Conservation Area consistent with the Conservation Objectives, CVWD may commit an equivalent dollar

## Section 7 – Biological Resources

---

value of its lands in the Conservation Areas to permanent conservation in lieu of paying the Development Mitigation fee. CVCC will continue to be responsible for ensuring that the Conservation Area Conservation Objectives are met.

- For future projects outside the Conservation Areas, CVWD may commit an equivalent dollar value of its lands in the Conservation Areas to permanent conservation in lieu of paying the CVMSHCP Local Development Mitigation Fee. These lands are not subject to the requirement that Local Permittee-owned lands that are not currently conserved must be committed to Conservation in perpetuity within 3 years of permit issuance.
- If before Year 50 of plan implementation, CVWD still owns land in the Conservation Areas that has not been conserved by any of the foregoing methods, CVWD shall cooperate with CVCC in the conservation of these lands through acquisition by CVCC or other means.
- Conservation will be accomplished through conveyance of fee title to CVCC, recordation of a conservation easement, or entering into an MOU for cooperative management with CVCC. CVWD will contribute \$3,583,400 toward the Endowment Fund for the Monitoring Program, the Management Program, and Adaptive Management. This may be paid in full the first full fiscal year after permit issuance, or it may be paid in installments over a maximum of 5 years, beginning in the first full fiscal year after permit issuance. Interest shall be paid by CVWD at the annual rate of 5.14 percent on the outstanding balance.
- Constructed habitats, mitigation measures for the 2002 PEIR incorporated into the CVMSHCP.

Additional CVWD mitigation projects under the plan are the following (CVMC and CVAG, 2008). Stipulations 1 through 4 are mitigation measures adopted for the 2002 PEIR for potential flow and water quality impacts on biological resources of the CVSC and drains that were incorporated into the CVMSHCP, even though the impacts were not anticipated to manifest for at least 10 to 15 years. Items 3 and 4 also address CVWD drain and CVSC maintenance for flood control. Item 5 addresses O&M (disposal of removed sediment) at the Whitewater Recharge Facility. Items 6 and 7 address mitigation measures at WRP-7 for the off-site disposal ponds, incorporated and expanded from the mitigation measures adopted for the WRP-7 Expansion EIR (MWH, 2000).

Under the CVMSHCP, CVWD will establish 66 acres of permanent habitat for California black rail and Yuma clapper rail in the Coachella Valley Stormwater Channel and Delta Conservation Area to replace habitat that is periodically altered by flood control and drain maintenance activities. CVWD will ensure that the water used to support the managed marsh habitat is irrigation water from the Lower Colorado River (LCR) or is other water with the same selenium concentration as water from the LCR or that meets a U.S. Environmental Protection Agency (USEPA) selenium standard for protection of aquatic life that has received a No Jeopardy determination from USFWS, whichever is greatest. The CVMSHCP states that within 2 years of Permit issuance, a plan detailing the location, water supply, monitoring and management responsibilities, and funding, shall be prepared by CVWD and submitted to the Wildlife



Agencies for review and approval. The plan further states that the habitat will be established within 3 years of approval by the Wildlife Agencies of this plan to establish the habitat.

The CVMSHCP also calls for CVWD to establish permanent riparian habitat, consisting of 44 acres of Sonoran cottonwood-willow riparian forest, in the CVSC and Delta Conservation Area to replace habitat that is periodically altered by flood control maintenance activities. The 44 acres address impacts to 37 acres of Sonoran cottonwood-willow riparian forest and 46 acres (at a 1:7 ratio) of primarily tamarisk scrub interspersed with occasional cottonwoods and willows. This Habitat is to provide for the conservation of this natural community and the riparian birds covered by the plan. The plan calls for, within 2 years of permit issuance, a plan detailing the location, water supply, and monitoring and management responsibilities, including funding, prepared by CVWD and submitted to the Wildlife Agencies for review and approval. The habitat is to be established within 3 years of approval by the Wildlife Agencies of this plan to establish the habitat.

1. The CVMSHCP also calls for CVWD to establish at least 25 acres of managed replacement habitat on a 1:1 ratio for desert pupfish, using low selenium water, at a site or sites to be determined with concurrence from the Wildlife Agencies. The CVMSHCP estimated that approximately 325 AFY of water would be required to maintain 25 acres of replacement habitat, replacing evaporation and maintaining appropriate flow-through rate. Ongoing maintenance and adjustments would be required, including vegetation control and dike and bank maintenance, to achieve desired habitat characteristics. This habitat is to replace the 25 acres of habitat periodically altered by CVWD maintenance activities in drains and flood control channels that contain pupfish habitat.
2. CVWD will also develop a study to evaluate the potential effect of routine drain maintenance on pupfish occupying the drains and to determine the efficacy of modifying maintenance practices to avoid or minimize potential take. The study will include method of surveying for pupfish, effects of the direction in which drains are cleaned (upstream or downstream), the manner in which the drain is cleaned (one side at a time or both), and the timing of sediment and vegetation removal. The study proposal will be prepared and submitted to the Wildlife Agencies within 2 years of permit issuance. The study will be initiated in the field season immediately following approval by the Wildlife Agencies. If the findings indicate that modification of the maintenance practices would significantly minimize impacts to pupfish, CVWD is to modify its maintenance practices.

At the present time (May 2011), a request for proposals (RFP) for riparian, wetlands, and desert pupfish habitat construction (items 1 through 3 above), has been prepared and is under review by CVAG and the Wildlife Agencies before the RFP is released to solicit bids. The riparian habitat, created marsh habitat, and 25 acre pupfish habitat constitutes mitigation in the CVMSHCP for habitat that is periodically altered by flood control and drain maintenance activities.

3. The CVMSHCP also states that as part of its (2002) WMP, CVWD is to conduct monitoring of selenium concentrations in the drains and the CVSC. CVWD routinely monitors selenium in the drains and CVSC (see Section 5 – Surface Water Resources).

## Section 7 – Biological Resources

---

4. The CVMSHCP calls for CVWD to enhance and manage Coachella Valley round-tailed ground squirrel habitat on land it owns in the East Indio Hills Conservation Area to offset impacts to this species from CVWD's O&M activities in the CVSC and Delta Conservation Area. The implementation of this element depends on whether CVCC is able to establish mesquite habitat on the WRP-7 pond site. If the WRP-7 site is deemed feasible, mesquite restoration will occur there, but enhancement and management of round-tailed ground squirrel habitat must also occur within the entire area of land CVWD owns in this area, not just WRP-7 pond site. CVCC has not yet initiated the feasibility study.
5. Under the CVMSHCP, CVWD is to deposit sand removed from the Whitewater groundwater recharge basins during maintenance operations in the downwind water and wind transport area on available Reserve Lands in a manner that downwind habitat would receive appreciable inputs of wind-blown sand from the deposits, as determined in consultation with the Reserve Management Oversight Committee (RMOC). CVWD has a sediment relocation experiment underway and the results of the experiment are to be considered when they are available. At the present time, this requirement is being implemented. CVWD crews have placed some sand removed from the ponds in an area downwind of the ponds, as requested, and will continue to do so as a part of pond maintenance.
6. In conjunction with the WRP-7 recharge facility, CVWD is to remove tamarisk from the site. In addition, if a study undertaken by the CVCC demonstrates the feasibility of mesquite restoration, CVWD is to restore and enhance mesquite and Coachella Valley round-tailed ground squirrel habitat on site. Within 2 years of CVMSHCP approval, a plan detailing the location, water requirements, and monitoring and management responsibilities, including funding, shall be provided to the Wildlife Agencies for review and approval. The Habitat is to be established within 3 years of approval of the CVMSHCP by the Wildlife Agencies. CVWD staff evaluated the tamarisk trees on the site in late 2010. The site has hundreds of mature tamarisk trees; CVWD will decide in the near future who will conduct the tree removal (CVWD staff or a contractor).
7. CVCC will undertake additional mesquite hummock restoration in the Conservation Area to ensure a total of 40 acres of mesquite Habitat is created. The CVMSHCP states that to the extent feasible, the acreage to be established by CVCC will be sited on the CVWD land where CVWD establishes its required mesquite habitat. To the extent that the CVWD site does not accommodate the CVCC-required acres of mesquite hummock restoration, CVCC will seek to establish the remaining requirement elsewhere in the East Indio Hills Conservation Area. If establishment of the full acreage is not feasible in this Conservation Area, mesquite hummock acreage needed to reach the required total will be established in other appropriate Conservation Areas proximate to Coachella Valley round-tailed ground squirrel habitat. As of this writing, CVCC has not yet initiated the study of hydrologic regimes on the CVWD site needed for the feasibility analysis.

CVMSHCP Section 4.4 presents required avoidance, minimization and mitigation measures for all Covered Activities within the Conservation Areas. These measures apply to biological corridors, burrowing owl, covered riparian bird species (during the nesting season), crissal

thrasher, desert tortoise, fluvial sand transport, Le Conte's thrasher, mesquite hummocks and mesquite bosque natural communities, Peninsular bighorn sheep habitat, triple-ribbed milkvetch, Palms Springs pocket mouse, and Little San Bernardino Mountains Linanthus.

For CVWD Covered Activities, applicable species specific measures not included in items 1 through 7 above (see **Table 7-2**) are for burrowing owl and bighorn sheep. However, evaluations for all Covered Species will be performed in future site-specific analyses for elements of the 2010 WMP update.

### ***Burrowing Owl Measures***

Burrowing owl measures are presented in CVMSHCP Section 4.4, pages 168-169. The measures identify surveys and actions to follow during construction or O&M activities if active burrows are found on proposed facilities or O&M sites.

The CVMSHCP also states that within 1 year of Permit issuance, CVCC will cooperate with Riverside County Flood Control, CVWD and IID to conduct an inventory of levees, berms, dikes and similar features in the plan area maintained by those Permittees. Burrowing owl burrow locations will be mapped and each agency will incorporate the information into its O&M practices to avoid impacts to the burrowing owl to the maximum extent Feasible. The inventory was completed in 2009 by the University of California, Riverside (UCR, 2009). Burrowing owls were found to be broadly distributed in the Coachella Valley, but uncommon, and to be generalists in their habitats — in and adjacent to suburban and urban development, in washes, fallow fields, sand dunes, agricultural drains and creosote scrub habitat. Of the 53 locations at which owls were found in the Coachella Valley, 65 percent were in Desert Hot Springs along Mission Creek and Little Morongo Wash, outside the study area. Approximately 70 percent of the locations were inside and 30 percent outside CVMSHCP Conservation Areas. In the East Valley, the largest accumulation of active nests was along the CVSC where water erosion had created “crag” in the bank that had first been occupied by burrowing rodents, probably ground squirrels.

CVCC in cooperation with the three agencies will prepare a manual for maintenance staff, educating them about the burrowing owl and appropriate actions to take when owls are encountered to avoid impacts to the maximum extent Feasible. The manual will be submitted to the Wildlife Agencies for review and comment within 2 years of Permit issuance. In conjunction with the CVMSHCP Monitoring Program the maps of the burrowing owl locations will be periodically updated; UCR will also conduct the monitoring. If avoidance is not possible, other mitigation measures such as owl relocation and provision of artificial burrows are included in the CVMSHCP.

