Final Program Environmental Impact Report

Implementation of the Colorado River Quantification Settlement Agreement

Volume 1 - EIR Text and Appendices

June 2002

State Clearinghouse Number 2000061034

Coachella Valley Water District
Imperial Irrigation District
The Metropolitan Water District of Southern California
San Diego County Water Authority

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PREFACE

FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

This Program Environmental Impact Report (PEIR) evaluates the potential environmental impacts from the implementation of the Proposed Project, the Quantification Settlement Agreement (QSA). The QSA would implement major components of California's draft Colorado River Water Use Plan (California Plan) and provide part of the mechanism for California to reduce its diversions of Colorado River water to the state's normal year apportionment of 4.4 million acre-feet (MAF). The QSA components would provide a framework for conservation measures and water transfers for a period of up to 75 years (referred to as the quantification period). The Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), and the Metropolitan Water District of Southern California (MWD) are signatory to the QSA.

CVWD, IID, MWD, and the San Diego County Water Authority (SDCWA) have entered into an agreement to be co-lead agencies for the preparation of an EIR in accordance with Section 15051 of the California Environmental Quality Act (CEQA) Guidelines. Although not a signatory to the QSA, SDCWA would benefit from the agreement since the QSA would facilitate the transfer of up to 200,000 acre-feet per year (KAFY) of Colorado River water from IID to SDCWA under the IID/SDCWA Water Conservation and Transfer Agreement dated April 29, 1998. The decision to prepare an EIR to assess the potential environmental impacts of implementation of the QSA was made following the completion of an Initial Study/Environmental Checklist. A Notice of Preparation (NOP) was published on June 6, 2000, and distributed to the California State Clearinghouse and other potentially interested parties.

The QSA is composed of related agreements, activities and projects, which, when taken together, support the consensual agreement among the four co-lead agencies regarding the use of Colorado River water. These proposed agreements describe how the co-lead agencies would budget their portion of California's apportionment of Colorado River water among themselves and to make water conserved in the IID service area and by lining the Coachella and All American canals available to CVWD, MWD, SDCWA, and others.

The QSA PEIR evaluates the aggregate impacts of a series of water transfers, water exchanges, water conservation measures, and other changes identified in the QSA. It is being prepared to ensure that the combined effects of the QSA components are evaluated and that where appropriate, program-wide mitigation measures are developed. This PEIR also provides project-level CEQA compliance for several components of the Proposed Project. Several other components of the Proposed Project have already been analyzed in approved CEQA documents. Although CEQA compliance has already been completed for these project components, this PEIR considers the aggregate impacts of the whole of the action as required by CEQA. Project-specific environmental documents addressing other specific QSA components are currently being prepared or will be prepared at the appropriate time once site-specific locations have been identified.

Potential mitigation measures have been identified for impacts that would result from the implementation of Project components that are receiving program-level analysis. Individual agencies that are responsible for implementing specific components of the QSA will be responsible for refining and adopting specific mitigation measures for these components in the project-level analyses being performed.

The Draft PEIR was released for public review on January 30, 2002. The 45-day review period was scheduled to end on March 15, but in response to requests for additional time, the review period was extended until March 26, 2002. The total review period was 56 days. Either the PEIR or a Notice of Availability of the PEIR was distributed to approximately 70 agencies, public libraries, Indian tribes, organizations, and individuals. Twenty-one comment letters were received from federal, state, regional and local agencies, Indian tribes, non-governmental organizations, and individuals.

Volume 1 of the Final PEIR contains the typical sections of an EIR, including an introduction; description of the Proposed Project; existing environmental conditions, impacts and mitigation measures; cumulative impacts; alternatives; and other sections required by CEQA. Volume 1 also includes the technical appendices that support the impact assessments. Volume 1 of the Final PEIR incorporates changes to the Draft PEIR made in response to comments and minor clarifications made by the co-lead agencies. Volume 2 of the Final PEIR contains comments received on the Draft PEIR and responses to those comments.

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EXECUTIVE SUMMARY

ES-1 INTRODUCTION AND PROJECT OBJECTIVES

This Program Environmental Impact Report (PEIR) provides an analysis of the environmental impacts of the Proposed Project, the implementation of the Quantification Settlement Agreement (QSA) among major Southern California water agencies. The co-lead agencies of the PEIR are the Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), the Metropolitan Water District of Southern California (MWD), and the San Diego County Water Authority (SDCWA).

The Proposed Project's goals and objectives are as follows:

- to settle, by consensual agreement, longstanding disputes regarding the priority, use, and transferability of Colorado River water;
- to agree upon a plan for the future distribution of Colorado River water among CVWD, IID, MWD, and SDCWA for up to 75 years, based on agreed-upon Colorado River water budgets for CVWD, IID, MWD, and SDCWA;
- to facilitate agreements and actions that, when implemented, would ensure the certainty and/or reliability of Colorado River water supplies available to CVWD, IID, MWD, and SDCWA;
- to assist these agencies in meeting their water demands without exceeding California's apportionment of Colorado River water;
- to identify agreed-upon terms and conditions for the conservation and transfer of specific amounts of Colorado River water within California; and
- to provide incentives to promote conservation of Colorado River water.

ES-2 PROJECT LOCATION

The project location includes much of Southern California. The region of influence (ROI) comprises the historic floodplain of the Colorado River below Lake Mead and the areas that receive Colorado River water: the IID, CVWD, and MWD service areas, including the SDCWA service area. The service areas include all or part of Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial counties. The ROI also includes the lower Colorado River mainstem and the areas of conveyance and distribution of Colorado River water by these agencies.

ES-3 PROJECT DESCRIPTION

The Proposed Project involves a series of water transfers, water exchanges, water conservation measures and other changes identified in the QSA. The QSA is a proposed agreement among CVWD, IID, and MWD to budget their portion of California's apportionment of Colorado River

water among themselves and to make water conserved in the IID service area and by lining the Coachella and All America canals available to CVWD, MWD, SDCWA, and others. Implementation of the QSA would not affect the diversion, distribution, and/or use of Colorado River water except within California. Within California, the QSA would only affect the diversion, distribution, and/or use of Colorado River water by the participating agencies (CVWD, IID, MWD, and SDCWA). The QSA would not affect the diversion, distribution, and/or use of Colorado River water by other agencies within California that hold rights to Colorado River water.

The QSA quantifies, by agreement, the amount of Colorado River water available to the participating agencies and calls for specific, changed distribution of that water among the agencies for the quantification period. The quantification period extends for up to 75 years, although the QSA anticipates a transition period of approximately 25 years for the full implementation of water conservation/transfers and exchange projects. Many of the water conservation and transfer components of the QSA would be implemented incrementally over a period of several years. The water agencies that are affected by the implementation of the QSA are the participating agencies (CVWD, IID, MWD, and SDCWA). Although not a signatory to the QSA, SDCWA would benefit from the QSA since the QSA would facilitate implementation of the 1998 IID/SDCWA Water Conservation and Transfer Agreement.

The QSA is composed of related agreements, activities and projects, which, when taken together, support the consensual agreement among the four co-lead agencies regarding the use of Colorado River water. The PEIR addresses the aggregate impacts of the implementation of each of the program components listed below.

A. IID's Priority 3a Colorado River Water Capped at 3.1 million acre-feet per year (MAFY)

B. QSA Changes to IID/MWD 1988 Agreement, IID/MWD/PVID/CVWD 1989 Approval Agreement, and MWD/CVWD 1989 Agreement to Supplemental Approval Agreement

C. IID/SDCWA Transfer of Conserved Water

D. MWD/SDCWA Exchange of Conserved Water (Up to 200 thousand acre-feet per year [KAFY])

E. IID/CVWD/MWD Transfer of Conserved Water (First 50 KAFY transferred from IID to CVWD and/or MWD, Second 50 KAFY transferred from IID to CVWD and/or MWD through year 44 and from MWD to CVWD beginning in year 45 of the QSA)

F. Transfer of Conserved Water from the All American Canal Lining Project (67.7 KAFY)

G. Priority 6a Colorado River Priorities and Volume Allocations

H. CVWD's Priority 3a Colorado River Water Capped at 330 KAFY

I. Transfer of Conserved Water from the Coachella Canal Lining Project (26 KAFY)

J. Transfer of Water (35 KAFY) - MWD/CVWD State Water Project (SWP) Entitlement Transfer and Exchange Agreement

K. MWD Priority 4 and 5 Colorado River Water Cap

L. Over and Under Run of Priorities 1, 2 and 3b

M. Use by Miscellaneous Present Perfected Rights and Federal Reserved Rights, including Certain Indian Reservations

N. QSA Shortage Sharing Provisions

Separate environmental analysis of many of the Agreement components has either been completed or is under preparation. The PEIR also addresses the project-specific impacts of those components not addressed in a separate environmental document.

Related Plans, Programs, and Actions

Several planned water resources management plans, programs, and actions may affect the allocation, distribution, and/or use of Colorado River water and associated environmental resources in California and adjacent states. A description of these plans, programs, and actions is provided below for background information. Additional information on related plans, programs and actions is provided in section 1.5.

Implementation Agreement

The Implementation Agreement (IA), an agreement between CVWD, IID, MWD, SDCWA, and the Secretary of the Interior, specifies the federal actions that are necessary to implement the QSA. Execution of the IA would commit the Secretary to making Colorado River water deliveries in accordance with the terms and conditions of the IA to enable the implementation of the QSA. A draft Environmental Impact Statement (EIS) that evaluates the environmental impacts of the execution of the IA and related accounting and environmental actions was issued by Reclamation in January 2002.

Inadvertent Overrun and Payback Policy

Reclamation is proposing to adopt the Inadvertent Overrun and Payback Policy (IOP), which would identify inadvertent overruns of Colorado River water and define subsequent payback requirements to the Colorado River. The IOP must be in place prior to implementation of the IA and QSA. A draft EIS that evaluates the environmental impacts of the IOP and related actions was issued by Reclamation in January 2002.

Biological Conservation Measures

In August 2000, Reclamation released its *Biological Assessment for Proposed Interim Surplus Criteria, Secretarial Implementation Agreements for California Water Plan Components, and Conservation Measures on the Lower Colorado River (Lake Mead to the Southerly International Boundary)* (Biological Assessment). The Biological Assessment identified potential impacts that could occur to federally listed fish and wildlife species and their associated critical habitats within the historic floodplain of the Colorado River between Parker Dam and Imperial Dam from implementing a change in point of delivery and diversion of Colorado River water from Imperial Dam to Lake Havasu of 400 KAFY. The biological conservation measures to offset potential impacts from the change in point of delivery and diversion were developed and agreed to by Reclamation and the U.S. Fish and Wildlife Service (Service) and were incorporated into the Service's January 2001 *Biological Opinion for Interim Surplus Criteria, Secretarial Implementation Agreements, and Conservation Measures on the Lower Colorado River, Lake*

Mead to the Southerly International Boundary, Arizona, California, and Nevada (Biological Opinion). A draft EIS that evaluates the environmental impacts of the biological conservation measures and related actions, including the IA and IOP, was issued by Reclamation in January 2002.

Coachella Valley Water Management Plan

CVWD prepared the Coachella Valley Water Management Plan (CVWMP) (CVWD 2000) to establish an overall program for managing its surface and groundwater resources in the future. The CVWMP involves a number of actions to reduce the current overdraft of the groundwater basin in the Coachella Valley. The CVWMP consists of both QSA and non-QSA components. Water that becomes available through implementation of the QSA will be used to reduce groundwater overdraft in the Coachella Valley. CVWD is currently preparing a Program EIR to address the potential environmental impacts of the CVWMP implementation.

IID Water Conservation and Transfer Project

IID Water Conservation and Transfer Project provides for water conservation in the IID service area and transfer of conserved water to SDCWA, MWD, and CVWD. In the event that the QSA is executed, IID would conserve up to 300 KAFY by a combination of system and on-farm conservation methods and would transfer up to 200 KAFY to SDCWA. CVWD and/or MWD would have the option to acquire up to 100 KAFY. A draft EIR/EIS was published in January 2002 that evaluates the IID Water Conservation and Transfer Project.

ES-4 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Table ES-1, located at the end of this Executive Summary, identifies the significant, less-than-significant, and beneficial impacts that would occur if the Proposed Project were implemented. It also lists the mitigation measures that have been identified to reduce significant impacts, as well as the residual impacts that would occur following their implementation. The following summarizes the significant impacts of the Proposed Project by resource. Details regarding Project impacts are provided in Chapter 3.

ES-4.1 Water Resources

The decrease in the amount of drainage water discharged into the Alamo River and IID drains could result in selenium concentrations exceeding the EPA Aquatic Life Criteria for Continuous Concentration. This would be a significant and unavoidable impact to water quality.