### ***Desert Tortoise Measures***

Desert tortoise measures, presented on CVMSHCP pages 4-170 to 4-176, identify survey requirements, actions to take if fresh tortoise sign is found, protocols for utility development, and O&M activities. The section presents inactive season protocols that apply to pre-construction and construction phases of utility Covered Activity projects occurring between November 1 and February 14. These include surveys, worker education, site fencing and marking, and agency

## Section 7 – Biological Resources

---

coordination, construction methods, tortoise handling and protection. Active season protocols apply to pre-construction and construction of utility development projects occurring between February 15 and November 1. They are identical to the inactive season protocols, but with additional surveys, monitoring fencing and site clearance. The section also presents measures for the disposition of sick, injured or dead desert tortoises located during a utility or road project.

### ***Peninsular Bighorn Sheep Measures***

For Peninsular bighorn sheep Habitat, CVMSHCP pages 4-176 to 4-177 identify measures applicable to Covered Activities. Covered Activities within sheep Habitat shall occur outside the lambing season (January 1 to June 30) unless authorized by a Minor Amendment to the plan with concurrence of the Wildlife Agencies. O&M of Covered Activities shall also be scheduled outside the lambing season but may extend into the January 1 to June 30 period if necessary to complete the activity, upon concurrence of the Wildlife Agencies. The measures also state that no toxic or invasive landscaping may be used at new project sites in bighorn sheep areas; existing oleander and other toxic plants must be removed.

As a Permittee, CVWD will also comply with mitigation measures for the following, as applicable, for Proposed Project elements:

### ***Biological Corridors***

Biological Corridors are present in all Conservation Areas and their maintenance will be considered on a site specific basis for Proposed Project elements in Conservation Areas.

### ***Mesquite Hummocks and Mesquite Bosque Natural Communities***

CVWD will be providing mitigation, together with CVCC, for this community (see item 6 above) on the CVWD WRP-7 pond site, if the CVCC feasibility study shows that community conservation and enhancement are feasible at this location. This is CVWD's mitigation for this community, other than to avoid or minimize potential impacts on other facilities' sites should this natural community be present. If the mitigation is found not to be feasible, then avoidance at other sites will constitute mitigation.

### ***Crissal Thrasher***

Core Habitat is present in the CVSC and Delta, East Indio Hills and Thousand Palms Conservation Areas. The crissal thrasher is found in the plan area from the area around Dos Palmas and the Salton Sea. Throughout its range, crissal thrasher is known as a resident of dense thickets and woodlands of shrubs or low trees in desert riparian and desert wash habitats. The CVMSHCP states (page 9-162) that as part of the avoidance, minimization, and mitigation measures required by the CVMSHCP, construction activities in eight identified Conservation Areas will avoid mesquite hummocks and mesquite bosque to the maximum extent feasible. This species will benefit from the CVWD habitat mitigation in the CVSC and Delta, East Indio Hills, Thousand Palms, Santa Rosa and San Jacinto Mountains Conservation Areas.

**Fluvial Sand Transport.** The CVMSHCP calls for Permittees to protect the fluvial (water-borne) sand transport processes in the Cabazon, Long Canyon, and West Deception Canyon Conservation Areas to ensure no net reduction in fluvial sand transport in these areas. No Proposed Project elements will be located in these Conservation Areas.

**Le Conte's Thrasher.** The species requires creosote scrub habitat and undisturbed substrate for foraging under desert shrubs. The CVMSHCP calls for the Permittees to protect and manage, in perpetuity, 73,204 acres of the modeled Habitat to mitigate the take of Le Conte's thrasher, chiefly by Habitat destruction for agriculture and development. Within the plan area, Le Conte's thrashers are known to occur in the Upper Mission Creek/Big Morongo Canyon, Whitewater Floodplain, Willow Hole, Edom Hill, Thousand Palms, and Desert Tortoise and Linkage Conservation Areas. In addition, as part of the avoidance, minimization, and mitigation measures required by the plan, construction activities in all the Conservation Areas are to avoid Le Conte's thrasher nesting sites.

### ***Triple-Ribbed Milkvetch***

Under the plan, CVMSHCP Core Habitat for this plant species is in Whitewater Canyon and Upper Mission Creek/Big Morongo Canyon. Over 85 percent of known occurrences are already protected on federal land. The CVMSHCP states that several historic locations near the area where the Whitewater River passes under Interstate 10 may have been disturbed or eliminated by levee construction and activities related to the Metropolitan CRA. Protection of the existing flooding regime in Whitewater Canyon above the Whitewater Recharge Facility is considered to be an important element of mitigation. The 2002 PEIR survey found no evidence of the triple-ribbed milkvetch in the Whitewater River channel and concluded that it would not be within the portion of the channel subject to water flows.

### ***Little San Bernardino Mountains Linanthus***

This species occurs uncommonly within a variety of desert habitat types including dunes and Sonoran scrub. Known localities include several sites in the West Valley, but none within the zone of Proposed Project activities. A population is known from Whitewater Canyon, considered a CVMSHCP Core Habitat Area, but the field survey for the 2002 PEIR found no individuals. The plant is usually associated with natural upland soils and cryptobiotic crusts (biological soil crust formation composed of living cyanobacteria, green algae, brown algae, fungi, lichens, and/or mosses), which do not occur in the Whitewater River channel. The plan states that protection of the flooding regime may be the most significant feature for conservation of this species' Habitat. The Proposed Project, as in the 2002 WMP, would not affect the flood regime because it will have no impact on the Whitewater River floodplain and river flows would be within historic levels.

### ***Palm Springs Pocket Mouse***

This obscure species is generally found on loose, sandy soils in dry desert habitats. Of the target Conservation Areas for this species in the CVMSHCP, only the Whitewater Floodplain could be affected by the Proposed Project elements. Habitat is mapped up-Valley and down-Valley from the Whitewater Recharge Facility. Mitigation and enhancement for this habitat is implemented

## Section 7 – Biological Resources

---

by CVWD as part of O&M requirements for the facility, under which sand cleared from the recharge ponds is deposited downstream/downwind to contribute to that habitat substrate. See CVWD mitigation item 5 above.

### 7.1.3.2 Land Use Adjacency Guidelines

CVMSHCP Section 4.5 presents Land Use Adjacency Guidelines to be considered by the Permittees in their review of individual public and private development projects adjacent to or within the Conservation Areas to minimize edge effects. These measures are to be implemented where applicable. CVWD is incorporating this verbiage into ongoing projects.

- drainage – development shall ensure that the quantity and quality of runoff is not adversely altered, nor contain toxic chemicals or exotic plant materials
- toxics – land uses that use toxic materials or generate bioproducts such as manure shall ensure that the chemicals do not discharge into the adjacent Conservation Area
- lighting – lighting shall be shielded and directed away from the Conservation Area toward the developed area
- noise – development that generates noise in excess of 75 dBA  $L_{eq}$  hourly shall incorporate setbacks, berms or walls to minimize noise effects
- invasives – invasive, non-native plant species shall not be incorporated in the landscaping (see CVMSHCP Table 4-113). Landscape treatments shall incorporate native plant materials to the maximum extent feasible; recommended species are listed in CVMSHCP Table 4-112.
- barriers – proposed land uses shall incorporate barriers in project design to minimize unauthorized public access, domestic animal predation, illegal trespass, or dumping. Barriers may be native landscaping, rocks/boulders, fencing, walls and/or signage.
- grading/land development – manufactured slopes shall not extend into adjacent land in a Conservation Area.

### 7.1.3.3 Take Authorization for Covered Activities Outside Conservation Areas

The CVMSHCP Permit provides take authorization for the following types of Covered Activities outside Conservation Areas, as long as compliance with CVMSHCP requirements is achieved: incorporation of pertinent avoidance, minimization and mitigation measures (CVMC and CVAG, 2008, section 7):

- **Development permitted or approved by Local Permittees.** This includes, but is not limited to, new projects approved pursuant to county and city general plans, including the circulation element of said general plans, transportation improvement plans for roads, master drainage plans, capital improvement plans, water and waste management plans [emphasis added], the County's adopted Trails Master Plan, and other plans adopted by the Permittees.

- Public facility construction, operations, and maintenance and safety activities by the Permittees for existing and future facilities, including both on and off site activities. Such facilities include, but are not limited to, publicly maintained roads and rights-of-way; materials pits; maintenance yards; flood control facilities; landfills, transfer stations, and other solid waste related facilities, including those for the processing of organic materials; public buildings; water development, production, storage, treatment, and transmission facilities; sewage treatment and transmission facilities; reclaimed water storage and transmission facilities [emphasis added]; public parks; substations and electric transmission facilities; and other public utility facilities providing services essential to the health, safety, and welfare of the public.
- **Emergency response activities by Permittees required to protect the public health, safety, and welfare.** Such emergency response activities by Permittees include emergency response to wildfire, flooding, earthquakes, and other emergency situations. The permits do not provide take authorization for agricultural operations.

Note that the management of potential impacts on wetlands remains with the State and federal agencies and is not part of the CVMSHCP.

### 7.1.3.4 Procedures for CVWD Compliance with the CVMSHCP

CVWD first determines whether a proposed project is in a Conservation Area (it is anticipated that no Proposed Project elements will be in Conservation Areas). If the proposed CVWD project is not located in a Conservation Area, there are two approaches. CVWD may pay the standard CVMSHCP Local Development Mitigation Fee (set at \$5,730 per acre for the first year of the plan, to be re-evaluated annually against the Consumer Price Index). The CEQA document (and NEPA document, if required) for the project would then state that mitigation for impacts to Covered Species and Habitats have been mitigated through the CVMSHCP. CVWD would conduct surveys of the project site for biological resources and include the results in the environmental document in any case.

If the proposed project is in a Conservation Area and would potentially result in disturbance to Habitat, natural communities, biological corridors, or essential ecological processes, then the project undergoes a Joint Project Review with the CVCC, with whom CVWD develops modifications to the project or to mitigation measures to reduce impacts on covered species or habitat. O&M of Covered Activities is not subject to the Joint Project Review Process.

The five-step process described in CVMSHCP Section 6.6.1.1. and Figure 6-1 consists of: 1) submittal of an application to CVCC for project review, 2) CVCC's review of the project, identification of impacts on the Conservation Area and Required Measures, 3) Wildlife Agencies' review, 4) written notification of the Permittee if the project is deemed consistent with Conservation Area objectives, or 5) meeting(s) to identify measures to achieve compliance if the project is not found in step 3) to be consistent with the affected Conservation Area goals and objectives.

This review is undertaken even if the project is identified as a CVWD Covered Activity in the CVMSHCP. The measures agreed upon through the Joint Project Review Process are

## Section 7 – Biological Resources

---

memorialized in writing. The project and accompanying CEQA document (and NEPA document if applicable) incorporate the modifications and can then state that mitigation for impacts to covered species and habitats have been mitigated through the CVMSHCP.

Some of the listed CVWD Covered Activities require Minor Amendments to the CVMSHCP. CVMSHCP Section 6.12.3 defines Minor Amendments as “amendments to the CVMSHCP of a minor or technical nature where the effect on Covered Species, level of Take, and Permittees’ ability to implement the CVMSHCP are not significantly different than those described in the CVMSHCP as originally adopted.” Minor Amendments to the CVMSHCP do not require amendments to the IA or the Permits. The procedures for obtaining a Minor Amendment are presented in CVMSHCP section 6.12.3. Minor Amendments specifically requiring Wildlife Agencies’ concurrence are: “Construction and operation of CVWD water recharge and storage and other water related facilities as described in Section 7.3 of the CVMSHCP.” These facilities are presented in **Table 7-2** of this SPEIR.

### 7.1.4 Sensitive Species and Habitats Potentially Occurring in the Study Area

**Table 7-1** lists the sensitive species and natural communities in the Coachella Valley study area covered by the CVMSHCP, and seven other species listed by the CDFG and USFWS, but not covered in the CVMSHCP. This is considered to be the baseline sensitive biological elements list for the 2010 WMP Update SPEIR. A comprehensive plant and animal species list for the Coachella Valley was presented in Appendix F of the 2002 PEIR.

Agency-listed sensitive plants and animals from the September 2001 list (for the 2002 PEIR) have been compared to the most current versions, respectively, of the CDFG “State and Federally Listed Endangered, Threatened and Rare Plants of California” and “State and Federally Listed Endangered, Threatened and Rare Animals of California” and CNDDDB lists of Special Plants and Special Animals (CDFG, 2001a, 2001b, 2009, 2011a, 2011b, and 2011c).

Study area sensitive plant listings did not change in the years between 2001 and 2011 (CNPS, 2011; CDFG, 2001b; CDFG 2011b). Changed listing information for the following animal species was published between 2002 and 2011:

- Arroyo toad, *Bufo californicus* (FE), Final Critical Habitat published May 13, 2005 [does not include Whitewater River below the CRA turnout],
- Bald eagle, *Haliaeetus leucocephalus* (SE), FT delisted August 8, 2007, and
- Bighorn sheep, *Ovis canadensis nelsoni* (ST, FE, SFP), Final Critical Habitat published April 2009.

## 7.2 ENVIRONMENTAL SETTING

The western Coachella Valley (West Valley) lies southeast of the high San Bernardino Mountain range, immediately south of the lower Little San Bernardino range, and northeast of the San Jacinto Mountains. The transitional area between the San Bernardino-Riverside basins and the Coachella Valley is the San Gorgonio Pass, through which funnel strong downslope winds. The



surrounding mountain slopes are relatively steep, with numerous drainages extending down into the West Valley; most carry only seasonal surface flows once they reach the low foothills and basins.

Vegetation on the lower slopes varies from xeric (dry) chaparral elements, including scrub oak (*Quercus dumosa*), laurel sumac (*Malosma laurina*) and chamise (*Adenostoma fasciculatum*), to typical desert species such as brittlebush (*Encelia californica*), creosote (*Larrea tridentata*), mesquite (*Prosopis glandulosa*), catclaw (*Acacia greggii*) and *Opuntia* cactus. The foothills are typically rocky, often with little exposed soil, transitioning narrowly at the toes of the slopes into broad, seasonally high-energy washes and arroyos. Vegetation within the wash channels forms during years of relatively low rainfall and runoff, but is generally scoured away during higher-rainfall years. The upper portion of the Coachella Valley floor has deep alluvial deposits; some with relatively large stones and boulders intermixed, and generally supports only thin, drought-tolerant vegetation.

Sand fields and dunes have formed over much of the West Valley, some positioned against the toes of slopes, and others spread over the central portion of the Coachella Valley floor. Where sand sources have been mined, blocked by windrow vegetation, or otherwise removed or stabilized, their dependent dunes have overgrown with herbaceous vegetation (some non-native). The spread of non-native herbaceous plants across the Coachella Valley has been worsened by the use of tamarisk (*Tamarix chinensis*) along railway alignments and as windrows, and the destabilization of substrates on dunes and desert pavement by grading or disking.

The East Valley, which extends from Point Happy in La Quinta south to the Salton Sea, is surrounded by relatively steep, rocky, thinly-vegetated mountain slopes and bajadas. Rainfall may at times generate flash flooding along otherwise dry arroyos, requiring diversion or detention structures in high-risk areas. Surface runoff is blocked and impounded behind detention dikes along the Canal margin and south of Lake Cahuilla; this water may accumulate in low areas behind the dikes, where it eventually evaporates or percolates into the groundwater basin.

Biological field surveys were performed for the 2002 PEIR from 1999 to 2002. While field surveys more than about two years old generally are considered “stale” by the California Department of Fish and Game (CDFG) and the US Fish and Wildlife Service (USFWS) (the Wildlife Agencies), the present 2010 WMP Update is programmatic and includes no immediate construction of site-specific elements or site-specific biological analyses. Field reconnaissance surveys were performed by CVWD environmental and biological staff on May 17 and 19, 2011 for this SPEIR for the facilities’ sites that are more or less known at this time — the Martinez Canyon recharge basin site and the area adjacent to WRP-4 identified for a potential desalination plant. Biological resources at the potential recharge basin site at Indio’s Posse Park will be evaluated by the City as part of park development. Other WMP facilities sites are unknown. Therefore, no updated field surveys were conducted at the Indio site or other sites for this SPEIR.

### 7.2.1 General Description of Habitats Potentially Affected by the Proposed Project

The habitats described in this section focus first on watercourses and wetland habitats that could be affected by changes in flows of imported waters or flows in agricultural drains, or discharged treated effluents due to effects of the Proposed Project on water resources. The second focus of this section is on terrestrial habitats that could be affected by construction of facilities to implement the Proposed Project—pipelines, pumping stations, tank reservoirs, water treatment plants, wastewater treatment plants and recharge facilities.

#### 7.2.1.1 Aquatic and Riparian Habitats

##### *Coachella Canal*

The entire Coachella Canal is now concrete-lined with the completion in late 2007 of the Coachella Canal Lining Project (CCLP) which greatly reduced seepage between siphons 7 and 30. Mitigation for wetlands dependent on the seepage is underway as a joint project among the U.S. Bureau of Reclamation (Reclamation), the U.S. Bureau of Land Management (BLM), CVWD, and the San Diego County Water Authority (SDCWA).

##### *Whitewater Channel Below the Metropolitan Turnout*

The Whitewater River is a natural channel crossed by the Metropolitan Water District of Southern California (Metropolitan) Colorado River Aqueduct (CRA). Metropolitan releases State Water Project (SWP) Exchange water into the channel from a CRA turnout, located approximately one mile north of Interstate 10 (I-10), whence it flows south under the freeway to State Highway 111 and is directed into the Whitewater Recharge Facility in the alluvial fan north of Windy Point.

The river channel is in part an unlined, sandy-bottomed channel and in part characterized by a rocky bottom bordered by earthen berms. Natural flow in the channel is limited to infrequent storm events and intermittent seasonal flow of variable duration depending on watershed runoff rates. SWP Exchange flows in the channel are typically braided, creating many small rivulets within the channel width. Because of the unstable substrate, variable flows and flood scour, little mature riparian vegetation or natural habitat exists within the channel margins; the native vegetation is scattered patches of mulefat (*Baccharis salicifolia*).

##### *Whitewater River/Coachella Valley Stormwater Channel and Drains*

The Whitewater River/ CVSC is a broad (up to about 300 to 400 feet wide), mostly unlined channel, bounded by graded, compacted earthen side berms, with a narrow pilot channel that is concrete-lined in sections (in the Indian Wells-Palm Desert-Rancho Mirage area) and cut down the center of the alignment for most of its length. The CVSC, the man-made extension of the Whitewater River channel, extends southerly from Point Happy to the Salton Sea.

CVWD and the CDFG signed a Memorandum of Understanding (MOU) in June 1977 to ensure both effective channel operation for flood control and maintenance of biologic habitat. The

MOU identified allowable emergency and routine maintenance activities in the channel. For example, the removal of vegetation in the CVSC to maintain flood capacity is to be performed on alternate sides of the pilot channel each year according to the MOU. In addition, CVWD is working with the U.S. Army Corps of Engineers (USACE) and CDFG to determine the appropriate Clean Water Act permits for CVWD's ongoing operations and maintenance within the Whitewater River/CVSC.

To maintain flood carrying capacity, CVWD currently maintains the Whitewater River/CVSC by mowing (but not uprooting) herbaceous regrowth in the channel from the edge of the pilot channel on either side to the top of the side berms. Bank stabilization work has also been performed. Fluctuations in flows in this area of the channel range from infrequent flows limited to storm events above the discharge from Valley Sanitary District's reclamation plant near Dillon Road to a steady but variable dry weather base flow (comprised of rising groundwater, nuisance water, subsurface drainage and treated municipal effluent) below Dillon Road that is also subject to occasional scouring flood flows from storms. The degree to which the sections of the CVSC are vegetated changes radically according to the frequency of storm flows and channel maintenance activities.

The pilot channel supports varying degrees of wetland and riparian growth, ranging from desiccation- or salt-tolerant grasses and herbs to vigorous stands of tamarisk, and scattered, formations of mixed willow (*Salix gooddingii*, *S. exigua*) and cottonwood (*Populus fremontii*). By mid-summer, surface flows extend to just above Van Buren Street in the City of Indio, but moist soils in the pilot channel support a dense thatch of (primarily non-native) wetland herbaceous species well upstream of that point. Upstream soils are kept moist by small flows of urban nuisance water generated by lawn and golf course watering, street washdown and some direct storm runoff.

Vegetation communities present in the CVSC are desert dry wash woodland, Sonoran creosote bush scrub, Sonoran cottonwood-willow forest, and freshwater marsh as well as urban/developed. Plants commonly found in the CVSC during the surveys for the 2002 PEIR and during the 2007 wetland delineation for the CVWD Mid-Valley Pipeline Phase 1 SEIR (MWH, 2007) primarily were species associated with the pilot channel, where water is most readily accessible, including: bassia (*Bassia hyssopifolia*), Bermuda grass (*Cynodon dactylon*), annual beard grass (*Polypogon monspeliensis*) and rabbitsfoot grass (*Polypogon* sp.), wild heliotrope (*Heliotropium curassavicum*), yellow sweet clover (*Melilotus indica*), common reed (*Phragmites australis*), cattail (*Typha* sp.), arrow weed (*Pluchea sericea*), knot weed or smartweed (*Polygonum* sp.), bulrush (*Scirpus robustus*), bush seepweed (*Suaeda moquinii*), fringed willow-herb (*Epilobium ciliatum*), Mexican tea (*Chenopodium ambrosioides*), shortawn foxtail (*Alopecurus aequalis*), scarlet monkeyflower (*Mimulus cardinalis*), yellow monkeyflower (*Mimulus guttatus*), Watson's amaranth (*Amaranthus watsonii*), willows and tamarisk. Areas of dry desert wash habitat had Jimson weed (*Datura meteloides*), tree tobacco (*Nicotiana glauca*) and tamarisk. Species found on drier substrates adjacent to the pilot channel were: big saltbush (*Atriplex lentiformis*), Emory baccharis (*Baccharis emoryi*), Fremont cottonwood and cocklebur, as well as white bush sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*) and creosote bush. Wildlife use of the CVSC is diverse, as the channel is open, unlined and easily accessible for most of its length. Smaller mammals [(jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus*

## Section 7 – Biological Resources

---

*audubonii*]) and “terrestrial” birds (roadrunner [(*Geococcyx californianus*), quail (*Callipepla californica*)] were observed moving in and out of the channel during the 1999 and 2002 field surveys. Several “track lines” (worn pathways formed by numerous animal passages over time) were noted, which crossed the access road from desert habitats into the channel (species use not determined). Movement along the riparian corridor within the channel is relatively unobstructed, with culverts and low road crossings posing the only significant barriers to passage of riparian-associated species up and down channel. Terrestrial species sometimes use large dry culverts as corridors. Terrestrial habitat values outside the channel margins have largely been compromised or degraded by agriculture and other land uses, but some areas of disturbed natural habitat (xeric upland) persist, particularly near the southern end of the alignment.