The increase of Colorado River water supplies for use in the CVWD service area would result in an increase in selenium in drain flows, which is considered a potentially significant and unavoidable impact. Groundwater recharge with Colorado River water in the Coachella Valley would result in an increase in total dissolved solids (TDS) of lower aquifer groundwater. This is considered a significant and unavoidable impact.

ES-4.2 Biological Resources

IID Service Area

Losses of wet areas and phreatophytic vegetation from the All American Canal Lining Project would be significant but would be mitigated to less-than-significant levels by habitat replacement and enhancement as part of that project. Potential alteration of emergent and in-channel vegetation along drains from on-farm conservation programs is considered significant but mitigable.

The All American Canal Lining Project would reduce habitat for non-native fish and would decrease seepage-fed areas adjacent to the canal, which are important habitat areas for certain wildlife species. There is also a potential for large mammals to enter and drown in the canal. Changes in amount or composition of vegetation from conservation measures could adversely impact bird and amphibian species using that habitat, and would be considered a significant but mitigable impact.

Construction-related activities in the IID service area related to on-farm conservation measures and water delivery system improvements may impact sensitive plant species, but the selection of sites for such activities would consider environmental concerns and sensitive plant species. Conservation measures have the potential to impact desert pupfish and impacts could range from less-than-significant to significant but mitigable.

CVWD Service Area

Losses of wetland and riparian plant communities from the Coachella Canal Lining Project are potentially significant. Construction activities have the potential to cause both temporary and permanent losses of native vegetation, and impacts would be less than significant, particularly in previously disturbed areas, but could be potentially significant but mitigable if native vegetation is permanently lost. The project also has the potential to adversely affect habitat for the Yuma clapper rail, California black rail, desert pupfish, and desert tortoise.

Constructing groundwater recharge facilities in the CVWD service area may impact wildlife habitat, but it is anticipated that these adverse impacts would be less than significant. The Dike 4 recharge facility may be constructed within critical habitat for the peninsular bighorn sheep. Should significant impacts be identified once specific sites are selected, they would be mitigable to less than significant.

Other construction-related activities (e.g., construction of pipelines and pumping stations) may impact sensitive plant species in the CVWD service area, but selection of sites for such activities would consider environmental concerns and sensitive plants species. Significant impacts would be mitigable to less than significant.

The increase in quantity of water and velocity of the flow within the drains in the CVWD service area due to an increase in groundwater levels has a potential to significantly impact desert pupfish populations residing within the drains. The potential impact will be monitored and mitigation will be formulated in cooperation with the resource agencies should the

monitoring effort indicate an adverse effect to the species. This potentially significant impact would be reduced to less-than-significant levels.

Lower Colorado River

The potential drop in median groundwater levels along the lower Colorado River could impact riparian vegetation with shallow roots (i.e., cottonwood and willow trees) along the outward fringes of the riparian zone. This impact to aquatic, marsh, and riparian vegetation is considered a potentially significant but mitigable impact.

Implementation of the Proposed Project has the potential to reduce wetland and riparian habitat along the lower Colorado River that is used by amphibians, reptiles, riparian and marsh obligate birds, and mammals. This potential loss of habitat would potentially be a significant but mitigable impact.

The potential loss of backwater area and main channel habitat would be a potentially significant impact. The potential reduction in emergent vegetation may result in the reduction of habitat for the Yuma clapper rail and the California black rail, and this potential loss of habitat would be considered a potentially significant impact. There is a potential, but less well-defined impact to riparian vegetation along the lower Colorado River, which could affect the southwestern willow flycatcher, western yellow-billed cuckoo, Arizona Bell's vireo, elf owl, Gila woodpecker, and gilded flicker. Impact to this habitat would be considered potentially significant. All of the above impacts would be mitigable to less than significant.

Salton Sea

Reduced inflows to the Salton Sea could produce additional increases in salinity in the Salton Sea and thus accelerate the loss of food sources for fish-eating birds at the Salton Sea due to increasing salinity. This is considered a potentially significant but mitigable impact. The accelerated change in the natural habitat of the desert pupfish is considered a potentially significant but mitigable impact. Significant but mitigable impacts would occur to the California brown pelican, black skimmer, double-crested cormorant, and other resident and migratory birds that forage on fish at the Salton Sea.

ES-4.3 Geology, Soils, and Minerals

Construction activities in the IID and CVWD service areas could cause a temporary increase in wind and water erosion of bare soils. This is a potentially significant but mitigable impact.

If groundwater levels in the CVWD service area increase to within 30 feet of the ground surface under habitable structures or important infrastructure, the liquefaction hazard could increase, which would be a potentially significant but mitigable impact.

ES-4.4 Land Use

No significant land use impacts would occur.

ES-4.5 Agricultural Resources

If fallowing of land as a conservation measure and/or the use of agricultural areas for habitat mitigation or restoration within the IID or CVWD service area and along the lower Colorado River result in the conversion of agricultural lands to non-agricultural use, it will result in a significant and potentially unavoidable impact to agricultural resources in Southern California.

Construction of recharge facilities in the CVWD service area could have a significant but mitigable effect on agricultural resources if they were located in agricultural areas because they could convert farmland to a non-agricultural use. As specific sites for the recharge facilities are located, additional environmental review will be conducted that will identify impacts to agricultural resources.

ES-4.6 Recreational Resources

Use of the area around the All American Canal by off-highway vehicles (OHVs) could present a hazard during construction, which would be a potentially significant but mitigable impact. Construction of a parallel canal would adversely affect recreational fishing by reducing the habitat for sportfish. Lining also could reduce downstream numbers of sportfish by reducing in-canal reproduction. These impacts would be significant but mitigable.

Construction activities during the lining of the Coachella Canal would temporarily disrupt some recreational uses of the area. Construction could block access to a recreational trail on Bureau of Land Management (BLM) lands, the Bradshaw Trail, which would be a significant but mitigable impact.

Decreasing water surface elevation of the Salton Sea would affect existing recreational facilities, some of which would have to be relocated (i.e., campgrounds, docks) or re-established (i.e., roads and trails leading to the water). Decreasing water levels would expose footings and other remnants of campgrounds that are currently underwater. The impact to developed recreational facilities from decreased water levels, therefore, is considered significant but mitigable.

The Proposed Project and related projects would accelerate the increase in salinity at the Salton Sea and reduce Sea elevation, which would accelerate the decline of the sport fishery that is anticipated under existing and future projected trends at the Salton Sea. This would hasten the decrease in the number of fish that live in the Salton Sea, adversely affecting sport fishing opportunities. This would be a significant but mitigable impact.

ES-4.7 Air Quality

Construction activities associated with on-farm and system water conservation measures in the IID service area would impact air quality from combustive emissions due to the use of fossil fuel-fired construction equipment and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The impact of combustive emissions would be less than significant, but fugitive dust emissions could be significant but mitigable from activities that disturb large amounts of soil. If fallowing is used to reduce water usage in the IID service area, there is a potential for significant but mitigable fugitive dust emissions from the fallowed land.

The Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001) determined that PM_{10} emissions (due to fugitive dust) from construction activities would constitute a significant impact even after mitigation. However, this impact would only last for the duration of construction activities.

Development of other new facilities in the CVWD service area would generate air pollutant emissions (NOx and PM_{10}) from construction-related activities. These activities would cause temporary impacts to local air quality and would be significant if they exceeded air pollutant thresholds established by the South Coast Air Quality Management District (SCAQMD) within the South Coast Air Basin (SCAB) Project region. Due to their short-term nature, construction-related activities would not interfere with attainment of the national and state ambient air quality standards over the long term.

Although the new shoreline created by reduced inflows to the Salton Sea would only marginally increase the total land area within the ROI that presently generates fugitive dust emissions, fugitive dust emissions from these areas are conservatively estimated to be significant, due to the PM_{10} nonattainment status of the region, but mitigable.

ES-4.8 Cultural Resources

Construction in the IID and CVWD service areas would involve ground disturbance that could impact a significant archaeological or paleontologic site or human remains. Such impacts would be significant but mitigable. Potentially significant but mitigable impacts could result if implementation of Project components would require demolition or relocation of a significant historic architectural resource.

Any physical alteration of the Coachella Canal would be a potentially significant but mitigable impact.

Reduction of the current and projected surface area of the Salton Sea may expose previously submerged cultural resources, which would leave those resources susceptible to site erosion and looting. This could result in a significant impact to cultural resources. Newly exposed land also could be cultivated or developed if found to be suitable for such use, which could impact cultural resources. Significant impacts would be mitigable.

ES-4.9 Noise

Construction in the IID and CVWD service areas would create short-term noise impacts from the use of various types of equipment. Construction would generally take place in rural, unpopulated areas, well away from noise sensitive receptors. However, should noise-sensitive receptors, including riparian birds, be exposed to noise in excess of applicable standards, the impact would be significant but mitigable.

Operations in the IID and CVWD service areas would require the operation of pumps that could generate long-term noise in excess of 70 dBA at 50 feet. Depending on the location of these pumps in relation to noise-sensitive receptors, noise from the pumps could cause a significant but mitigable impact.

ES-4.10 Aesthetics

If pipelines or pump stations in the CVWD service area were located in a visually sensitive area, impacts could be significant but mitigable.

Due to implementation of the Proposed Project, views of the Salton Sea from some public areas would include increased dry land and decreased open water. The exposed area would look like the existing beach, but views of the water from the developed public viewing facilities would be from a much greater distance. The change would be very gradual, and the visual impact would not be perceptible except over a long period, but ultimately, the impact would be significant but mitigable.

ES-4.11 Hazards and Hazardous Materials

Construction activities in the IID and CVWD service areas may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if such activities coincide with construction in evacuation or other emergency routes. This would be a potentially significant but mitigable impact.

The proposed improvements in the IID and CVWD service areas likely would be located in agricultural or remote areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, however, impacts would be significant but mitigable.

Mosquito habitat could be created if new recharge basins were constructed in the CVWD service area, which would be a potentially significant but mitigable impact.

ES-4.12 Public Services, Utilities, and Transportation

Construction of new facilities in the CVWD service area could cause temporary disruption of present traffic patterns and increases in traffic hazards, or availability of parking on local roadways. Given the existing favorable conditions and the short duration of construction, impacts would not be significant unless construction occurred in the immediate vicinity of heavily traveled roadways and intersections. Significant impacts would be mitigable to less than significant.

Pipelines, pumping stations, and recharge basins would likely be located in rural or undeveloped areas away from schools or providers of emergency services. However, if construction occurred near such facilities, it could restrict emergency access, which would be a significant but mitigable impact.

ES-4.13 Population, Housing, and Employment

No significant impacts to population, housing, or employment would occur.

ES-5 SUMMARY OF SIGNIFICANT CUMULATIVE IMPACTS

The cumulative impacts of the Proposed Project combined with other regional water supplies or closely related projects in the region are described in detail in Chapter 4 and are summarized in

Table ES-2. A list approach was used to identify the closely related projects that could result in cumulatively considerable impacts. Potential projects that may result in a cumulative impact in combination with the Proposed Project were initially identified through a review of regional and local environmental documents. Once identified, these projects were examined for their potential to result in a cumulative impact when combined with the Proposed Project. Those projects identified for the analysis of cumulative impacts were generally those that involved water resources in the region, those projects with a potential to affect the resources of the Colorado River or Salton Sea, or those projects that have a potential to impact the same resources as the components of the Proposed Project. This section summarizes the significant cumulative impacts that would occur to each resource considered in this PEIR. Impacts that were described as speculative in section 4.2 are not included in the following discussion.

ES-5.1 Water Resources

The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to water quality along the lower Colorado River. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. Such practices include, but are not limited to, the installation of temporary berms and sedimentation traps, such as silt fencing, straw bales, and sand bags, revegetating disturbed areas immediately after grading, and conveying surface run-off in a manner that minimizes the potential for erosion and sedimentation. Geotextile binding fabrics should be used if necessary to hold slope soils until vegetation is established. With mitigation, these potential short-term impacts would be reduced to less-than-significant.

ES-5.2 Biological Resources

The Proposed Project and the Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Valley together would slightly lower the Colorado River median water surface elevation between Parker Dam and the Palo Verde Diversion Dam. This would result in a potentially significant cumulative impact to biological resources. Depending on the details of individual agreements for offstream storage, cumulative impacts to biological resources along the lower Colorado River could be significant. It is anticipated that most of the potential cumulative impacts to biological resources would be attributable to the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to biological resources along the lower Colorado River. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. With mitigation, these potential short-term impacts would be reduced to less-than-significant.