Where riparian vegetation forms dense patches along the alignment and where freshwater resources are dependable, the habitat may support species such as blue grosbeak (*Passerina caerulea*), red-winged blackbird (*Agelaius phoeniceus*), northern oriole (*Icterus galbula*) and hooded oriole (*Icterus cucullatus*), green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), American kestrel (*Falco sparverius*) and Cooper’s hawk (*Accipiter cooperi*).

Terrestrial species appear to be able to move into habitat areas within the channel with minimal obstruction, having only to cross over varying widths of open ground. Nocturnal species [such as desert woodrat (*Neotoma l. lepida*), cactus mouse (*Peromyscus eremicus*) and kit fox (*Vulpes macrotis arsipus*)], or high mobility species [desert cottontail, desert black-tailed jackrabbit and coyote (*Canis latrans*)], should be able to cross open space from natural desert systems to open water and riparian cover in the pilot channel at a number of points along the alignment, where intervening roadway and embankment widths are only a few hundred feet.

### *The Salton Sea*

As discussed in **Section 5**, the Coachella Valley drains southward to the Salton Sea, with flows containing treated wastewater effluent, storm flows, rising groundwater and subsurface drain flows that together currently make up about 6 to 8 percent of the total inflow to the sea.

Where the mouths of the CVSC and agricultural drains empty into the Salton Sea, there are mixed open water, freshwater cattail-reed marshes, and cottonwood-willow riparian stands supported by freshwater flows from these channels. These habitats have varied in extent and quality over time, coincident with degree of saline water intrusion. The Sea elevation steadily rose from 1935, then stabilized, and has been falling steadily since 1995 to an average elevation of approximately -230.7 feet below mean sea level (msl) (see **Figure 5-5**). The CVSC/drains and freshwater marsh habitat has moved downstream as the sea level has declined.

Wildlife using this site are diverse, although primarily consisting of birds and foraging terrestrial mammals. The marsh supports substantial numbers of herons and egrets, the most abundant being the great blue heron (*Ardea herodias*), green heron, black-crowned night heron, great egret (*Ardea alba*), snowy egret (*Egretta thula*) and cattle egret (*Bubulcus ibis*). This area also has the potential to support sensitive species such as the State Threatened/Federally Endangered Yuma clapper rail (*Rallus longirostris*), the State Threatened/State Fully protected California black rail (*Laterallus jamaicensis*), least bittern (*Ixobrychus exilis*), white-faced ibis (*Plegadis chihi*), and

more common species such as Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), western grebe (*Aechmophorus occidentalis*), Clark's grebe (*Aechmophorus clarkia*), and American coot (*Fulica americana*). Birds of prey hunt over the marshes, and northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), and occasionally also State Endangered bald eagle (*Haliaeetus leucocephalus*) and State Endangered American peregrine falcon (*Falco peregrinus*) would be expected to occur on a resident or seasonal basis.

Blue grosbeak, northern flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), ash-throated flycatcher (*Myiarchus cinerascens*), western kingbird (*Tyrannus verticalis*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), and common ground dove (*Columbina passerina*) also have been observed at this site. The total bird species documented as occurring within Salton Sea habitats on a regular basis is 279, with additional records including 96 accidental occurrences of species not normally found in this region (McCaskie, ed., 1989). For the purposes of long-term analyses, Salton Sea estuarine habitats should be considered as potentially supporting all bird species known to occur locally on a regular basis. In general, the southern end of the Sea (outside the Proposed Project study area) has far more extensive marsh and riparian habitats, and many of the species recorded for the area are either known only from that end, or are more frequently seen or abundant there.

Terrestrial vertebrate use of the marsh would be limited to (primarily) nocturnal forays by coyote, raccoon (*Procyon lotor*), bobcat (*Lynx rufus*) and other generalist-feeders searching for sleeping birds, foraging for crustaceans and hunting for muskrats and other small mammals. A number of bat species might be expected to forage for flying insects over the estuarine habitats, particularly in spring and summer, when mass adult emergences of aquatic flies and mayflies occur. Resource values for larger terrestrial species are somewhat compromised by the obvious presence of humans hunting, shooting, dumping trash and fishing along the access road and channel.

Open mud flats and the sand spit at the terminus of the CVSC are vegetated with salt-tolerant shrubs such as saltbush (*Atriplex canescens*), Bermuda grass (*Cynodon dactylon*), iodine bush (*Allenrolfea occidentalis*) and wild heliotrope (*Heliotropium currasavicum*). The soil surface in this area is salt-encrusted and only plant species that can germinate and grow in such substrates are able to persist here. Wildlife on this site is restricted to species able to tolerate exposure to high heat and humidity, or small enough to take shelter in the sparse vegetation. Side-blotched lizards (*Uta stansburiana*) occur in the saltbush habitat, along with greater roadrunner. Black-necked stilts (*Himantopus mexicanus*) nest in inundated vegetation and in debris piles along the shoreline. Birds on the mudflats are American avocet (*Recurvirostra americana*), black skimmer (*Rhynchops niger*), several species of sandpiper (*Calidris* sp.), long-billed curlew (*Numenius americanus*) American oystercatcher (*Haematopus palliatus*), and three flamingos (*Phoenicopterus*, (species not determined, but probably either greater, lesser, or Chilean flamingos, all of which occur in California as escapees from captivity and have been reported from the Sea).

The Torres-Martinez Tribe of Desert Cahuilla Indians (TMDCI) has developed an 85-acre wetland system on the shore of the Salton Sea west of the CVSC outflow. The system, sited on TMDCI land, at present consists of seven water quality treatment ponds, followed by four open

## Section 7 – Biological Resources

---

water and cattail habitat ponds that drain to the Salton Sea. Additional brackish water habitat ponds are proposed as Sea level falls. The TMDCI have created valuable wetland and pond habitat that is used by a variety of sensitive species on land that was formerly degraded desert. The water to maintain the wetlands is diverted from the CVSC, flows through the wetlands and into the Salton Sea. The wetland supports migratory and resident birds and other sensitive species that depend on increasingly scarce wetland habitat. The water diversion, which is metered, reduces to a minor extent the total water inflow to the Salton Sea because of evapotranspiration from the wetland plants and evaporation from water surfaces.

California Department of Water Resources (DWR) and CDFG predict (DWR and CDFG, 2010a) that declining inflows in future years from various factors will result in ecosystem collapse of the Salton Sea due to increasing salinity and other water quality issues (temperature, eutrophication and related low dissolved oxygen and algal productivity). The pileworm, a primary component of the Salton Sea food web, will likely be affected when the salinity exceeds 50,000 mg/L (DWR and CDFG, 2006). Tilapia, which is presently the primary forage species for fish-eating birds at the Salton Sea, may be eliminated when salinity exceeds 60,000 mg/L. Salinity in 2008 reached 50,000 mg/L (Jack Crayon, DFG, pers. comm., 2009), and by 2010 reached 53,000 mg/L (DWR and DFG, 2010). The sea salinity could exceed 60,000 mg/L as early as 2018. Tilapia continue to persist in lower salinity areas where the rivers, creeks, and agricultural drains enter the Salton Sea. However, the loss of fish populations from the open water area would reduce and possibly eliminate use of the Salton Sea by fish-eating birds, such as pelicans, double-crested cormorants, and black skimmers by the early 2020s. Some of these birds could use the areas where the rivers, creeks, and drains enter the Salton Sea if fish continue to persist in these locations. In addition, the relative abundance of bird species that forage on invertebrates (worms, crustaceans) likely would change over time with increases in salinity and resultant changes in the invertebrate community.

### 7.2.1.2 Terrestrial Habitats

Coachella Valley terrestrial habitats are diverse, characterized by ground slope, soil characteristics, solar and wind exposure, water supply and plant communities. Coachella Valley habitats are:

- the valley floor with dunes and sand fields — active sand dunes, active sand fields, stabilized dunes and sand fields,
- alluvial plains (bajadas),
- sandy washes,
- desert fan palm oases, and
- foothill and montane habitats including mesquite hummocks.

#### *Valley Floor Dunes and Sand Fields*

The Coachella Valley floor is generally characterized by flat, low-lying terrain with desert scrub vegetation, and areas of blowing sand creating dune and sand field systems. The systems are

subdivided into active dunes and sand fields or stabilized sand fields. These sparsely vegetated blowsand habitats support low perennial plant diversity, high annual plant diversity and diverse invertebrates. The most common plant community found in the sand dune and active fields is the Sonoran Desert creosote bush scrub, which includes creosote bush, burro bush (*Ambrosia dumosa*), brittlebush, and desert brickellia.

Urban and resort development and agriculture on the Valley floor have eliminated or fragmented this habitat over time. Dunes and sand fields become stabilized by conditions that prevent the inflow of fresh sources of sand, such as the construction of the Union Pacific Railroad lines, I-10, and associated windbreaks, upwind development and the construction of roads, buildings and landscaping.

There are a number of plant and animal species endemic to these habitats that are listed as State and Federally Threatened or Endangered, including the Coachella Valley fringe-toed lizard (*Uma inornata*) and the Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*). All of these habitats are carpets of wildflowers following spring precipitation.

### ***Alluvial Plains (Bajadas)***

Bajadas or alluvial plains are formed by the coalescing of alluvial materials washed from adjacent canyons. The materials fan out on the Valley floor from the canyon mouth and are coarsest (boulders and cobbles) near the mountains and finest (sands and clays) at the furthest extent. The vegetation communities and habitats, reflective of the substrate, also change with distance from the canyon mouth.

The dominant plant community of the alluvial plain in the Coachella Valley is Sonoran mixed woody and succulent scrub, a variant of the creosote scrub community. Sonoran mixed woody and succulent scrub is present along the lower slopes of the Santa Rosa and Little San Bernardino Mountains. The plant community is represented by creosote bush, indigo bush (*Psoralea emoryi*), catclaw acacia, desert lavender (*Hyptis emoryi*), rock daisy (*Perityle emoryi*) and palo verde (*Cercidium microphyllum*), plus 93 annual plant species and several species of cacti—beavertail, barrel, fishhook, hedgehog and cholla.