The North Baja Powerline Project could result in a slight increase in the loss of riparian and marsh habitat in the IID service area and so has the potential for a significant cumulative impact in combination with the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

Implementation of the CVWMP would result in potential localized impacts to areas in the Coachella Valley where facilities may be located. These areas of disturbance may be within the same general locations as those facilities associated with the Proposed Project components of the CVWMP. Impacts to biological resources could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

ES-5.3 Geology, Soils, and Minerals

Significant impacts to geology and soils would result from construction of Proposed Project facilities in the IID and CVWD service areas. To the extent that construction of projects such as the CVWMP, Te'Ayawa Energy Center, Cabazon Power Plant occurred at the same time and/or in the same general location as the Proposed Project, impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

ES-5.4 Land Use and Planning

No significant cumulative impacts to land use and planning would result from implementation of the Proposed Project and related projects.

ES-5.5 Agricultural Resources

The Proposed Project could result in the conversion of Important Farmland to non-agricultural use, as described in section 3.5. This is considered a significant and potentially unavoidable impact. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion, as could the implementation of the Proposed Project's biological mitigation measures along the Colorado River, and the North Baja Powerline Project. If such conversion occurred, it would be a significant and potentially unavoidable cumulative impact to agricultural resources in Southern California.

ES-5.6 Recreational Resources

No significant cumulative impacts to recreational resources would result from implementation of the Proposed Project and related projects.

ES-5.7 Air Quality

Construction of Proposed Project facilities in the IID and CVWD service areas would create short-term significant air quality impacts. To the extent that construction of projects such as the CVWMP, Te'Ayawa Energy Center, and Cabazon Power Plant occurred at the same time and/or in the same general as construction associated with the Proposed Project, air quality could be cumulatively significant. If these projects and the Coachella Canal lining project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

ES-5.8 Cultural Resources

Impacts to cultural resources from the Proposed Project could result from construction in the IID and CVWD service areas and at the Salton Sea. Impacts to cultural resources also could result from construction of related projects in the IID and CVWD service areas. Impacts to cultural resources along the lower Colorado River could result from ground disturbance required to implement the conservation/restoration actions of the MSCP and the Proposed Project's biological mitigation measures. Impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

ES-5.9 Noise

The Proposed Project could result in short-term noise impacts from construction and long-term impacts from the operation of pumps in proximity to noise-sensitive receptors. Related construction projects also could result in short-term noise impacts. A significant cumulative impact could occur if construction occurred in the same general area at the same time. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

ES-5.10 Aesthetics

The Proposed Project could cause significant aesthetic impacts should facilities in the CVWD service area be constructed in visually sensitive areas. Significant visual impacts are not expected to result from the other related projects, but mitigation measures associated with the Proposed Project would reduce any potentially significant cumulative impacts to less-than-

significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

ES-5.11 Hazards and Hazardous Materials

The Proposed Project would result in a significant impact to hazards and hazardous materials if construction temporarily interfered with an adopted emergency response plan or occurred in proximity to evacuation or other emergency routes. It also could result in a significant impact if construction occurred on sites containing hazardous materials. Significant cumulative impacts could occur to the extent that other related projects caused similar impacts. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

ES-5.12 Public Services, Utilities, and Transportation

Construction associated with the Proposed Project in the IID and CVWD service areas could cause temporary impacts to transportation and emergency access to facilities such as schools. Significant cumulative impacts could occur if construction of related projects occurred in the same general location and at the same time as the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

ES-5.13 Population, Housing, and Employment

No significant cumulative impacts to population, housing, or employment would result from implementation of the Proposed Project and related projects.

ES-6 ALTERNATIVES CONSIDERED

Impacts of the Alternatives to the Proposed Project are discussed in Chapter 5 and summarized below.

Alternative 1: No Project

Under Alternative 1, the Department of Interior would enforce the Law of the River under its existing terms and require California to divert no more than 4.4 million acre feet (MAF) during normal years. Based on the existing priority system, the diversions to MWD would be reduced from the baseline condition of approximately 1.25 MAFY to approximately 660 KAFY. Net diversions for Priority 1, 2, and 3 users (including CVWD and IID) would be limited to 3.85 MAFY, less the amount of water made available under the 1989 IID/MWD Agreement described in section 1.5. There would also be no increased use of Colorado River water in the CVWD service area, resulting in continued dependence on groundwater resources.

MWD and SDWCA would be expected to make up the shortfall of approximately 650 KAFY in Colorado River water supplies through other water management methods and/or supplies not

involving additional diversions from the Colorado River. These could include increased recycling and conservation, and other methods including desalination of ocean water, and use of other supply options.

Anticipated Impacts of Alternative 1

The beneficial impacts of the Proposed Project from reduced groundwater overdraft in the Coachella Valley would not occur. Water conserved and transferred as part of the All American and Coachella Canal lining projects, included as part of the Proposed Project, also would not occur. Significant unavoidable impacts in the CVWD and/or IID service areas would not occur. Significant but mitigable impacts to biological resources, geological resources, water quality, recreational resources, air quality, cultural resources, noise, agricultural resources, aesthetics, hazards, and transportation in the IID and/or CVWD service areas also would not occur.

Reduction in average water flows in the Colorado River from Parker to Imperial dams due to the implementation of the Proposed Project would not occur, nor would the resulting potentially significant impacts to biological resources of the lower Colorado River.

The no project alternative would avoid the acceleration of impacts to air quality, biological resources, cultural resources, recreational resources, and aesthetics of the Salton Sea that would occur under the Proposed Project. Future impacts to these Salton Sea resources would occur regardless of whether the Proposed Project is implemented, although at a slower rate.

Environmental impacts resulting from other water management actions (i.e., conservation, recycling and desalting) that may be implemented as part of Alternative 1 would primarily occur in the CVWD, MWD, and SDWCA service areas.

Conclusion

This alternative would not meet any of the goals of the Proposed Project, or be consistent with the objectives of the California Colorado River Water Use Plan. It would not:

- settle by consensual agreement disputes regarding Colorado River water use;
- establish a plan for future distribution of Colorado River water among the co-lead agencies;
- maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;
- result in agreement on terms and conditions for Colorado River water conservation and transfers; and
- provide incentives for conserving Colorado River water.

None of the significant or less-than-significant environmental impacts of the Proposed Project would occur. Degradation of the Salton Sea would continue. Beneficial impacts associated with lining the All American and Coachella canals would not occur, nor would beneficial impacts from reduced groundwater overdraft in the Coachella Valley. Under the no project alternative, Proposed Project-related impacts to the Salton Sea would be avoided.

Alternative 2: Implement the Proposed Project while Minimizing Changes in Points of Diversion

Alternative 2 would result in the implementation of the Proposed Project while minimizing changes to the current diversion points and amounts on the Colorado River. Under Alternative 2, Colorado River flows (and the resultant median water surface elevation) between Parker and Imperial dams would remain largely unchanged. Therefore, Alternative 2 would reduce the anticipated project-related adverse impacts on Colorado River fish, wildlife, and wetland resources.

Alternative 2A: Connect the Coachella Canal to the Colorado River Aqueduct

Description of Alternative 2A

Alternative 2A would connect the Coachella Canal to the Colorado River Aqueduct (CRA) by adding a new pipeline and associated facilities between these two canals west of the City of Coachella. This option would retain the current diversion points and amounts on the Colorado River but would allow water to be transferred to MWD and SDCWA to be diverted at Imperial Dam rather than at Parker Dam. The water ultimately would be delivered into the CRA for use in the MWD or SDCWA service areas and to implement the San Luis Rey Indian Water Rights Settlement Act.

Anticipated Impacts of Alternative 2A

Impacts to the IID, CVWD, MWD, and SDCWA service areas from water conservation and/or use would remain the same as described for the Proposed Project, as would impacts to the Salton Sea. Alternative 2A would avoid impacts associated with the change in diversion of water from the Colorado River. No loss of habitat on the Colorado River would occur. Implementation of this alternative would result in both short-term and long-term impacts within the Coachella Valley associated with the construction and operation of the new pipeline connecting the Coachella Canal to the CRA.

Conclusion

Implementation of Alternative 2A, while reducing potential impacts to biological resources along the Colorado River, would not reduce any other impacts associated with implementation of the Proposed Project. There is a potential that the construction of the pipeline connecting the Coachella Canal to the CRA would result in a number of substantial and possibly unavoidable significant impacts to water resources, biological resources, geology, soils and minerals, agricultural resources, air quality, cultural resources, noise, aesthetics, and hazards and hazardous materials. This alternative would not have any major advantage over the Proposed Project because mitigation measures for biological impacts in the Colorado River area would reduce any impacts to less-than-significant levels. This alternative would meet all of the objectives of the Proposed Project.

Alternative 2B: Connect the All American Canal to the SDCWA System

Description of Alternative 2B

Alternative 2B would connect the All American Canal to the SDCWA system via a new pipeline between the western end of the All American Canal in Imperial County to the San Vincente Reservoir within San Diego County. This option would allow implementation of the IID/SDCWA Water Conservation and Transfer Agreement, as amended by the QSA. Up to 200 KAFY would be diverted at Imperial Dam for use by SDCWA, rather than at Parker Dam as would occur under the Proposed Project.

Anticipated Impacts of Alternative 2B

Implementation of this alternative would reduce the impacts of the Proposed Project to biological resources along the Colorado River by reducing the amount of marsh and riparian vegetation affected. Implementation of this alternative has all of the other impacts that the Proposed Project would have. Additional potential impacts associated with the proposed pipeline construction could occur during the construction period.

Conclusion

Implementation of Alternative 2B, while partially reducing potential impacts to biological resources along the Colorado River, would not reduce any other impacts to the Salton Sea associated with the implementation of the Proposed Project. There is also a potential that the construction of the pipeline and reservoirs would result in a number of substantial and possibly unavoidable significant impacts as identified. Although potentially feasible, the alternative would not have any major environmental advantage over the Proposed Project. This alternative would lessen impacts along the Colorado River, but a portion of the mitigation measures that have been identified to reduce potential impacts to biological resources to less-than-significant levels would still need to be implemented. This alternative would meet all of the objectives of the Proposed Project.

Alternative 3: Reduced Project Implementation to 230 KAFY of Water Conservation and Transfer

Description of Alternative 3

Alternative 3 includes partial implementation of the Proposed Project by reducing the level of conservation and transfer to the minimum allowable under the IID/SDCWA Water Conservation and Transfer Agreement. The purpose of this alternative is to substantially lessen the biological, recreational, air quality, and water impacts of the Proposed Project on the Salton Sea, IID service area, and the Colorado River. Under this alternative, 130 KAFY rather than 200 KAFY would be conserved via on-farm conservation methods and transferred to SDCWA. The First and Second 50 KAFY components of the Proposed Project could be satisfied by a mixture of conservation measures, including on-farm irrigation system improvements, delivery system improvements, and/or fallowing. The remainder of the Proposed Project would be implemented as proposed.

Anticipated Impacts of Alternative 3

Under this alternative, the maximum anticipated reduction in flows of the Colorado River between Parker and Imperial dams would be 318 KAFY. There would also be reduced conservation of water in the IID service area, and therefore, reduced impacts to Salton Sea resources, although impacts to the Salton Sea, as described above, would remain significant. Beneficial impacts to groundwater resources in the Coachella Valley would be the same as the Proposed Project.

Conclusion

Alternative 3, although decreasing the amount of water transferred, provides only a slight reduction of potential impacts to the Colorado River and, at best, slightly less impacts to the IID service area and the Salton Sea than the Proposed Project. This alternative would meet the objectives of the Proposed Project. This alternative, however, would not avoid or substantially reduce the impacts of the Proposed Project.

Alternative 4: Proposed Project Implementation With Additional Conservation

Description of Alternative 4

Alternative 4 was designed to avoid impacts to fish-eating birds at the Salton Sea resulting from a reduction in inflow volume, as contemplated under the Proposed Project. Under this alternative, water conserved by additional actions within the IID service area would offset reduced inflows to the Salton Sea resulting from water conservation and transfer actions by IID. Replacement water would be made available for the period necessary to avoid impacts of the Proposed Project on fish-eating birds as a result of the loss of the food source for these birds or to avoid the recreational impact of the loss of the Salton Sea sport fishery.

Anticipated Impacts of Alternative 4

Except for the elimination of the temporary impacts to fish-eating birds and the sport fishery, the type of impacts to the Salton Sea ultimately would be generally the same as those of the Proposed Project although they could differ in intensity. Temporary impacts to fish-eating birds would be avoided since the water from the additional conservation would allow water to be temporarily made available to avoid increasing salinity due to reduced Sea elevation. Implementation of this alternative would delay impacts to air quality, cultural resources, and recreational resources from the Proposed Project as a result of reduced water water surface elevation of the Salton Sea.