### ***Desert Washes***

Desert washes are steep-sided erosional channels that incise the alluvial fans from the mountains to the valley floor, becoming wider and shallower as they descend. The characteristic vegetation, adapted to infrequent but intense flooding, includes smoketree, palo verde, chuperosa (*Justicia californica*), cheesebush (*Hymenoclea salsola*), sweetbush (*Clethra alnifolia*), desert lavender, indigo bush, sandpaper plant (*Petalonyx linearis*) and bladderpod (*Isomeris arborea*). These sandy channels are wildlife movement corridors, often the locations for sensitive desert tortoise (*Gopherus agassizii*), and support a greater abundance and diversity of birds than hillside or creosote bush scrub.

## Section 7 – Biological Resources

---

### *Desert Fan Palm Oases*

Lush oases dominated by the native desert fan palm (*Washingtonia filifera*) are present where water occurs at or near the surface in canyons and along the San Andreas fault zone. Because of their unique characteristics and limited distribution, desert fan palm oases have been accorded special status by the State as a natural community with the highest priority. Wildlife species associated with this community include carpenter bee (*Xylocopa* sp.), giant palm borer beetle (*Dinapate wrightii*), California tree frog (*Hyla regilla*), common kingsnake (*Lampropeltis*, sp.), hooded oriole, Cooper's hawk, golden eagle, prairie falcon, least Bell's vireo (*Vireo belli pusillus*), common flicker (*Colaptes auratus*), and southern yellow bat (*Lasiurus ega*). Listed Peninsular bighorn sheep also frequent the oases of the Santa Rosa and San Jacinto Mountains.

### *Foothill and Montane Habitats*

The Coachella Valley floor is bounded by the steep San Bernardino, San Jacinto, Santa Rosa and Little San Bernardino Mountains, which reach an elevation of approximately 3,500 feet MSL. Vegetation density and biomass increase with elevation and associated increase in precipitation. Vegetation of the lower rocky slopes includes creosote bush, brittlebush, burrobush, agave (*Agave deserti*), ocotillo (*Fouquieria splendens*), spike moss (*Selaginella* sp.), Parry's cloak fern (*Cheilanthes parryi*), arrowleaf (*Balsamorhiza sagittata*), pigmy cedar (*Peucephyllum schottii*), bushy cryptantha (*Cryptantha racemosa*) bedstraw (*Galium californicum* ssp. *californicum*), rush pea (*Caesalpinia gilliesii*) and crossosoma (*Crossosoma bigelovii*). The lower rocky hillsides connect with valley floor habitat for wide-ranging animals such as Peninsular bighorn sheep, prairie falcon, golden eagle, bobcat and mountain lion (*Felis concolor*).

This habitat also contains mesquite hummocks or mesquite bosques, considered to be sensitive by the California Natural Diversity Data Base (CNDDDB), California Native Plant Society (CNPS) and the Coachella Valley Multiple Species Habitat Conservation Plan/ Natural Community Conservation Plan (CVMSHCP or plan). Mesquite is also the only vegetation type considered in the CVMSHCP to be potentially dependent on groundwater table levels. The CVMSHCP (2008) states that substantial lowering of the water table by groundwater withdrawals could significantly affect mesquite hummocks and associated Covered Species in the Willow Hole, East Indio Hills, or Thousand Palms Conservation Area on the northeast side of the Valley. Implementation of the CVMSHCP includes monitoring of the hydrological regimes that support mesquite hummocks. The Coachella Valley Conservation Commission (CVCC), which administers the CVMSHCP, will conduct this study; it has not been initiated as of this writing.

### *Tamarisk*

Tamarisk merits special mention as an invasive plant now present throughout the Colorado Basin, including the Coachella Valley, generally regarded as degrading natural habitat and an indicator of lowered value ecosystems. When tamarisk has formed dense thickets along canals and estuaries, it may become structurally analogous to native shrub species in terms of providing shade, shelter, and occasionally, nest sites. As such, it may be used by bird species more dependent upon the physical, structural characteristics of the habitat than species composition. Generally, though, tamarisk provides much lower habitat values than either willow or



cottonwood. Tamarisk supports few to no native insect populations (Liesner, 1971; Cohan, et al., 1979; DeLoach, et al., 2000). Tamarisk forms unnaturally dense thickets, in some areas obstructing the natural movement of aeolian (wind-blown) sands, and it increases the risk of recurring, high-intensity fire in systems that may not be specifically pre-adapted to burning.

### 7.3 SIGNIFICANCE CRITERIA

Based on State CEQA Guidelines, Appendix G, significant impacts to biological resources (direct or indirect), may occur if a project action:

- has 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,
- has 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,
- has 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,
- interferes 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,
- conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or
- conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional or state habitat conservation plan.

### 7.4 IMPACTS

Within the Coachella Valley study area there are two categories of biologic resources impacts from implementation of the 2010 WMP Update: impacts on wetland or waterbody-associated habitats and impacts on terrestrial habitats. The former resources are those associated with the Valley's surface waters that may experience changes in volume or quality; the latter are associated with Valley floor habitats that may be disturbed for installation of infrastructure.

With the exception of proposed recharge basin areas at Martinez Canyon and in Indio, the locations for these facilities are not yet identified. Boundaries and layouts of recharge basin facilities have not been identified and site surveys for biological resources have not been done. Therefore, this section evaluates biologic impacts of the Proposed Project at a programmatic level.

### 7.4.1 Coachella Canal and Distribution System

The quality and amount of Colorado River water delivered via the Coachella Canal are controlled largely by existing water supply agreements. Designated beneficial uses (BUs) for the Coachella Canal related to biological resources are Warm Freshwater Habitat and Preservation of Rare, Threatened, or Endangered Species (Regional Board, 2006) (**Table 5-1**).

The 2002 WMP PEIR did not anticipate a substantial change in the flow or quality of the Coachella Canal. Therefore, no biological impacts on aquatic species were identified for this surface water.

The WMP may evaluate in a future update the feasibility of discharging recycled water to the Canal water distribution system (to enclosed distribution pipelines, not into the Canal itself) within the Coachella Valley to augment the Canal water supply for agricultural irrigation. The discharged effluent will need to meet California Title 22 requirements for recycled water (secondary treatment plus filtration and disinfection). The pipeline distribution system is not freshwater habitat or sensitive species habitat. There would be no impact on biological resources in the Canal itself.

Therefore, since substantial changes in the flow or quality of the Coachella Canal are not anticipated, the Proposed Project will have no impacts on biological resources in this surface water.

### 7.4.2 Whitewater River between the Metropolitan Aqueduct Turnout and the Whitewater Recharge Facility

This section evaluates potential impacts on biologic resources in the Whitewater River channel below the Metropolitan turnout from the CRA. Neither the 2002 WMP nor the Proposed Project will have any effect on flows or biological resources north of the Metropolitan turnout since no WMP facilities or actions were or are proposed above the turnout.

The 2002 WMP was anticipated to increase peak and average dry weather flows in the Whitewater River below the Metropolitan CRA turnout because additional water would be present year-round; these flows were found to be similar to flows that occurred in the past. Under the 2002 WMP, the annual average flow in this reach of the Whitewater was predicted to be approximately 103,000 AFY. That figure was not significantly different from the average flow that had been measured during the previous five years (1994 to 1999) of 107,000 AFY. The flows have been highly variable; Metropolitan has delivered more than 300,000 AF in a given year to the Coachella Valley through the turnout as part of the advance delivery agreement with CVWD. Similarly, peak monthly releases were not expected to be greater than past peaks. The 2002 PEIR concluded that impacts to biological resources in the Whitewater River channel were less than significant, as flows were projected to be within levels experienced in the channel over the previous five years. The 2002 PEIR evaluated potential impacts of flows on sensitive plants (Coachella Valley milkvetch and triple-ridged milkvetch) and arroyo toad. Surveys found no plants present and no suitable habitat for arroyo toads.

Therefore, the impact of Proposed Project implementation on flows, the existing sparse channel vegetation, channel width or depth or other characteristics is anticipated to be the same as or slightly less than those evaluated for the 2002 PEIR. The impacts on biological resources in this watercourse are less than significant.

### 7.4.3 Whitewater River/CVSC and Drains

This section evaluates impacts in the Whitewater River below the Whitewater Recharge Facility and its man-made extension, the CVSC.

The 2002 PEIR discussed refilling the groundwater basin by overdraft reduction. Refilling the deeper aquifers in the basin by recharge and reducing pumping results in water moving upwards from the Lower aquifer into the Upper aquifer and into the Semi-perched aquifer. Water in the Semi-perched aquifer is intercepted by agricultural drains, so overdraft reduction results in would increased flows in the agricultural drains and CVSC and therefore increases in flows to the Salton Sea. Because overcoming overdraft is a gradual process, however. These effects were not predicted to appear for 10 to 15 years. Baseline (1999) CVSC and drain flows were 81,500 AFY, predicted to increase to 160,500 AFY by 2035. Increases in drain flows were considered by the Wildlife Agencies to have potentially significant impacts because they could scour existing riparian vegetation and allow larger predatory fishes to venture further up the drains to deplete populations of endangered pupfish. Program level biological effects identified in the 2002 PEIR were the potential effects of increases in flows in Valley agricultural drains on sensitive desert pupfish, black rails and clapper rails, and in the CVSC on rail habitat.

Refilling the basin, with elimination of overdraft, was also predicted to change drain and CVSC flow quality, with possible future increases in selenium to levels that exceeded aquatic life criteria and in salinity. In the 2002 PEIR and the accompanying adopted Mitigation Monitoring and Reporting Plan (MMRP), CVWD committed to off-site replacement of all rail habitat and pupfish habitat in the CVSC, consisting of 66 acres of marsh and 25 acres of pupfish habitat using low selenium water to mitigate for changes in drain flows and for potential increases in selenium and salinity in CVSC and drain waters. These facilities are now part of the CVWD commitments in the CVMSHCP, even if the impacts are never observed. As of April 2011, an RFP has been submitted to the Wildlife Agencies for review in preparation of soliciting bids on these created habitats.

In the 2010 WMP Update, drain and CVSC flows are still predicted to increase from current rates with reduction in overdraft due to implementation of Proposed Project elements — conservation (reduced pumping), increased recharge and increased source substitution that leaves more water in the basin — but to a slightly lesser extent than projected in 2002. Baseline (2009) flows are now approximately 61,000 AFY (about 26 percent lower than in 1999). Drain and CVSC flow has steadily decreased since the 1970s because of overdraft and improvement in the efficiency of agricultural practices and schedule delays in implementing certain 2002 WMP elements. Projected flows in the 2010 WMP Update are 125,000 AFY by 2045 (about 25 percent lower than previous planning target year projections in the 2002 WMP).

An expanded element in the 2010 WMP Update is desalination. The 2002 Plan included 13,600 AFY of agricultural desalination that created a brine flow of 2,000 AFY. The 2010 WMP

## Section 7 – Biological Resources

---

Update projects up to 85,000 AFY of desalination (with an undetermined brine flow), which if implemented could reduce total CVSC and drain flow from 60,000 to 40,000 AFY by 2045. With maximum desalination, the resulting reduction in drain flow and shallower drains could reduce pupfish predation by larger fishes.

At the same time, there are concerns for maintaining habitat in the CVSC, agricultural drains and CVSC Delta (at the mouth of the CVSC). There is no identified minimum flow that must be maintained in the Coachella Valley agricultural drains in which pupfish are present. The drains are not designated critical habitat for the endangered pupfish (USFWS, 1993); however, CDFG indicated in the past that drying up the drains would still constitute a “take” of an endangered species.

A reduction in CVSC flows with implementation of desalination of agricultural drain water in the East Valley would reduce existing water supply for the wetlands at the mouth of the CVSC. The water supply required to maintain existing habitat and create proposed new habitat is estimated in **Table 7-3** below, based on evapotranspiration figures for various habitat types used to design water supply facilities for the Dos Palmas Mitigation Area north of the Salton Sea, which was mitigation for the Coachella Canal Lining Project (MWH, 2008).

**Table 7-3**  
**Estimated Water Demand by Existing and Proposed Habitat**  
**at the Mouth of the CVSC and Drains**

Habitat Type	Evapotranspiration Rate—Coachella Valley (ft/year)	Acreage	Water Demand (AFY)
Freshwater marsh- CVWD mitigation	6	66	396
Freshwater marsh – TMDCI	6	85	510
Freshwater marsh - existing	6	15	90
Cottonwood willow riparian - existing	5	10	50
Cottonwood-willow riparian – CVWD mitigation	5	44	220
Open water - existing	8	8	64
<b>Total</b>			<b>1,594</b>

Source: MWH, 2008; CVWD, 2008. TMDCI = Torres-Martinez Tribe of Desert Cahuilla Indians

A reduction in CVSC flows would have a potential impact on water supply for the wetlands at the mouth of the CVSC. However, the amount required for the TMDCI wetlands is minor compared to the total drain flow projected from the CVWD drainage system with implementation of the 2010 WMP Update (300 to 1,600 AFY for the TMDCI wetlands vs. projected 38,000 to 125,000 AFY by 2045, depending on how much desalination is implemented). Moreover, the TMDCI wetlands could beneficially use the brine stream created by proposed desalination treatment of agricultural drain water or Canal water in the East Valley to create additional brackish water habitat without the need to pump water up from the Sea. Therefore, the impacts of the TMDCI wetlands with the 2010 WMP Update, if so implemented, would be less than significant or beneficial and not cumulatively considerable.

As discussed above, a minimum CVSC flow must be sufficient to maintain the current wetlands at the mouth of the CVSC and drains must maintain a flow sufficient to maintain pupfish. The basis for maintaining this habitat is not only prevention of adverse impacts to pupfish and wetland and riparian vegetation, but also to birds protected under the MBTA. These wetlands are breeding habitat for rails, western grebe and Clark's grebe. The grebes have appeared within the last six years and, because of their over-water mating dance, have caused the resource agencies to close a portion of the Salton Sea to boating and fishing during the breeding season.

The total estimated wetland water demand of approximately 1,600 AFY is minor compared to the existing flow (approximately 2.7 percent). For a large area with patchy vegetation, however, the flow may need to be greater than 1,600 AFY to ensure that all plants receive sufficient water supply year round. The wetland water demand is still minor (about 4 percent) compared to the lowest flows to the CVSC Delta and Salton Sea projected by the Coachella Valley groundwater model for the 2010 WMP Update of 40,000 AFY by 2045 with maximum diversions for desalination. Therefore, this flow should be sufficient to maintain or enhance existing pupfish and wetland habitat and support proposed wetlands to meet requirements of mitigation and other proposed wetland projects in the CVMSHCP. Therefore, the impact is less than significant.

### 7.4.4 The Salton Sea

Current average annual flow to the Salton Sea is approximately 1,002,000 AFY (Reclamation, 2010). With implementation of the QSA, the average inflow to the Sea is expected to decrease over about 15 to 20 years to an expected inflow of about 930,000 AFY (Salton Sea Authority, 2004). The QSA also requires IID to offset the impacts of declining inflows from water transfers by delivering "mitigation" water directly to the Sea through 2017, providing a brief window during which time it was intended that restoration potentially could be designed and implemented. Nevertheless, the sea level has continued to decline and salinity has continued to increase. It has been predicted that without a restoration project, starting in 2018 the size and water quality of the Salton Sea would begin a period of rapid decline, with a roughly 60 percent loss of volume, a tripling of salinity, and exposure of nearly 116 square miles of lakebed within approximately 12 years (Cohen and Hyun, 2006).

There is no large-scale Salton Sea restoration project underway at this time. The \$9 billion Salton Sea Ecosystem Restoration Plan (see **Section 5 – Surface Water Resources** and **Section 9 – Related Projects and Cumulative Impacts**) was not funded by the state Legislature and the project is on hold.

The DWR and CDFG SCH Project Implementation Plan (EIR/EIS in preparation) initially proposed the construction of approximately 2,400 acres of ponds to support fish, chiefly tilapia, for fish-eating birds at the mouths of the three rivers into the Salton Sea — Whitewater/CVSC, Alamo River and New River (DWR and CDFG, 2010). The Whitewater/CVSC ponds were later eliminated from consideration on the bases of "water availability," "long term reliability" and "land access." The DWR and CDFG Species Conservation Habitat project does not address the condition of the Sea as a whole. Therefore, at present it appears that the predicted conditions after 2017, collapse of the Salton Sea ecosystem, will occur.

## Section 7 – Biological Resources

---

The Salton Sea Authority Restoration Plan has also not moved forward as a whole, but elements are being implemented as funding allows. Additional funding is being sought.

The baseline (1999) inflow to the Sea from the Coachella Valley reported in the 2002 WMP of 81,500 AFY constituted approximately 6 percent of the total inflow. The 2002 WMP projected Coachella Valley flows to the Sea to increase from 81,500 AFY in 1999 to 160,500 AFY (before desalination) by 2035 because of increased drain flows as a result of overdraft reduction. Increased flow to the Sea projected in the 2002 WMP was considered to partially offset the adverse effects of inflow reductions to the Sea anticipated with water conservation and future water transfers from IID to CVWD and SDCWA under the QSA. The effect of the increase in flow from CVWD to the Sea was considered to be minor but beneficial.

Over the intervening years, the Sea elevation decreased by approximately 3 feet, faster than previously projected, and the salinity increased from approximately 45,000 mg/L to 53,000 mg/L (DWR and CVDG, 2010a). The Salton Sea marine fishery is largely gone; tilapia is the principal sport fish (DWR and CDFG, 2010b). Tilapia is anticipated to disappear when the salinity reaches 60,000 mg/L around 2018.

There are three Proposed Project scenarios that potentially affect the drain and CVSC flows to the Salton Sea. Under the first scenario, the flows are projected to increase by 2045 as the basins refill with the overcoming of overdraft. Under the second and third scenarios, the increased drain and CVSC flows would be diverted for a range of desalination treatment (at a location to be identified in the East Valley, but anticipated to be at or near WRP-4), if less costly water supplies (such as SWP water transfers and leases) do not become available or are not available in sufficient amounts. The second scenario is minimum anticipated desalination capacity (55,000 AFY) and the third reflects maximum desalination capacity (85,000 AFY).

As discussed in **Section 5.6.3.1**, Coachella Valley future contributions of flow to the Salton Sea could change from about 60,000 AFY under current modeled conditions increasing to as much as 126,000 AFY by 2045 if no drain water desalination is implemented, increasing to about 70,000 AFY by 2045 if minimum drain water desalination is implemented, or decreasing to about 41,000 AFY by 2045 if the maximum amount of drain water desalination is implemented. With maximum desalination, the inflow from the Coachella Valley could decline by 19,000 AFY compared to existing conditions. This reduction would represent a 1.9 percent decrease in the total inflow to the Sea compared to current conditions (19,000 AFY divided by 1,022,000 AFY). In 2045, this reduction represents a 2.5 percent decrease relative to projected future Salton Sea if Coachella Valley had not declined (19,000 AFY divided by 758,000 AFY [698,000AFY + 60,000 AFY]). The vast majority of the decline in future Salton Sea inflows (97.5 percent) is due decreases from other sources to the Sea. The Proposed Project contribution to changes in inflow is considered to be less than significant.

**Table 5-16** shows Salton Sea elevations will decline in the future. As described previously, this decline principally results from reduced inflow associated with water transfers, implementation of water recovery programs in Mexico and other factors. If existing flows from the Coachella Valley area maintained in the future, the Salton Sea would decline about 6 ft by 2020 and 24 ft by 2045. With no desalination under the Proposed Project, inflows to the Salton Sea from the

Coachella Valley would increase compared to current conditions, partially offsetting declines in inflow from other sources. Salton Sea elevations would not change in 2020 and would be about 4 ft higher in 2045. These effects would be beneficial. With maximum desalination, Salton Sea inflows would decline slightly by 2045 compared to existing conditions; however, Salton Sea elevations would be essentially the same as if existing Coachella Valley flows were maintained through 2045. Therefore, the Proposed Project contribution to Salton Sea elevation and playa change is considered to be less than significant. Impacts on biological resources affected by playa exposure are also considered to be less than significant.

The relationship of flow and quality to Salton Sea biological resources is that the drains and CVSC (like the Alamo and New Rivers in Imperial County) contribute lower salinity water to the Sea than current seawater—a TDS of about 2,000 mg/L (which supports aquatic and riparian life) versus 53,000 mg/L (which is too saline for nearly all fishes and other biological species). While the drain flow TDS is anticipated to increase to 2,800 or 2,900 mg/L, the contribution of CVSC and drain water creates livable aquatic habitat where it enters the Sea and helps to dilute it. Therefore, the impact of the 2010 WMP Update on the overall biology of the Sea is considered to be less than significant.

### 7.4.5 Areawide Impacts on Terrestrial Habitats

The 2002 PEIR stated that proposed recharge basins, pipelines, pumping stations, domestic water treatment plant and a desalination plant in desert areas could result in potential minor incremental or direct loss of habitat for sensitive terrestrial species. Most of the areas of potential use are already disturbed and all of them lie adjacent to existing agricultural or residential developments. Pipelines will be constructed in roadways, road rights-of-way and in agricultural fields. They are not likely to be constructed in undisturbed habitat. However, focused surveys will be performed for sensitive species if suitable habitat exists.

Mitigation adopted in 2002 stated that where habitat values are found to be suitable based on biological surveys of future facilities sites, focused surveys will be conducted for sensitive species as part of facilities siting. If sensitive species are found, CVWD will notify the USFWS and CDFG and develop, together with these agencies, appropriate minimization and mitigation measures. Implementation of these measures would reduce the remaining impact to less than significant.