Conclusion

Alternative 4 would avoid significant impacts on the Salton Sea fishery and impacts to fish-eating birds caused by the loss of the fishery. Other impacts would be delayed for the period that replacement water is utilized. This alternative would meet most of the Proposed Project's goals.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The California Environmental Quality Act (CEQA) requires that an EIR identify the environmentally superior alternative. In the case of this PEIR, the No-Project Alternative (Alternative 1) is considered environmentally superior since it would not result in any of the identified significant impacts associated with the implementation of the Proposed Project.

CEQA requires that an additional alternative be defined as environmentally superior if the no project alternative is considered environmentally superior. Depending upon how conservation is implemented and which mitigation measures are employed, the Proposed Project may be environmentally superior to the other alternatives. If conservation actions and mitigation measures that would reduce impacts to the fish populations and fish-eating birds at the Salton Sea are not employed as part of the Proposed Project, then Alternative 4 would be considered environmentally superior. Alternative 4 would avoid significant impacts to biological resources associated with the implementation of the Proposed Project to the Salton Sea. Impacts to resources in other areas from other project alternatives would not be substantially different than those of the Proposed Project, with the potential exception of impacts to the biological resources of the lower Colorado River, which would be avoided or reduced by Alternatives 2A and 2B, respectively.

ES-7 GROWTH-INDUCING IMPACTS

The QSA does not directly or indirectly provide new water supplies to Southern California. Instead, the QSA changes the distribution of existing Colorado River water supplies among the co-lead agencies, thereby assisting California in reducing its use of Colorado River from an average of 5.0 MAFY to 4.4 MAFY in normal years. QSA implementation will merely ensure that delivery of Colorado River water to the MWD/SDCWA service areas will be identical, at best, to the historical averages for the last 15 years or more.

The diversion patterns of Colorado River water envisioned by the QSA have occurred for decades. For example, MWD has diverted up to an amount to fill the CRA, or approximately 1.3 MAFY. There have also been years where CVWD has diverted up to approximately 450 KAF, and years where IID had reduced its diversions to (or less than) 3.1 MAF.

Cities and counties are the primary agencies responsible for regulating land use through their general plans, specific plans, and zoning regulations. The water supplies being provided and planned for by all four co-lead agencies are consistent with the level of growth projected by regional planning agencies and local general plans, and impacts of projected growth have been disclosed and mitigated in general plan CEQA documents.

CVWD, IID, MWD, and SDCWA do not have the authority to regulate land use. Future growth will occur in accordance with local planning decisions. With the passage of Senate Bill (SB) 610 (Costa) and SB 221 (Kuehl) in 2001, water suppliers such as the co-lead agencies will be required to provide detailed information to cities and counties about current and future water demand and availability in advance of city and county planning decisions on large development proposals.

ES-8 AREAS OF KNOWN CONTROVERSY

Two areas of potential controversy remain with the implementation of the components of the Proposed Project.

- Concern has been expressed regarding the potential conversion of farmland to non-agricultural use, on either a short-term or long-term basis, as a result of fallowing as a conservation measure or the use of farmland for mitigation or environmental purposes, and the resulting impacts to agricultural resources and the social and economic consequences.
- Concern has been expressed by environmental groups, Salton Sea area residents, the Salton Sea Authority, and other interested parties about the effect of reduced drainage inflows to the Sea resulting from water conservation within the IID water service area. Reduced drainage inflows are expected to accelerate the existing trend of increasing salinity at the Salton Sea, and concern has been expressed that this acceleration will affect implementation of a Salton Sea restoration project.

ES-9 UNRESOLVED ISSUES

The following issue still needs to be resolved associated with the implementation of the components of the Proposed Project:

- The Salton Sea is an agricultural drainage repository that has no legal rights or entitlements to Colorado River water. Implementation of any project element or mitigation strategy that would make available Colorado River water to the Salton Sea could subject that part of the project to a claim that it is not in compliance with the Law of the River and/or a claim that it is not a reasonable and beneficial use of water.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT			
Water Resources	Reduction in diversion of Colorado River water and limit on Priority 3a diversions by IID would not affect drainage patterns and runoff or flood hazard, and would not cause inundation. This reduction is not considered a significant impact. Reduced groundwater inflow from the lining of the All American Canal and a decrease in groundwater recharge in the IID service area are not considered significant. The decrease in the amount of water discharged from New River could result in increased TDS and selenium concentrations and decreased TSS, but this is considered a less than significant impact to water quality in the New River. The decrease in the amount of drainage water discharged into the Alamo River and IID drains could result in selenium concentrations exceeding the EPA Aquatic Life Criteria for Continuous Concentration, and thus impact biological resources in these areas. This impact would be significant and unavoidable to water quality.	No mitigation for increased selenium concentrations in the Alamo River and IID drains has been identified, and this is considered a significant and unavoidable impact to water quality.	Significant unavoidable impact due to increased selenium levels in the Alamo River and IID drains.
Biological Resources	*Vegetation.* Losses of wet areas and phreatophytic vegetation from the All American Canal Lining Project are anticipated to be significant but would be mitigated to less-than-significant levels by habitat replacement and enhancement as part of that project. Potential alteration of emergent and in-channel vegetation along drains from on-farm conservation programs is considered significant. Construction activities associated with water conservation improvements have the potential to cause both temporary and permanent losses of phreatophytic or emergent vegetation, but impacts will likely be less-than-significant.	Mitigation measures for the All American Lining Project have been developed in the EIS/EIRs for this project and include the following: (1) site-specific surveys for sensitive species will be conducted. Species will be avoided or programs will be developed for replacement of the habitat or other compensation; (2) the canals will be restocked with channel catfish one time after completion of construction; (3) structures will be constructed to allow wildlife to escape if they enter the canal; (4) structures will be constructed in the canals to increase edge areas for fisheries; and (5) marsh and other seepage-fed habitats will be replaced, as necessary.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Biological Resources (continued)	*Fish and Wildlife.* The All American Canal Lining Project would reduce habitat for non-native fish, would decrease seepage-fed areas adjacent to the canal (which are important habitats wildlife species), and could cause temporary and permanent impacts to wildlife habitat in adjacent uplands. There is also a potential for large mammals to enter and drown in the canals. Changes in amount or composition of vegetation from conservation measures could adversely impact bird and amphibian species using that habitat, and would be considered a significant impact. *Sensitive Species.* Construction-related activities may impact sensitive plant species, but selection of sites for such activities would consider environmental concerns and sensitive plants species. Conservation measures have the potential to impact desert pupfish and impacts could range from less-than-significant to significant but would be mitigable.	IID is preparing an HCP to address the impacts to sensitive species and the overall habitats within the IID service area as a result of conservation by IID in connection with the Project and IID's normal operations and maintenance. The conservation measures are incorporated in this EIR as potential mitigation measures. Non-Salton Sea components of the HCP that are intended to mitigate the impacts of any take of covered species that might occur as a result of the activities covered by the HCP, including the Proposed Project, within the IID service area and the Salton Sea include the following: (1) *Tamarisk Scrub-Habitat Conservation Strategy:* Replacement of habitat disturbed through planting of mesquite bosques and/or cottonwood willow habitat. Additional habitat replacement where subsurface drainage is affected by canal construction or other activities; (2) *Drain Habitat Conservation Strategy:* IID would create at least 190 acres of managed marsh habitat to a maximum of 652 acres; (3) *Desert Habitat Conservation Strategy:* This strategy involves an extensive monitoring program and habitat replacement associated with construction of canals and other facilities within desert habitat; (4) *Burrowing Owl Conservation Strategy:* This strategy would involve pre-construction monitoring; avoidance, where possible, of nesting and foraging areas; and other methods, such as nest boxes, to mitigate any impact to the species; (5) *Desert Pupfish Conservation Strategy:* IID would manage its drains to minimize water quality impacts to the species and develop measures to enhance habitat within the drains. IID would also minimize impacts during maintenance of the drains to reduce any impact to the species; and (6) *Razorback Sucker Conservation Strategy:* Any fish found within the canals would be transported back to the Colorado River.	

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Geology, Soils, and Minerals	Construction activities associated with on-farm water conservation measures and water delivery system-based conservation measures could cause a temporary increase in wind and water erosion of bare soils. This is a potentially significant impact. Operation of water conservation measures could increase the long-term potential for soil, wind, and water erosion, but the amount of erosion would not be substantial because relatively small areas would be involved and standard Best Management Practices would be implemented. Impacts would not be significant.	To minimize soil erosion from construction, one or more of the following measures could be implemented as standard operating practices during construction activities: (1) apply water to areas where vehicles and equipment are involved in ground-disturbing activities; (2) pave dirt roads or keep them wet; (3) increase water applications or reduce ground-disturbing activities with increasing wind speeds; (4) minimize the amount of disturbed area and vehicle speeds on site; (5) cover inactive soil stockpiles or treat them with soil binders, such as crusting agents; and (6) designate personnel to monitor erosion control program activities to ensure that they are effective in minimizing soil erosion.	Less than significant with mitigation.
Land Use	The water conservation measures, including fallowing, would not result in significant changes in land use because they would not physically divide an established community; conflict with any applicable land use plan, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or conflict with any applicable habitat conservation plan or natural community conservation plan.	No mitigation measures are required.	None.
Agricultural Resources	On-farm or water delivery system water conservation measures would only require small amounts of land, and they would not result in the conversion of Important Farmland to non-agricultural use or conflict with Williamson Act contract lands in Imperial Valley. No significant impacts to agricultural resources would result. If fallowing is used exclusively to conserve the 300 KAFY required for transfer, approximately 50,000 acres of land (11 percent of the total amount of Important Farmland in Imperial County) could be fallowed annually. If fallowing is implemented so as to take farmland out of production on a short-term	The only way to avoid or reduce the impact associated with the conversion of Important Farmland in the IID service area as a result of fallowing as a conservation measure is to utilize non-fallowing conservation measures or to utilize short-term fallowing, which does not result in conversion of Important Farmland to non-agricultural use; however, exclusive use of short-term fallowing may not be feasible for generating conserved water and use of agricultural land on a long-term basis may be required.	Potentially significant unavoidable impact due to the potential loss of Important Farmland in the IID service area.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Agricultural Resources (continued)	basis, it would not result in the conversion of Important Farmland to non-agricultural use. However, if fallowing is implemented so as to take farmland out of production on a longer-term or permanent basis, resulting in the conversion of Important Farmland to non-agricultural use, it would be a significant impact to agricultural resources in the Imperial Valley. If additional agricultural land is fallowed to implement Mitigation Strategy 2, this would contribute to the potentially significant impact to agricultural resources.		
Recreational Resources	Construction activities associated with building a canal parallel to the existing All American Canal would temporarily disrupt camping. This impact would be short-term and less than significant. Use of the area around the canal by OHVs could present a hazard during construction, which would be a potentially significant impact. The existing canal would be maintained as an emergency canal and would not be available for recreational use, and hazards to OHVs associated with the existing canal would be avoided by taking steps necessary to prohibit and discourage use within the channel and would be less than significant. Construction of a parallel canal would adversely affect recreational fishing by reducing the habitat for sports fish. Lining also could reduce downstream numbers of sports fish by reducing in-canal reproduction. These impacts would be significant. The proposed water conservation measures, including fallowing, would be located in remote farm areas well removed from recreational areas used by the public and therefore would not impact recreational resources.	To minimize impacts to recreational fishing, mitigation measures include placing artificial reefs within the lined portion of the canal, conducting a channel catfish stocking program, or developing a recreational fishery resource in one or more regulating reservoirs in IID's distribution system. To minimize public inconvenience during construction of the All American Canal Lining Project and to ensure public safety, an interim recreation management plan would be developed jointly with BLM. The plan would include temporary closure of acreage needed for construction activities, signs at public access points, literature (handouts) informing visitors about the program and safety hazards, and modifications of public access to compensate for construction activities and to provide safe public access to observe construction at selected locations. The plan would address the patrol and surveillance requirements of the Immigration and Naturalization Service's Border Patrol.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Air Quality	Impacts from lining the All American Canal were evaluated in the EIS/EIR for that project and found to be not significant since fugitive dust from construction activities would be controlled by the application of water onto disturbed areas (USBR and IID 1994). Construction activities associated with on-farm water conservation measures improvements would impact air quality from combustive emissions due to the use of fossil fuel-fired construction equipment and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The impact of combustive emissions would be less than significant, but fugitive dust emissions could be significant from activities that disturb large amounts of soil. Air quality impacts due to the operation of on-farm water conservation measures would result primarily from the periodic maintenance of these systems, and the minor amounts of emissions that would result from these activities would cause less than significant air quality impacts. If fallowing is used to reduce water usage in the IID service area, there is a potential for significant fugitive dust emissions from the fallowed land.	Standard operating practices to minimize PM_{10} and fugitive dust emissions that could be implemented include: 1. Minimize the use of diesel-powered equipment where feasible. 2. Use alternative diesel fuels in construction equipment where feasible. 3. Use particulate traps on diesel-powered equipment. 4. Properly tune and maintain all construction equipment. 5. Apply water to areas where vehicles and equipment are involved in ground-disturbing activities. 6. Pave dirt roads, keep them wet, or apply non-toxic soil stabilizers, such as salts or detergents. 7. Increase water applications or reduce ground-disturbing activities with increasing wind speeds. 8. Minimize the amount of disturbed area and limit vehicle speeds onsite. 9. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents or water them to keep moist. 10. Cover trucks that haul soils or fine aggregate materials. 11. Designate personnel to monitor dust control program activities to ensure that they are effective in minimizing fugitive dust emissions. 12. Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways. 13. Sweep streets near the construction area at the end of the day if visible soil material is present. 14. Per SCAQMD Rule 403, for large construction sites (greater than 100 acres of disturbed area or daily earth-moving or throughput volume of 7,700 cubic meters) or medium operations (50 to 100 acres of disturbed area or daily earth-moving or throughput volume of 3,850 – 7,700 cubic meters) under a contingency notification, an approved fugitive dust emissions control plan must be prepared.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Air Quality (continued)		15. For applicable construction areas (such as pipeline alignments), establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover will be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting. Best Management Practices that could be implemented to reduce fugitive dust emissions related to fallowing include: (1) implement conservation cropping sequences and wind erosion protection measures as outlined by the U.S. Department of Agriculture Natural Resources Conservation Service; (2) apply soil stabilization chemicals to fallowed fields; (3) re-apply drain or other unused water to allow protective vegetation to be established; and (4) reuse irrigation return flows to irrigate windbreaks across blocks of land including many fields to reduce emissions from fallowed, farmed, and other lands within the block.	
Cultural Resources	Construction of water conservation measures would involve ground disturbance that could impact an archaeological or paleontologic site or human remains. Most ground disturbance would take place in previously disturbed areas and, therefore, impacts to cultural resources would be unlikely. However, ground-disturbing activities still have the potential to impact a significant archaeological or paleontologic resource or human remains, particularly if those activities occur in previously undisturbed areas. Potentially significant impacts could result if implementation of Proposed Project components would require demolition or relocation of a significant historic architectural resource.	Mitigation measures included in the All American Canal Lining EIS/EIR include: (1) prior to construction, class III surveys would be conducted in the Pilot Knob area and along the entire length of the canal to be lined to determine the locations of cultural resources. Surveys also would be conducted at gravel quarries not previously surveyed; (2) if a site cannot be avoided, mitigation would include professionally recovering, documenting, and preserving the cultural resources as appropriate. Surveys and recovery activities would be coordinated with the California SHPO and the tribe with whom project coordination is in progress. To fulfill the requirements of the NHPA, Reclamation will enter into an agreement with the California SHPO, Native American tribes, BLM, other interested persons, and the Advisory Council on Historic Preservation. A Native American observer will be given the opportunity to participate in archaeological surveys in the Pilot Knob ACEC; and	