These analyses and measures are equally applicable to the 2010 WMP Update SPEIR, except that the CVMSHCP, under which CVWD is a Permittee, is now in place. Because CVWD is a signatory and Permittee, the CVWD water and wastewater facilities projects outside CVMSHCP designated Conservation Areas are Covered Activities if the mitigation requirements of the CVMSHCP, to which CVWD has already committed, are met. If potentially significant impacts on additional covered species are identified, the mitigation measures will also comply with CVMSHCP requirements for those species.

Select 2010 WMP Update elements are already Covered Activities, with mitigations indicated. For example, the full-scale Martinez Canyon Recharge Basins are a Covered Activity, with a Minor Amendment to the CVMSHCP and adherence to bighorn sheep mitigations (**Table 7-2**).

## Section 7 – Biological Resources

---

If species on a site are sensitive but not covered by the CVMSHCP, CVWD will develop mitigation measures with the CDFG and USFWS, as applicable and described above.

Potential for impacts on specific terrestrial habitat types presented earlier in this section is identified below.

**Valley floor habitats with dunes and sand fields** could be affected by the construction of proposed facilities constructed in desert habitat and not in streets, in agriculture, or at existing wastewater treatment plants. As above, impact determinations and mitigation would be coordinated with the CVMSHCP and the Wildlife Agencies, as appropriate.

Proposed facilities may be constructed in areas with **sandy washes** and **alluvial plan (bajada)** habitats, particularly the Martinez Canyon recharge facility. A reconnaissance survey was conducted in May 2011; future site surveys will characterize these resources; protection measures will be developed during compliance with the CVMSHCP and preparation of CEQA/NEPA documentation.

No facilities are currently proposed in foothill areas with **mesquite hummocks**, the only vegetation community in the Valley potentially affected by changes in groundwater levels. CVWD has already committed to mitigation for mesquite hummocks on the WRP-7 pond site in the CVMSHCP if CVCC determines in a future feasibility study that such mitigation is feasible. Anticipated increases in groundwater levels with implementation of the 2010 WMP Update would have a beneficial effect on the mesquite hummock and mesquite bosque communities.

No 2010 WMP Update facilities are proposed to be constructed in or adjacent to **desert fan palm oases**, which are in mountain canyons or along the San Andreas fault. Therefore, there will be no impact.

No 2010 WMP Update facilities will be constructed in or immediately adjacent to **montane habitats** because of slope and distance from water uses and supplies. Therefore, there will be no impact.

### 7.4.6 Facility-Specific – Terrestrial Habitat Impacts

Biological aspects of sites for proposed facilities to be implemented under the 2010 WMP Update are discussed below. The facilities would be constructed on the Valley floor or, in the case of the full-scale Martinez Canyon Recharge Facilities, in part on a bajada. The majority of the sites for these facilities, their boundaries, capacities, treatment processes and disposal methods have not been identified, so element-specific biologic impacts cannot be evaluated in this document. Once identified, biological resources analyses, including reconnaissance and protocol surveys, as applicable, will be performed for all of the individual project sites and incorporated into environmental documents that could tier off the 2010 WMP Update SPEIR. Mitigation for potential impacts will be developed to comply with CVMSHCP requirements (inside or outside a Conservation Area) or directly with the Wildlife Agencies, as appropriate.



#### **7.4.6.1 Desalination Facilities**

A desalination plant was projected in the 2002 PEIR, but no site was identified, and the capacity was far smaller than currently considered. No brine disposal method was identified.

The 2010 WMP Update desalination facilities to treat agricultural drain water, with associated piping and pumping and brine disposal facilities would probably be sited at or near CVWD WRP-4 adjacent to the CVSC in the Mecca area. A reconnaissance survey performed on May 18 and 19, 2011 found that the site is largely disturbed Valley floor and existing and former agriculture. No sensitive species or habitats were observed or expected. The site is bordered on the south by an agricultural drain which contains cattails and bulrushes, but CVWD routinely clears agricultural drains to maintain drainage and flood control functions.

The desalination brine disposal method will be identified in a future feasibility study, but potentially could involve creation of saline wetlands on the desert valley floor, or conveyance to the TMDCI wetlands to create brackish water habitat.

Under the CVMSHCP, the desalination facility is a CVWD Covered Activity if located outside a Conservation Area, as long as CVMSHCP mitigation measures are implemented, as applicable. If the facility is sited at WRP-4, it will be outside a Conservation Area. Land Use Adjacency guidelines would apply. Therefore, the impact of construction and operation of the desalination plant itself is anticipated to be less than significant.

#### **7.4.6.2 Canal Water Treatment Plant**

A system for treatment and storage of Canal water for potable use, including water treatment plants, storage reservoirs, and brine disposal may be implemented. This facility was included in the 2002 WMP or PEIR, but after 2030. The treatment plant site has not been identified; but could likely be on existing agricultural land or less likely on desert habitat in the East Valley.

Under the CVMSHCP, the treatment facility is a CVWD Covered Activity if located outside a Conservation Area, as long as CVMSHCP mitigation measures are implemented, as applicable. If the facility is sited within a Conservation Area, it will need to become a Covered Activity through a Minor Amendment to the CVMSHCP and CVWD will need to commit to applicable mitigation.

#### **7.4.6.3 Water and Wastewater Infrastructure**

During the WMP planning period, CVWD will construct wells, pipelines, pumping stations, and storage reservoirs to connect future recreational vehicle (RV)/Trailer parks to the CVWD water and sewer systems. Locations of the facilities will be identified in the future, but it is anticipated that they will be sited primarily in or adjacent to existing roads where biological habitat is largely disturbed and sensitive species generally are not present.

As above, under the CVMSHCP, these facilities are CVWD Covered Activities if located outside a Conservation Area, as long as CVMSHCP mitigation measures are implemented, as applicable.

## Section 7 – Biological Resources

---

If the facilities are sited within a Conservation Area, they will need to become Covered Activities and CVWD will need to commit to applicable mitigation.

### 7.4.6.4 Mid-Valley Pipeline Phases 2 and 3

Completion of the Mid-Valley Pipeline Project Phases 2 and 3 involves construction of pipelines from WRP-10 to convey recycled water and/or Coachella Canal water to up to 50 golf courses in the mid-Valley. It is anticipated that the pipelines will be constructed in existing paved streets and on users' sites to deliver Canal water and recycled water. Under the CVMSHCP, these facilities are CVWD Covered Activities since they are anticipated to be located outside a Conservation Area, as long as CVMSHCP mitigation measures are implemented, as applicable.

### 7.4.6.5 Recharge Basin Sites

No additional facilities are needed under the WMP for the Whitewater Recharge facility. The existing Whitewater Recharge Facility operation and maintenance is covered in the CVMSHCP by requirements for a sediment removal and placement in a downwind deposition area to maintain CVFTL habitat (**Table 7-2**). Therefore, there would be no Proposed Project impact on biological resources at this site.

New facilities for groundwater recharge considered in the 2010 WMP Update are additional conveyance (pipeline and pumping station) to the Levy Facility to increase recharge, the full-scale Martinez Canyon Recharge Facility and the City of Indio Posse Park Recharge Facility.

The construction and operation of the Levy facility (formerly Dike 4) and the Martinez Canyon recharge facilities are Covered Activities in the CVMSHCP for CVWD with ongoing implementation of adopted and required mitigation measures for bighorn sheep.

#### *Thomas E Levy (Dike 4) Groundwater Recharge Facility*

At this location, the 2010 WMP Update proposes a pumping station and pipelines in streets to convey additional water to the site from Lake Cahuilla. These facilities will be within or adjacent to existing or projected urban developments. As above, they would be outside a Conservation Area and are therefore Covered Activities under the CVMSHCP if they comply with CVMSHCP measures. Construction of additional conveyance would be in disturbed areas and in existing streets. Therefore, the biological resources impact would be less than significant.

#### *Martinez Canyon Recharge Facility*

The Martinez Canyon Recharge Facility was discussed in the 2002 WMP and PEIR. A reconnaissance survey was performed at that time. The recharge facility began as a pilot project, underway since 2005, but the full-scale facility was described in the 2002 WMP. Upon completion of the future full-scale facility, the 2010 WMP Update expects 20,000 to 40,000 AFY of recharge on average. The Martinez Canyon facility is projected to start initial operation in 2016 and to reach full capacity by 2018.

A follow-up biological resources reconnaissance visit of the 320-acre parcel owned by CVWD by CVWD environmental and biological resources staff on May 18 and 19, 2011 found that the site was characterized by desert bajada habitat traversed by desert riparian washes (see Appendix F). The site is bounded on the north, east and south by agriculture. The survey was conducted at the appropriate time of year to observe sensitive species; no sensitive plant or animal species were observed. There was evidence of refuse dumping on the site.

The site is adjacent to but not within the CVMSHCP Santa Rosa Mountains Conservation Area. The recharge facility is a Covered Activity in the CVMSHCP, with implementation of relevant bighorn sheep measures and compliance with Land Adjacency Guidelines. There is also a minor potential for the presence of desert tortoise on the site, which would be mitigated by adherence to Desert Tortoise measures, if a survey done just before construction confirms their presence. Therefore, the impact would be less than significant with incorporation of CVMSHCP compliance measures, to which CVWD has already committed but would be presented in the site specific CEQA document for the recharge facility project.

### *City of Indio Groundwater Recharge Facility*

In the 2010 WMP Update, CVWD is also evaluating alternative recharge locations that might allow recharge in the vicinity of areas of significant groundwater pumping. This was not an element of the 2002 WMP or PEIR.

A settlement agreement between the City of Indio and CVWD specifies a process for proposing and evaluating additional recharge facilities in the vicinity of Indio (CVWD-Indio, 2009) to benefit the Indio area. The 2010 WMP Update assumes for planning purposes that an Indio facility could recharge 10,000 AFY.

The Indio Water Authority (IWA) conducted a preliminary investigation (performed by Petra Geotechnical) that identified Posse Park (located at Avenue 42 and Golf Center Parkway adjacent to the Coachella Canal) as a potential location for recharge of both the Upper and Lower Coachella Valley aquifers by either spreading or injection wells (Indio, 2009). IWA recently drilled two exploratory wells to a depth of 600 feet at this location and plans to conduct further studies to validate the use of Posse Park to replenish the aquifer. The amount of potential recharge at this location has not been determined.

From available aerial photography (Google Maps, 2010), and the City of Indio Capital Improvement Program (CIP) description of the proposed recharge project (Indio, 2009), the roughly triangular park site has an area of approximately 60-70 acres, bounded on the west by residences, on the south by Avenue 42 and residences, on the east by the northern extension of Golf Center Parkway, and on the northeast by the Coachella Canal and its adjacent unpaved access road. The existing aerial photography shows desert habitat on approximately half of the site and disturbed desert habitat on the remaining land.

The City of Indio CIP graphic for Posse Park (Indio, 2009) shows a proposed central green area bordered by recharge basins on the north, east and west, with the rest of the site largely cleared. It is anticipated that site-specific analyses of biological resources will be performed for this site,

## Section 7 – Biological Resources

---

possibly together with the evaluation of the park development, and for other sites in a future feasibility analysis by the City of Indio with assistance from CVWD, if requested.