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Cultural Resources (continued)		(3) steps would be taken as part of an Interim Recreation Management Plan to deter the public from sensitive areas. Incidental contractor activity at the construction site would be restricted to a predetermined area. Each onsite construction contract would include provisions requiring the contractor to report cultural resources located during the construction activities and to cease construction activities in the immediate area of the located resources until professional cultural resources personnel inspect the site. In the event that cultural resources are discovered during construction, work would be suspended until evaluation and mitigation are complete. Impacts from other construction projects within the IID service area would be mitigated through site-specific CEQA review associated with each project.	Less than significant with mitigation.
Noise	Construction of water conservation measures would create short-term noise impacts from the use of various types of equipment. Construction would generally take place in rural, unpopulated areas, well away from noise-sensitive receptors. However, should noise-sensitive receptors, including riparian birds, be exposed to noise in excess of 75 dBA Leq when averaged over an 8-hour period, which would exceed the Imperial County construction noise standards, the impact would be significant. Operation of certain water conservation measures would require the operation of pumps that could generate long-term noise in excess of 70 dBA at 50 feet. Depending on the location of these pumps in relation to noise-sensitive receptors, noise from the pumps could exceed the Normally Acceptable noise/land use compatibility guideline of 70 dBA and the operational standards of the Imperial County General Plan, which would be a significant impact.	When construction occurs sufficiently close to noise-sensitive receptors so that noise from construction activities exceeds local regulatory standards or causes a substantial increase in ambient noise levels, the following measures could be implemented: (1) use hydraulically or electrically powered impact tools when possible (if the use of pneumatically powered tools is unavoidable, use an exhaust muffler on the compressed air exhaust); (2) install manufacturer's standard noise control devices, such as mufflers, on construction equipment; (3) locate stationary equipment as far as possible from noise-sensitive receptors; (4) notify nearby property users whenever extremely noisy work might occur; (5) use stockpiles as noise barriers when feasible; (6) keep idling of construction equipment to a minimum (no more than 30 minutes) when not in use; (7) install temporary or portable acoustic barriers around stationary construction noise sources; (8) as appropriate, modify noise enclosures with acoustical louvers, baffle walls, and/or acoustical panels; and (9) limit construction activities to non-mating, non-nesting seasons of noise-sensitive species.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Noise (continued)		To mitigate operational noise impacts, pumps could be located at sufficient distances from sensitive receptors to ensure that noise levels at the receptor do not exceed local noise standards. If there is no flexibility in their placement, barriers or enclosures could be constructed to ensure adherence to local standards.	
Aesthetics	The All American Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project. Other water conservation measures, including fallowing, would be located in irrigated parts of the service area and would be visually compatible with the surrounding agricultural uses.	No mitigation measures are required.	None.
Hazards and Hazardous Materials	Public safety impacts from lining the All American Canal would be avoided by constructing slipform ridges on the sideslopes of the canal to provide reliable handholds and footholds. The Proposed Project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if construction activities are located in proximity to evacuation or other emergency routes. This would be a potentially significant impact. The proposed improvements would be located in agricultural areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant.	To mitigate temporary impacts to the implementation of an adopted emergency response plan or emergency evacuation plan, once specific sites are selected, the following procedures could be followed: determine whether construction would occur in a location that could interfere with the implementation of an emergency response plan or emergency evacuation plan. If so, the duration and location of construction and contacts for responsible parties would be given to providers of emergency services well before construction. To mitigate potential impacts from locating facilities on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites to a less than significant level, if warranted, records searches would be conducted through California Environmental Protection Agency (Cal EPA), Long Beach Office and through a database search firm such as VISTA Info. The results of the search and any mitigation required if proposed construction encounters contaminated soils would be considered in the subsequent environmental documents prepared for the facilities. If required, mitigation measures may include but are not limited to relocating the facility to avoid the contamination or removal of contaminated soils.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
IMPERIAL IRRIGATION DISTRICT (CONTINUED)			
Public Services, Utilities and Transportation	Implementation of the Proposed Project would not cause average power production at Drop Nos. 1, 2, 3, 4, 5, and East Highline to be less than the minimum amount of power generation over the last 15 years. This is not considered a substantial reduction in the facility's ability to produce power; therefore, the impact would not be significant. The minimal amount of short-term traffic that would be generated from the All American Canal Lining Project and construction of other water conservation measures would not significantly impact traffic conditions. Minimal maintenance of on-farm conservation measures and water delivery systems would be required and would be indistinguishable from routine farm activities.	No mitigation measures are required.	None.
Population, Housing, and Employment	Based on a worst-case scenario, Imperial County could experience a net loss of up to 1,400 jobs, of which approximately 12% would come from the agricultural sectors (up to 1,300 jobs). Such a change would comprise just under 3 percent of the Year 2000 county employment level. This would not represent a significant impact to population, housing, or employment.	No mitigation measures are required.	None.
Water Resources	The increase of Colorado River water supplies for use in the service area is a beneficial impact as it would correct the current groundwater overdraft problem in the Coachella Valley, and would increase drainage flows to the Salton Sea from the Coachella Valley. The voluntary limitation of Priority 3a diversions by CVWD at 330 KAFY would not adversely impact groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation and is not considered a significant impact. Seepage from the Coachella Canal would be reduced through the proposed canal-lining project. Groundwater levels would be expected to decline near the newly lined section, but this is not considered significant to local groundwater resources.	Should the impact to lower aquifer groundwater in the CVWD service area as a result of groundwater recharge cause any Torres Martinez Indian Reservation domestic drinking water well to exceed any recognized health-based water quality standard, CVWD will work with the Tribe to bring the drinking water supply of the Tribe into compliance by either providing domestic water service to the Tribe from the district's domestic water system or by providing appropriate well-head treatment.	Significant unavoidable water quality impacts due to increased selenium levels in the CVWD drains and to an increase in TDS of lower aquifer Upper Valley groundwater.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT			
Water Resources (continued)	The increase of Colorado River water supplies for use in the service area would result in an increase in TDS of agricultural return flows. This is a less than significant impact because water quality objectives would not be exceeded. It would also result in an increase of selenium in drain flows, which is considered a potentially and unavoidable significant impact. Additional flow in the Coachella Valley Stormwater Channel (CVSC) and drains would result in a potential increase in turbidity, but this is considered a less than significant impact. Groundwater recharge with Colorado River water in the Upper Valley would result in an increase in TDS of lower aquifer Upper Valley groundwater. This is considered a significant and unavoidable impact.		
Biological Resources	*Vegetation.* Losses of wetland and riparian plant communities from the Coachella Canal Lining Project are potentially significant. Construction activities have the potential to cause both temporary and permanent losses of native vegetation, and impacts would be less than significant, particularly in previously disturbed areas, but could potentially be significant if native vegetation is permanently lost. *Fish and Wildlife.* Constructing groundwater recharge facilities may impact wildlife habitat, but it is anticipated that these adverse impacts would be less than significant. *Sensitive Species.* Construction-related activities may impact sensitive plant species, but selection of sites for such activities would consider environmental concerns and sensitive plants species. The Proposed Project has the potential to impact desert pupfish populations within the drains due to an increase in volume and velocity of the drain water. Although the magnitude of this impact cannot be precisely determined, this impact is considered potentially significant. The Coachella Canal Lining Project has the potential to adversely affect habitat for the Yuma	Mitigation measures for the lining of the Coachella Canal have been adopted as part of the EIS/EIR prepared for that project and include the following: (1) site-specific surveys for desert tortoise. Avoidance or relocation will be conducted for any tortoises found within construction areas; (2) the canals will be restocked with channel catfish once after completion of construction; (3) structures will be constructed to allow large mammals to escape if they enter the canal; and (4) structures will be constructed in the canals to increase edge areas for fisheries. Reclamation and CVWD have developed a plan to provide flow into Salt Creek to provide water for the marsh areas downstream of the Coachella Canal. Site-specific studies and mitigation measures would be developed when specific projects are developed for the recharge basins, pipelines, pump stations, and other new facilities. Site-specific surveys would be conducted at each potential facility site in order to determine if sensitive plant and animal species may be on the site. These include such species as the desert tortoise, flat-tailed horned lizard, and Palm Springs ground squirrel. Any potential impacts to	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Biological Resources (continued)	clapper rail, California black rail, desert pupfish, and desert tortoise. The Dike 4 recharge facility may be constructed within critical habitat for the peninsular bighorn sheep.	biological resources would be determined and mitigation measures developed. These measures could include habitat restoration on site or nearby, or use of an alternative site that does not have significant biological impacts. Specific mitigation measures for bighorn sheep and other resources could include: (1) no persistent pesticides would be used at the recharge basin sites; (2) no sheep would be handled unless they are in immediate danger; (3) vehicle travel on the basin site would be no more than 20 mph; (4) hydroseeding with native species for erosion control would be provided for disturbed areas that were vegetated before project construction, as appropriate; (5) construction would be conducted outside the lambing season; (6) workers would be prohibited from bringing dogs, or other pets, or firearms to the site during construction or operation of the facilities; and (7) a Worker Environmental Awareness Training Program for construction personnel would be conducted. A monitoring program would be developed for the pupfish in the drain system of CVWD. If the monitoring indicates a potential adverse effect to these species, specific mitigation measures would be developed in coordination with the Service and CDFG. These measures could include creation of additional habitat, modification of drain flows, or other measures identified in the CVMSHCP or a site-specific HCP.	

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Geology, Soils, and Minerals	Earthmoving during construction of new facilities could cause a temporary increase in wind and water erosion of bare soils, which could significantly increase the short-term potential for localized wind and water erosion. If groundwater levels increase to within 30 feet of the ground surface under habitable structures or important infrastructure, the liquefaction hazard could increase, which would be a potentially significant impact.	To minimize soil erosion from construction, one or more of the following measures could be implemented as standard operating practices during construction activities: (1) apply water to areas where vehicles and equipment are involved in ground-disturbing activities; (2) pave dirt roads or keep them wet; (3) increase water applications or reduce ground-disturbing activities with increasing wind speeds; (4) minimize the amount of disturbed area and vehicle speeds on site; (5) cover inactive soil stockpiles or treat them with soil binders, such as crusting agents; and (6) designate personnel to monitor erosion control program activities to ensure that they are effective in minimizing soil erosion. To mitigate the potential significant impact from increased risk of liquefaction in the Coachella Valley, CVWD would monitor water levels in the vicinity of recharge basins and manage recharge operations such that water levels would remain greater than 30 feet below the ground surface near the recharge site.	Less than significant with mitigation.
Land Use	No aspects of the Proposed Project would significantly alter land uses. New facilities would likely be located in rural or remote areas, and these facilities would not physically divide an established community.	No mitigation measures are required.	None.
Agricultural Resources	The water source for agriculture would now be primarily Colorado River water, which has good infiltration characteristics that would benefit some agricultural users. Construction of recharge facilities could have a significant effect on agricultural resources if they were located in agricultural areas because they could convert farmland to a non-agricultural use. As specific sites for the recharge facilities are located, additional environmental review will be conducted that will identify impacts to agricultural resources.	Recharge basins in the CVWD service area should not be located on land that is designated as Important Farmland, zoned for agricultural use, or subject to a Williamson Act contract.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Recreational Resources	Construction activities during the lining of the Coachella Canal would temporarily disrupt some recreational uses of the area. Construction could block access to a recreational trail on BLM lands, the Bradshaw Trail, which would be a significant impact. Seasonal RV campers would be exposed to construction traffic but would not be constrained by construction. Once completed, the canal lining would have no effect on access or general recreational opportunities in the area. A traffic control plan has been incorporated as a project feature that would minimize impacts to recreational visitors. Lining the canal would result in a reduction in the amount of fish available to anglers, but this impact would not be significant. The mitigation for the fishery that is required by P.L. 100-675, in which Congress authorized the canal-lining project, would maintain fish populations at approximately the same level. Construction of pumping stations, pipelines, and recharge basins would be unlikely to affect recreational resources since they would be located in agricultural or remote areas. Such construction would be evaluated in future site-specific environmental documents.	To mitigate short-term construction impacts to canal fisheries, channel catfish would be stocked once construction is completed. To mitigate permanent impacts to the canal fishery, artificial reefs would be installed and maintained in the newly lined portions of the canal. If the artificial reefs do not function as expected, the canal would be stocked with channel catfish at a rate that would maintain the fish population at pre-project levels or an alternative method of supporting the fish population would be identified by Reclamation and CVWD. To mitigate the potential impact from obstruction of the Bradshaw Trail, OHV access along the Bradshaw Trail would be maintained during construction (for example, by posting signs directing visitors to alternate locations where they may cross the Coachella Canal when siphon 24 is blocked by construction activity).	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Air Quality	The Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001) determined that PM_{10} emissions (due to fugitive dust) from construction activities would constitute a significant impact even after mitigation. However, this impact would only last for the duration of construction activities. Development of other new facilities would generate air pollutant emissions (NOx and PM_{10}) from construction-related activities. These activities would cause temporary impacts to local air quality and would be significant if they exceeded air pollutant thresholds established by the SCAQMD within the SCAB Project region. Due to their short-term nature, construction-related activities would not interfere with attainment of the national and state ambient air quality standards over the long term. Operation of facilities associated with implementation of the Proposed Project would have minimal impacts to air quality.	If proposed construction activities within the SCAB exceed a SCAQMD NOx emission threshold, one or more of the following measures could be implemented: (1) retard injection timing by 2 degrees on diesel-powered equipment; (2) properly tune and maintain all construction equipment; and (3) use low-NOx engines, alternative fuels, electrification, and other advanced technologies, whenever feasible. Standard operating practices to minimize combustive and fugitive dust emissions that could be implemented include: 1. Minimize the use of diesel-powered equipment where feasible. 2. Use alternative diesel fuels in construction equipment where feasible. 3. Use particulate traps on diesel-powered equipment. 4. Properly tune and maintain all construction equipment. 5. Apply water to areas where vehicles and equipment are involved in ground-disturbing activities. 6. Pave dirt roads, keep them wet, or apply non-toxic soil stabilizers, such as salts or detergents. 7. Increase water applications or reduce ground-disturbing activities with increasing wind speeds. 8. Minimize the amount of disturbed area and limit vehicle speeds onsite. 9. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents or water them to keep moist. 10. Cover trucks that haul soils or fine aggregate materials. 11. Designate personnel to monitor dust control program activities to ensure that they are effective in minimizing fugitive dust emissions. 12. Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways. 13. Sweep streets near the construction area at the end of the day if visible soil material is present.	Temporary significant unavoidable impact due to the lining of the Coachella Canal.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Air Quality (continued)		14. Per SCAQMD Rule 403, for large construction sites (greater than 100 acres of disturbed area or daily earth-moving or throughput volume of 7,700 cubic meters) or medium operations (50 to 100 acres of disturbed area or daily earth-moving or throughput volume of 3,850 – 7,700 cubic meters) under a contingency notification, an approved fugitive dust emissions control plan must be prepared. 15. For applicable construction areas (such as pipeline alignments), establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover will be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting. Standard operating practices to minimize PM_{10} and fugitive dust emissions from proposed construction activities include: 1. Implement conservation cropping sequences and wind erosion protection measures as outlined by the USDA Natural Resources Conservation Service, such as: – Plan ahead to start with plenty of vegetative residue and maintain as much residue on fallowed fields as possible. Residue is more effective for wind erosion protection if left standing. – If residues are not adequate, small grain can be seeded to take advantage of winter rains and lightly irrigated as needed to get adequate growth. – Avoid any tillage, if possible. – Avoid any traffic when fields are dry to avoid pulverization. 2. Apply soil stabilization chemicals to fallowed fields. 3. Re-apply drain or other unused water to allow protective vegetation to be established. 4. Reuse irrigation return flows to irrigate windbreaks across blocks of land including many fields to reduce emissions from fallowed, farmed, and other lands within the block. Windbreak species, management, and layout would be optimized to achieve the largest feasible dust emissions reduction per unit water available for their irrigation. Windbreak corridors would provide ancillary aesthetic and habitat benefits.	