The City of Indio also is a Permittee and signatory to the CVMSHCP. The recharge site is not within a CVMSHCP Conservation Area (CVMC and CVAG, 2008 Figure 4-1). CVMSHCP measures for water facilities outside Conservation Areas will need to be incorporated into the project CEQA document, construction specifications and O&M.

### 7.4.7 Water Transfers and Leases

Water transfers were part of the 2002 WMP and PEIR, but specific transferring agencies other than Metropolitan were not identified. Subsequently CVWD and Desert Water Agency (DWA) implemented three water transfers from Berrenda Mesa Water District and Tulare Lake Basin Water Storage District and obtained short term transfers from the Lower Yuba River Accord. Water transfers and leases on the SWP from other SWP contractors to CVWD and DWA bring water to the Valley using existing conveyance and recharge facilities only and therefore have no biological impacts since no construction will be required and flows will be within historic ranges.

Additional water transfers, leases and exchanges from northern or central California under the 2010 WMP Update also will be conveyed in the SWP, exchanged for Colorado River water with water from Metropolitan and conveyed through the CRA to the Whitewater turnout, thence to the existing spreading basins at Whitewater. As described above, O&M at Whitewater is a CVMSHCP Covered Activity; the characteristics of the O&M would not change with implementation of the transfers and leases. Therefore, there would be no new impact of the 2010 WMP Update.

Similarly, it is anticipated that if CVWD participated in or purchased water from a coastal desalination plant in the future, the water will be exchanged through existing conveyances. CVWD will participate in the CEQA compliance for the desalination facility as a responsible agency.

### 7.4.8 Noise Effects of Construction on Wildlife

The 2002 PEIR stated that noise from construction (vehicles, equipment and human presence) of Proposed Project elements (pipelines, pumping stations, tank reservoirs, water treatment plants, wastewater treatment plants and recharge facilities) could potentially affect noise intolerant species, including Peninsular bighorn sheep, breeding in birds protected by the MBTA, or sensitive wetland birds such as the Yuma clapper rail and California black rail. Small mammals and birds may move away from the construction zone and return once construction is completed.

One suggested threshold of significance will be reached if the level of construction noise at the nesting site of a breeding bird exceeds 60 dBA. This is a threshold value USFWS uses for analysis of noise impacts on breeding listed least Bell's vireo to avoid masking mating calls (Barrett, 1996). It has also become the threshold used for least Bell's vireo noise effects in the SDCWA Natural Communities Conservation Plan (NCCP) / HCP (SDCWA, 2010). Mitigation consists of limiting construction to the non-breeding season, if sensitive species are determined

to be present in the construction area, or timing construction and location to maintain noise below the 60 dBA threshold. However, the threshold in the adopted CVMSHCP is 75 dBA.

**7.4.9 Impacts on Listed Species not Covered by the CVMSHCP**

Sensitive species in the 2010 WMP Update study area not covered in the CVMSHCP are shown in **Table 7-4**

In the WMP study area, the brown pelican and least tern are found at the Salton Sea. The analysis of Salton Sea impacts above finds implementation of the 2010 WMP Update to have less than significant impacts on Salton Sea biota, including birds. Therefore, no mitigation for these species is required.

**Table 7-4  
Listed Species Not Covered by the CVMSHCP**

Species	Status
California Brown pelican ( <i>Pelecanus occidentalis californicus</i> )	FE / SE
California least tern ( <i>Sterna antillarum browni</i> )	FE/ SE
Swainson’s hawk ( <i>Buteo swainsoni</i> )	ST
American peregrine falcon ( <i>Falco peregrinus anatum</i> )	SE
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	SE
Western yellow-billed cuckoo ( <i>Coccyzus americanus occidentalis</i> )	SE
Arizona Bell’s vireo ( <i>Vireo bellii arizonae</i> )	SE

Swainson’s hawk, peregrine falcon and bald eagle are all raptors whose foraging and roosting areas potentially could be reduced by the construction of proposed facilities if sited in desert areas rather than in agriculture or disturbed areas. The number of affected acres of forage habitat is considered to be less than significant because proposed facilities sites are relatively small and most would be constructed in disturbed areas. Site specific assessments will be performed for tiered projects to confirm these effects. Therefore, mitigation measures for potential impacts on these species, if applicable, would need to be coordinated directly with the USFWS and CDFG.

The additive effect of all projected development throughout the Valley could be cumulatively considerable, however, and was the impetus for the CVMSHCP (see also **Section 9 – Related Projects and Cumulative Impacts**).

The yellow billed cuckoo and Arizona Bell’s vireo are riparian obligate birds. Mitigation for impacts on riparian habitat of water flow and quality changes with the creation and enhancement of riparian and wetland habitat in the CVSC and CVSC Delta Conservation Area required under the CVMSHCP would also benefit these species. Therefore, the effect is beneficial.

### 7.4.10 Potential Conflict with Other Ordinances or Policies

The CVMSHCP became effective in 2008, after completion of the 2002 WMP and PEIR. Therefore, construction and operation of Proposed Project elements need to comply with the CVMSHCP for covered species and actions in Conservation Areas and for Permitted actions outside Conservation Areas. CVWD is a signatory to the CVMSHCP and a Permittee. As discussed above, several CVWD projects and the 2002 PEIR biological resources impact mitigation measures became Covered Activities in the plan (see CVMSHCP Table 7-6) (CVMC and CVAG, 2008). Other projects, yet to be defined, are not specifically covered, but are in the categories of permitted Activities outside Conservation Areas: water and wastewater master plans; flood control facilities; water development, production, storage, treatment, and transmission facilities; sewage treatment and transmission facilities; and reclaimed water storage and transmission facilities. Because CVWD is a signatory and Permittee and because compliance with the CVMSHCP is required, there would be no conflict between the 2010 WMP Update and the CVMSHCP.

Riverside County has oak tree protection ordinances (Riverside County, 1993), but there are no naturally occurring oaks on the Coachella Valley floor. The Riverside County Planning Department also requires a permit for removal of any native tree (Riverside County, 2010); however, proposed facilities sites on the Valley floor will be in agricultural or desert scrub or disturbed areas not anticipated to contain native trees. Therefore, the Proposed Project will not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Nevertheless, compliance with such policies or ordinances will be confirmed in the second tier documents for site-specific projects.

The CVMSHCP and Riverside County ordinances do not address impacts on jurisdictional wetlands. Therefore, wetland impacts, as mentioned above, would still need to be coordinated with the U.S. Army Corps of Engineers Clean Water Act (CWA) Section 404 process and U.S. Fish and Wildlife Service consultation (federal jurisdictional wetlands), the CDFG for state wetlands and aquatic habitat within the jurisdictional boundaries of waters of the state and possibly the Streambed alteration Agreement Process Under Fish and Game Code Section 1600,, and the Regional Board also for federal and state wetlands impacts and impacts on water quality in wetlands (CWA Section 401 Water Quality Certification). CVWD is in the process of working with these agencies on jurisdictional determinations and ongoing maintenance of the CVSC and drains. CVWD performed jurisdictional determinations and successfully obtained state and federal permits for the Mid-Valley Pipeline project along 7 miles of the CVSC. CVWD is familiar with the agencies and the procedures for compliance and coordination; no conflict with these regulations is anticipated for the Proposed Project.

## 7.5 MITIGATION MEASURES

At a programmatic level, implementation of the 2010 WMP Update will impact groundwater levels and flows and water quality in select surface waters. For CVWD Covered Activities in the CVMSHCP inside and outside Conservation Areas (**Table 7-2**), CVWD has already committed to mitigation for Covered Species and covered natural communities, corridors and linkages, as presented in **Section 7.1.2.3**. No additional mitigation measures are required under the CVMSHCP. This applies to:

- flow and water quality in the CVSC and East Valley drains including flow increases from the 2010 WMP Update,
- Oasis area drains,
- Coachella Canal,
- WRP-7 O&M,
- Levy facility,
- Martinez Canyon recharge facility, and
- reservoirs and associated booster stations and transmission mains in the Santa Rosa and Jacinto Mountains.

Impacts of flow decreases in the CVSC and Delta Conservation Area that flow to the Salton Sea were evaluated for maximum diversion for desalination. Flow increases, but not flow decreases, due to the WMP are covered in the CVMSHCP. However, the impact of the decrease for biological resources was evaluated and found to be less than significant. Therefore, no additional mitigation is required.

At a programmatic level, impacts of groundwater level increases from implementation of the 2010 WMP Update would be beneficial on mesquite habitat, and have no impact on terrestrial habitats that are not groundwater dependent. Impacts to terrestrial habitats and species from facilities construction would be assessed, and mitigated as warranted, in second tier site-specific environmental documents. With adherence to the requirements of the CVMSHCP, no programmatic mitigation measures for the protection of biological resources are warranted.

### **7.6 FUTURE ANALYSES**

Biological resources impacts of 2010 WMP Update facilities' construction and operation will be evaluated in subsequent or second tier, site-specific environmental documents. These documents will need to comply with stipulations in the CVMSHCP for CVWD Covered Activities in Conservation Areas and Permittee Covered Activities outside Conservation Areas.

2010 WMP Update elements not specifically identified as Covered Activities in Conservation Areas in the CVMSHCP are:

- tertiary treatment facilities would be constructed at the three wastewater treatment plants that discharge to the CVSC. The current plant flows to the CVSC will not change, so there would be no impact on the CVSC and Delta Conservation Area. The new treatment units will be constructed on the existing plant sites, which are not in but are adjacent to the Conservation Area. The Land Use Adjacency Guidelines, to which CVWD has agreed as a Permittee, will be incorporated into project design and O&M. The facilities are considered Covered Activities outside a Conservation Area.

## Section 7 – Biological Resources

---

- the City of Indio recharge facility proposed for Posse Park is not in a CVMSHCP Conservation Area. It is assumed that CEQA compliance and mitigation for any impacts on sensitive biological resources at the site will be the responsibility of the city of Indio.
- pipelines, tanks and associated booster stations and transmission mains not in the Santa Rosa and Jacinto Mountains, which are Covered Activities outside Conservation Areas.
- water treatment plants at sites yet to be defined, but anticipated to be outside Conservation Areas.
- participation in the planning and environmental evaluation of a coastal desalination plant outside the 2010 WMP Update study area.

Under the CVMSHCP, Covered Activities for Permittees outside Conservation Areas specifically include water and wastewater master plans; flood control facilities; water development, production, storage, treatment, and transmission facilities; sewage treatment and transmission facilities; and reclaimed water storage and transmission facilities, as long as Permit and Plan requirements are met. This list appears to include all of the above facilities. Therefore, no additional mitigation for covered species or habitats is required.

As described above, potentially significant impacts on biological resources not covered by the CVMSHCP from implementation of the Proposed Project are not anticipated. However, any potential impacts identified in second tier CEQA documents will require mitigation measures to be coordinated directly with the USFWS and CDFG to comply with FESA and CESA.