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Cultural Resources	Any physical alteration of the Coachella Canal would be a potentially significant impact requiring mitigation. Construction of new facilities and canal lining would involve ground disturbance that could impact an archaeological or paleontologic site or human remains. Most ground disturbance would take place in previously disturbed areas and, therefore, impacts to cultural resources would be unlikely. However, ground-disturbing activities still have the potential to impact a significant archaeological or paleontologic resource or human remains, particularly if those activities occur in previously undisturbed areas. Potentially significant impacts could result if implementation of Proposed Project components would require demolition or relocation of a significant historic architectural resource.	The following environmental commitments and mitigation measures were included in the Coachella Canal Lining Project EIS/EIR: (1) all cultural resource activities will be conducted in accordance with 36 CFR 800 and in consultation with the California SHPO, BLM for public domain land, and as appropriate, the Federal Advisory Council on Historic Preservation; (2) should any burial sites be encountered during construction, they will be treated pursuant to the procedures outlined in the NAGRPA; (3) prior to construction, a detailed construction plan will be developed. To minimize impacts, existing roads and staging areas will be used wherever possible. New borrow areas (other than the canal-bank spoil piles) and access roads will require a Class III survey unless the compliance process was completed within the past 5 years. All areas potentially affected, as well as areas to be disturbed for new habitat planting, will also have Class III surveys; (4) avoidance will be utilized to the extent possible; (5) continuation of consultations with the Cahuilla Indian community and other area Native American tribal organizations should serve to recognize their interests and develop appropriate solutions to any issues. If impacts occur, mitigation would consist of professional recovery of cultural resources or development, where possible, of means to avoid impacts; and 6) appropriate documentation about the Coachella Canal will be prepared that is equivalent to a Historic American Engineering Record. Impacts from other construction projects within the CVWD service area would be mitigated through site-specific CEQA review associated with each project component.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Noise	Construction of new facilities would create short-term, noise impacts from the use of various types of equipment. Construction would generally take place in rural, unpopulated areas, well away from noise-sensitive receptors. However, should they be constructed in proximity to noise-sensitive receptors, impacts could be significant. Pump stations and routine maintenance activities would generate operations-related noise. Although pumps likely would be located in rural, sparsely populated areas and generally would be equipped with electric motors, if they were located in proximity to noise-sensitive receptors, impacts could be significant. Routine maintenance activities would not cause significant noise impacts.	When construction occurs sufficiently close to noise sensitive receptors so that noise from construction activities exceeds local regulatory standards or causes a substantial increase in ambient noise levels, the following measures could be implemented: (1) use hydraulically or electrically powered impact tools when possible (if the use of pneumatically powered tools is unavoidable, use an exhaust muffler on the compressed air exhaust); (2) install manufacturer's standard noise control devices, such as mufflers, on construction equipment; (3) locate stationary equipment as far as possible from noise sensitive receptors; (4) notify nearby property users whenever extremely noisy work might occur; (5) use stockpiles as noise barriers when feasible; (6) keep idling of construction equipment to a minimum (no more than 30 minutes) when not in use; (7) install temporary or portable acoustic barriers around stationary construction noise sources; (8) as appropriate, modify noise enclosures with acoustical louvers, baffle walls, and/or acoustical panels; and (9) limit construction activities to non-mating, non-nesting seasons of noise-sensitive species. To mitigate operational noise impacts, pumps could be located at sufficient distances from sensitive receptors to ensure that noise levels at the receptor do not exceed local noise standards. If there is no flexibility in their placement, barriers or enclosures could be constructed to ensure adherence to local standards.	Less than significant with mitigation.
Aesthetics	The Coachella Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project. Construction of new facilities would likely be visually compatible with existing uses of the area, and impacts would not be significant. However, should pipelines or pump stations be located in a visually sensitive area, impacts could be significant.	To reduce potential impacts from the construction of pipelines and pumping stations, pipelines and pumping stations would be located in agricultural areas to the extent feasible. As appropriate, pipelines would be buried along existing roadways or located on the edges of agricultural fields. To the extent feasible, pumping stations would be small, low structures painted in pale earth tones to blend with the native soils.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Hazards and Hazardous Materials	Public safety impacts from lining the Coachella Canal would be avoided by constructing slipform ridges on the sideslopes of the canal to provide reliable handholds and footholds. Impacts would be less than significant. The construction and operation of new facilities would not have significant safety impacts. However, mosquito habitat could be created in the new recharge basins, which would be a potentially significant impact. The Proposed Project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if construction activities are located in proximity to evacuation or other emergency routes. This would be a potentially significant impact. The proposed improvements would be located in agricultural or remote areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant.	To reduce the potential for mosquitoes to breed in any CVWD recharge basins if constructed, the design of the recharge basins would incorporate design and operation parameters that discourage mosquitoes and the establishment of their habitat. To mitigate temporary impacts to the implementation of an adopted emergency response plan or emergency evacuation plan, once specific sites are selected, it would be determined whether construction would occur in a location that could interfere with the implementation of an emergency response plan or emergency evacuation plan. If so, the duration and location of construction and contacts for responsible parties would be given to providers of emergency services well before construction. To mitigate potential impacts from locating facilities on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites to a less than significant level, if warranted, records searches will be conducted through California Environmental Protection Agency (Cal EPA), Long Beach Office and through a database search firm such as VISTA Info. The results of the search and any mitigation required if proposed construction encounters contaminated soils will be considered in the subsequent environmental documents prepared for the facilities. If required, mitigation measures may include but are not limited to relocating the facility to avoid the contamination or removal of contaminated soils.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COACHELLA VALLEY WATER DISTRICT (CONTINUED)			
Public Services, Utilities and Transportation	Recharge basins may require storm flow management facilities; these will be addressed once specific sites are selected. Construction of new facilities could cause temporary disruption of present traffic patterns and increases in traffic hazards, or availability of parking on local roadways. Given the existing favorable conditions and the short duration of construction, impacts would not be significant unless construction occurred in the immediate vicinity of heavily traveled roadways and intersections. Pipelines, pumping stations, and recharge basins would likely be located in rural or undeveloped areas away from schools or providers of emergency services. However, if construction occurred near such facilities, it could restrict emergency access, which would be a significant but mitigable impact. As noted in the Coachella Canal Lining Project EIS/EIR, a traffic control plan is incorporated as a project feature, which would avoid significant transportation impacts from construction of this project. No significant long-term impacts would occur.	To reduce the potential impact from construction in the vicinity of schools or emergency services facilities in the CVWD service area, nearby schools and emergency service providers would be notified of construction prior to its onset, and a traffic control plan would be developed to ensure that access and emergency response are possible at all times. Although not expected, if a significant transportation impact is identified near high-volume roadways and intersections in the CVWD service area, one or more of the following measures could be implemented to reduce impacts to a less-than-significant level: (1) to mitigate temporary traffic disruption and ensure public safety, traffic control plans would be prepared for construction sites in or near higher traffic volume roadways (the plans would be provided to and approved by, as applicable, Caltrans, the individual City departments, the County of Riverside, and local providers of emergency services); and (2) high-volume intersections would be avoided if possible.	Less than significant with mitigation.
Population, Housing, and Employment	No aspects of the Proposed Project would significantly impact population, housing, or employment.	No mitigation measures are required.	None.
METROPOLITAN WATER DISTRICT			
Water Resources	Colorado River water diversions by MWD would replace a portion of the previously diverted surplus and unused apportionment water with Priority 3a water. This change in diversions is not considered a significant impact to water resources, as this water would replace previously diverted surplus and unused apportionments water, and would not impact water quality, groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
METROPOLITAN WATER DISTRICT (CONTINUED)			
Biological Resources	No significant biological impact in the MWD service area would occur from implementation of the Proposed Project.	No mitigation measures are required.	None.
Geology, Soils, and Minerals	No new construction or changes in the operation of existing facilities would occur that would impact geology, soils, or minerals.	No mitigation measures are required.	None.
Land Use	No new construction or operational changes would occur in this service area that would physically divide the local community or otherwise result in a direct change to land use pattern.	No mitigation measures are required.	None.
Agricultural Resources	No impacts would occur because the amount of water available for agricultural use would not change, nor would any aspects of the Proposed Project cause the conversion of farmland or otherwise impede the use of agricultural lands.	No mitigation measures are required.	None.
Recreational Resources	No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.	No mitigation measures are required.	None.
Air Quality	No construction or substantial changes in operations would occur within the MWD service area. Implementation of the Proposed Project would not result in potentially significant air quality impacts.	No mitigation measures are required.	None.
Cultural Resources	Implementation of the Proposed Project would not require the construction of new MWD facilities or the modification of existing MWD facilities. Impacts to cultural resources, therefore, would not occur because no new ground-disturbing activities would be required.	No mitigation measures are required.	None.
Noise	The Proposed Project would not generate noise in the MWD service area since no construction or operational changes would occur.	No mitigation measures are required.	None.
Aesthetics	Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
METROPOLITAN WATER DISTRICT (CONTINUED)			
Hazards and Hazardous Materials	No aspects of the Proposed Project would cause safety impacts in the MWD service area since no construction or operational changes would occur. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health.	No mitigation measures are required.	None.
Public Services, Utilities and Transporta-tion	No significant impacts associated with public services, utilities, or transportation would occur.	No mitigation measures are required.	None.
Population, Housing, and Employ-ment	Implementation of the Proposed Project would not affect population, housing, or employment in the MWD service area.	No mitigation measures are required.	None.
SAN DIEGO COUNTY WATER AUTHORITY			
Water Resources	Implementation of the Proposed Project would not result in a substantial change to the total quantity or quality of imported water delivered to SDCWA; transfer water from IID would replace a portion of water currently purchased from MWD. The Proposed Project would not impact groundwater, drainage patterns and runoff, or flood hazard; and would not cause inundation. Changes to water quality are less than significant.	No mitigation measures are required.	None.
Biological Resources	No significant biological impact in the SDCWA service area would occur from implementation of the Proposed Project.	No mitigation measures are required.	None.
Geology, Soils, and Minerals	No new construction or changes in the operation of existing facilities would occur that would impact geology, soils, or minerals.	No mitigation measures are required.	None.
Land Use	No new construction or operational changes would occur in this service area that would physically divide the local community or otherwise result in a direct change to land use pattern.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SAN DIEGO COUNTY WATER AUTHORITY (CONTINUED)			
Agricultural Resources	No impacts would occur because the amount of water available for agricultural use would not change, nor would any aspects of the Project cause the conversion of farmland or otherwise impede the use of agricultural lands.	No mitigation measures are required.	None.
Recreational Resources	No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.	No mitigation measures are required.	None.
Air Quality	No construction or substantial changes in operations would occur within the SDCWA service area. Implementation of the Proposed Project would not result in potentially significant air quality impacts.	No mitigation measures are required.	None.
Cultural Resources	Implementation of the Proposed Project would not require the construction of new SDCWA facilities or the modification of existing SDCWA facilities. Impacts to cultural resources, therefore, would not occur because no new ground-disturbing activities would be required.	No mitigation measures are required.	None.
Noise	The Proposed Project would not generate noise in the SDCWA service area since no construction or operational changes would occur.	No mitigation measures are required.	None.
Aesthetics	Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur.	No mitigation measures are required.	None.
Hazards and Hazardous Materials	No aspects of the Proposed Project would cause safety impacts in the SDCWA service area since no construction or operational changes would occur. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health.	No mitigation measures are required.	None.
Public Services, Utilities and Transportation	No significant impacts associated with public services, utilities, or transportation would occur.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SAN DIEGO COUNTY WATER AUTHORITY (CONTINUED)			
Population, Housing, and Employ-ment	Implementation of the Proposed Project would not affect population, housing, or employment in the SDCWA service area.	No mitigation measures are required.	None.
COLORADO RIVER			
Water Resources	Transfers under the Proposed Project would shift diversion of between 183 KAF and 388 KAF from Imperial Dam to Parker Dam, decreasing flow in this reach. With full implementation of QSA transfer diversions, the change in median water water surface elevation would be no more than 0.4 feet between Parker Dam and Imperial Dam. The reduction in flows due to the Proposed Project could potentially result in a decrease in as much as 35 surface acres of the open water in the main channel, 17 surface acres of open water in backwaters, and 28 acres of emergent vegetation in backwaters. Changes in water surface elevation in Lake Mead and the Colorado River between Hoover Dam and Imperial Dam are not an impact to hydrologic resources, but could impact other resources. Reductions in flow to the River in the Parker to Imperial reach, while not a significant impact to hydrologic resources, could affect other resource areas. The Proposed Project could increase salinity by as much as 1 mg/L below Hoover Dam and by as much as 8 mg/L at Imperial Dam. It is assumed, however, that additional salinity control measures under the provisions of the Colorado River Salinity Control Act would be implemented and water quality objectives would be met.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COLORADO RIVER (CONTINUED)			
Biological Resources	*Vegetation.* Potential drop in median groundwater levels could impact riparian vegetation with shallow or slow-growing roots (i.e., cottonwood and willow trees) along the outward fringes of the riparian zone. This impact to aquatic, marsh, and riparian vegetation is considered a potentially significant impact. *Fish and Wildlife.* Implementation of the Proposed Project has the potential to reduce aquatic wetland and riparian habitat along the Colorado River that is used by fish, amphibians, reptiles, riparian and marsh obligate birds, and mammals. This potential loss of habitat would potentially be a significant impact. *Sensitive Species.* Potential loss of backwater area and main channel habitat would be a potentially significant impact. The potential reduction in emergent vegetation may result in the reduction of habitat for the Yuma clapper rail and the California black rail, and would be considered a potentially significant impact. There is a potential, but less well-defined impact to riparian vegetation along the lower Colorado River, which could affect the southwestern willow flycatcher, yellow-billed cuckoo, Arizona Bell's vireo, elf owl, Gila woodpecker, and gilded flicker. Impact to this habitat would be considered potentially significant.	Mitigation/conservation measures were identified in the Biological Opinion (USFWS 2001) to mitigate impacts to sensitive habitat and special status species along the lower Colorado River. These measures include: (1) stocking razorback suckers into the Colorado River between Parker and Imperial dams; (2) restoring or creating 44 acres of backwater habitat along the lower Colorado River between Parker and Imperial dams; (3) providing 5-year funding for the capture of wild-born or F1 generation of bonytails from Lake Mohave; and (4) implementing a two-tiered conservation plan, which includes restoration of 372 acres of riparian vegetation, to minimize the impact to willow flycatcher and other riparian species. If impacts to California-listed species require issuance of a take authorization pursuant to the CESA, consultation with CDFG will be initiated. Other actions, similar to measures described above may be employed, as appropriate, to further reduce impacts to California-listed species. These potential actions may include: (1) removal and control of exotic species and other pest management measures; (2) purchase of conservation easements or fee title lands for long-term preservation; and (3) construction of nesting boxes or other platforms.	Less than significant with mitigation.
Geology, Soils, and Minerals	The slight lowering of the Colorado River's median water surface elevation would be gradual, minimizing the potential for erosion. This impact would not be significant in either California or Arizona.	No mitigation measures are required.	None.
Land Use	The Proposed Project would not result in any construction or changes to land use patterns around the Colorado River, either in California or Arizona.	No mitigation measures are required.	None.
Agricultural Resources	Implementation of the Proposed Project would not result in any changes in water supply to or otherwise affect any agricultural land immediately adjacent to the Colorado River in either California or Arizona. No significant impact to agricultural resources would occur.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COLORADO RIVER (CONTINUED)			
Recreational Resources	The median water surface elevation of the Colorado River would change slightly, but no recreational facilities or water-oriented activities would be affected. No significant changes in the median water surface elevation of the lakes that are fed by the River would occur, and the Proposed Project would not significantly affect wildlife, fish, or any recreational activities that are dependent upon these resources, including sport fishing.	No mitigation measures are required.	None.
Air Quality	Decrease in river flow would intermittently expose land in California and Arizona that is currently submerged along the Colorado River. However, this change would be within the range of historic fluctuations of the River and would not increase the amount of land that would be exposed and subject to increased fugitive dust emissions. This impact would be less than significant.	No mitigation measures are required.	None.
Cultural Resources	The change in median water water surface elevation of the Colorado River and backwaters from the implementation of the Proposed Project would be less than significant in comparison to the daily and seasonal fluctuations that currently occur. Impacts to cultural resources would therefore be less than significant.	No mitigation measures are required.	None.
Noise	The only change to the Colorado River area would be associated with different median water levels, flow rates, etc. No noise would be generated from Proposed Project components in this area, either in California or Arizona.	No mitigation measures are required.	None.
Aesthetics	Although the Proposed Project would result in a slight decrease in median water surface elevation, the decrease would be within the River's normal range of fluctuation and would not produce a perceptible change to its visual qualities.	No mitigation measures are required.	None.
Hazards and Hazardous Materials	Implementation of the Proposed Project would not affect public safety or result in significant impacts associated with hazards and hazardous materials along the River either in California or Arizona. No construction or other changes would occur that would in any way affect public safety.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
COLORADO RIVER (CONTINUED)			
Public Services, Utilities and Transportation	Slight changes in hydropower generation would not represent a substantial decrease and would not be significant. The Project would not cause construction, population changes, or any other actions that would affect public services, utilities, or transportation systems near the Colorado River, either in California or Arizona.	No mitigation measures are required.	None.
Population, Housing, and Employment	There would be a slight decrease in median water surface elevation between Parker and Imperial dams, but this would not be sufficient to adversely affect tourism or other economic activities in California or Arizona. Any such reductions in revenues from tourist activities and the associated jobs would be negligible.	No mitigation measures are required.	None.
SALTON SEA			
Water Resources	The Proposed Project would result in decreased flows to the Salton Sea and this, combined with evaporation, would act to lower the mean water surface elevation, decrease surface area, and increase salinity concentrations of the Sea. Decreased mean water surface elevation and decreased surface area would represent less than significant impacts to hydrology. There is no water quality criterion for salinity in the Salton Sea and, therefore, increased salinity would not be a significant impact when compared to current trends.	No mitigation measures are required.	None.
Biological Resources	*Vegetation*. The accelerated decline in Salton Sea water surface elevation caused by the implementation of the Proposed Project has the potential to result in the loss of tamarisk scrub vegetation. This impact to vegetation is considered adverse, but not significant, since the impact would be to non-native vegetation. No significant impact to managed marsh vegetation would occur since the hydrology of these areas is not dependent upon the Salton Sea. *Fish and Wildlife*. The acceleration of the increase in salinity of the Salton Sea would likely change the species composition of the invertebrate and fish populations and cause a decline in their general population size. The impact to fisheries (more rapid loss) is considered less than significant since these	Mitigation Strategy 2 has been developed by IID, in consultation with USFWS and CDFG, to mitigate the earlier reduction in fish abundance expected from the acceleration of the salinization of the Salton Sea as a result of the Proposed Project.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SALTON SEA (CONTINUED)			
Biological Resources (continued)	species are not native to the Salton Sea. Any loss of wetland or riparian habitat would reduce wildlife habitat, and could have adverse, but not significant impacts for species dependent upon those habitats. The loss of food sources for fish-eating birds is considered a potentially significant impact. Bird populations that feed on invertebrates may potentially be affected sooner as well, but the level of impact is considered adverse, but not significant since the invertebrate populations that birds would feed upon is expected to remain.		
Biological Resources (continued)	*Sensitive Species*. The accelerated change in the natural habitat of the desert pupfish is considered a potentially significant impact. Significant impacts would occur to the California brown pelican, black skimmer, double-crested cormorant, and other resident and migratory birds that forage on fish.		
Geology, Soils, and Minerals	The lower elevation of the Salton Sea would cause additional bare soil to be exposed, but the high salt content of the Sea and the underlying soils would cause a crust to form as the soils dried. This crust should be fairly stable and resistant to erosion. Impacts would be less than significant.	No mitigation measures are required.	None.
Land Use	The acceleration in the Salton Sea's salinity would not physically divide the local community or otherwise result in a direct change to land use patterns, although this could affect the area's desirability for recreational use.	No mitigation measures are required.	None.
Agricultural Resources	The Salton Sea itself does not contain agricultural resources, and the changes to Sea elevation and salinity would not affect nearby agricultural lands. No significant impact to agricultural resources would occur.	No mitigation measures are required.	None.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SALTON SEA (CONTINUED)			
Recreational Resources	Decreasing water surface elevation of the Salton Sea would affect existing recreational facilities, some of which would have to be relocated (i.e., campgrounds, docks) or re-established (i.e., roads and trails leading to the water). Decreasing water levels would expose footings and other remnants of campgrounds that are currently underwater. The impact to developed recreational facilities from decreased water levels, therefore, is considered significant. Increased salinity would hasten the decrease in the number of fish that live in the Salton Sea, adversely affecting sport fishing opportunities. This would be a significant impact.	If the decrease in the water surface elevation of the Salton Sea results in the exposure of public docks, launch ramps, or other public structures, thus precluding their intended use, then funding could be provided for the relocation of these facilities in proportion to the water elevation decrease that is attributable to the Proposed Project. Footings and other remnants of campgrounds that are exposed due to the accelerated decline in water surface elevation of the Salton Sea would be removed. Alternatively, implementation of Mitigation Strategy 2 would avoid impacts associated with the decline in Salton Sea water surface elevation. This potentially feasible measure would reduce the impacts to recreational facilities, such as newly exposed docks, launch ramps, and campground remnants, to a less-than-significant level. Mitigation Strategy 2 also would mitigate impacts to sport fishing to a less-than-significant level.	Significant and unavoidable impact to sport fishing, if Mitigation Strategy 2 is not adopted.
Air Quality	Although the new shoreline created by reduced inflows to the Salton Sea would only marginally increase the total land area within the ROI that presently generates fugitive dust, emissions from these areas would be significant due to the PM10 nonattainment status of the region. Decreased water flow and quality in the Salton Sea could contribute to the premature death of flora and fauna and/or increase the summertime algae blooms, either or both of which would contribute to odorous emissions. However, as a result of low population levels around the Sea, it is not likely that the Proposed Project would create objectionable odors affecting a substantial number of people. This impact would be less than significant.	Implementation of Mitigation Strategy 2 would avoid fugitive dust impacts associated with the decline in Salton Sea water surface elevation since additional water would be conserved by IID and would be allowed to flow to the Salton Sea. This potentially feasible measure would reduce impacts to air quality to a less-than-significant level. As the IID Water Conservation and Transfer Project becomes more defined, additional mitigation measures to address air quality impacts may be identified.	

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SALTON SEA (CONTINUED)			
Cultural Resources	Reduction of the current and projected surface area of the Salton Sea may expose previously submerged cultural resources, which would leave those resources susceptible to site erosion and looting. This could result in a significant impact to cultural resources.	IID could conduct a series of archaeological and paleontological surveys at regular intervals (once every 3 years) to check the freshly exposed lands for the presence/absence of archaeological or paleontological sites. Future ground-disturbing projects would be subject to CEQA review (or in the case of tribal lands, would be subject to federal oversight by the Bureau of Indian Affairs following Section 106 compliance pathways). Tribal permission would be obtained before entry onto tribal lands. Alternatively, implementation of Mitigation Strategy 2 would avoid impacts associated with the decline in Salton Sea elevation. This potentially feasible measure would reduce impacts to cultural resources to a less than significant level.	Less than significant with mitigation.
Noise	The only changes to the Salton Sea area would be associated with reduced inflow. No activities that generate noise would occur.	No mitigation measures are required.	None.
Aesthetics	Views of the Salton Sea from some public areas would include increased dry land and decreased open water. The exposed area would look like the existing beach, but views of the water from the developed public viewing facilities would be from a much greater distance. The change would be very gradual, and the visual impact would not be perceptible except over a long period, but ultimately, the impact would be significant.	The following measures could be implemented on an on-going basis as the Sea recedes until it reaches its lowest and stable elevation, at which point they shall be permanent. • Recreational facilities that would become further removed from the waters of the Salton Sea would be relocated to an appropriate site adjacent to the Salton Sea and access will be extended to the new shoreline so as to provide quality public viewing opportunities of the Salton Sea and its shoreline. • Interpretive facilities and materials would be developed and made available to the public at recreation areas and along public roadways. Interpretive displays may include historic photographs of the Salton Sea landscape and information about water conservation measures, including their effects on Salton Sea water levels. Alternatively, implementation of Mitigation Strategy 2 would avoid aesthetic impacts associated with the decline in Salton Sea elevation.	Less than significant with mitigation.

Table ES-1. Summary of Impacts and Mitigations

Resource	*Description of Impact*	*Mitigation[1] Measure*	*Residual Impact*
SALTON SEA (CONTINUED)			
Hazards and Hazardous Materials	The Proposed Project would accelerate the decline in the Sea's water surface elevation, but the amount of bottom sediment that would be exposed would be relatively small, resulting in only limited potential for public exposure to significant new hazardous conditions. The impact would be less than significant. The receding shoreline would likely reduce the amount of brackish marsh, which would reduce the area's mosquito population.	No mitigation measures are required.	None.
Public Services, Utilities and Transportation	Because impacts to this area would only involve change in water levels of the Salton Sea, impacts to public utilities, public services, and transportation systems would not occur.	No mitigation measures are required.	None.
Population, Housing, and Employment	Changes to water surface elevation and water quality of the Salton Sea would impact the fisheries and other recreational resources of the Sea, which may indirectly affect employment opportunities in the area, and possibly lead to a reduction in population. This potential loss of employment opportunities, while having social consequences, would not constitute a significant change to the environment.	No mitigation measures are required.	None.

1 Potential mitigation measures have been identified for impacts that would result from the implementation of Project components that are receiving program-level analysis. Individual agencies that are responsible for implementing specific components of the QSA will be responsible for refining and adopting specific mitigation measures for these components in the project-level analyses being performed.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Implementation Agreement (IA)	Same as Proposed Project.	No significant cumulative impacts would occur.
Inadvertent Overrun and Payback Policy (IOP)	Minor changes in river and reservoir levels associated with overrun and payback periods. Impacts associated with conservation by IID for purposes of paying back diversion exceedances in accordance with the IOP would be consistent with those that are already addressed in Chapter 3 of this PEIR.	No significant cumulative impacts would occur.
Interim Surplus Guidelines	Minor reduction in Lake Mead reservoir levels.	No significant cumulative impacts would occur.
Rule for Offstream Storage	Possible changes to flows and reservoir elevations in the Colorado River between Lake Powell and the Southerly International Boundary. This could adversely impact biological resources.	The Proposed Project could significantly impact biological resources of the lower Colorado River due to reduction in groundwater and water surface elevation. Cumulative impacts are potentially significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Lower Colorado River Multi-Species Conservation Program (MSCP)	Long-term beneficial impacts to biological resources on the lower Colorado River. The construction of conservation/restoration actions could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise. Impacts to cultural resources also could result from ground disturbance required to implement the conservation/restoration actions of the MSCP. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion of Important Farmland to non-agricultural use.	The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. Such practices include, but are not limited to, the installation of temporary berms and sedimentation traps, such as silt fencing, straw bales, and sand bags, revegetating disturbed areas immediately after grading, and conveying surface run-off in a manner that minimizes the potential for erosion and sedimentation. Geotextile binding fabrics should be used if necessary to hold slope soils until vegetation is established. Impacts to cultural resources along the lower Colorado River also could result from ground disturbance required to implement the conservation/restoration actions of the MSCP and the Proposed Project's biological mitigation measures.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Lower Colorado River Multi-Species Conservation Program (MSCP) (continued)		Impacts to cultural resources from the Proposed Project also could occur in the IID and SDCWA service areas and at the Salton Sea. Impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. The Proposed Project could result in the conversion of Important Farmland to non-agricultural use, as described in section 3.5. This is considered a significant and potentially unavoidable impact. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion, as could the implementation of the Proposed Project's biological mitigation measures along the Colorado River. This would be a significant and potentially unavoidable impact to agricultural resources in Southern California.
Lower Colorado River Desert Region Plan	Beneficial impacts to water quality in agricultural drains.	No significant cumulative impacts would occur.
Colorado River Salinity Control Program	Beneficial impacts to Colorado River water quality	No significant cumulative impacts would occur.
Colorado River Basin Watershed Management Initiative	Beneficial impacts to water quality of the Salton Sea, New River, Alamo River, Imperial Valley agricultural drains, and CVSC.	No significant cumulative impacts would occur.
Salton Sea Restoration Project	Potential short- and long-term significant impacts to several environmental resources depending upon the alternative restoration strategies selected.	Due to lack of definition of alternatives, cumulative impacts are speculative. Cumulative impacts are potentially significant but mitigable.
Total Maximum Daily Load (TMDL) Program	Beneficial impacts to water quality in the Salton Sea and its tributaries.	No significant cumulative impacts would occur.
Heber Wastewater Treatment System	Beneficial impacts to water quality of agricultural drains and the Alamo River.	No significant cumulative impacts would occur..
Dos Palmas Habitat Restoration/Enhancement	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Brawley, California Wetland Project	Beneficial impacts to water quality of the New River, Salton Sea, and Imperial Valley agricultural drains.	No significant cumulative impacts would occur.
North Baja Powerline Project	Potential significant impacts to biological and (marsh and riparian habitat).	Potentially significant cumulative biological impacts. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. Significant, potentially unavoidable cumulative impacts to agricultural resources could occur if both projects resulted in the conversion of Important Farmland. Short-term cumulative impacts from construction are unlikely unless construction occurred in the same general location and at the same time. Potential unavoidable short-term air quality impacts if construction occurred at the same time as the Coachella Canal Lining Project.
Mexicali Wastewater System Improvements	The Mexicali Wastewater System Improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea. The two power plants would collectively evaporate approximately 10,570 AFY. The net reduction in water flows to the Salton Sea would be less than 1 percent of the total amount of flow (U.S. DOE 2001). The power plants combined would result in a negligible increase in the salinity of the Salton Sea. Ultimately, the reduction of phosphates, organics, and heavy metals from Mexico that are currently discharged to the Salton Sea will have a positive impact on water and biological resources. The small increase in salinity level and reduction in water quantity would be negligible; hence the power plants would have no measurable impact.	The Proposed Project would result in a less than significant impact to the water quality of the New River, while the wastewater treatment plant improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea. The power plants would result in negligible impacts to water quality. Cumulative impacts would not be significant.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Coachella Valley Water Management Plan (CVWMP) (non-QSA part)	Short-term, construction-related impacts to biological resources, air quality, geology and soils, public services and utilities, transportation, hazardous materials, noise, and public safety. Potential increased agricultural return flows and decreased water quality to drains that empty into the Salton Sea from the Coachella Valley. Depending on the specific locations of facilities that would be constructed, impacts to biological, cultural, and geological resources also could occur.	Potential localized impacts to areas of disturbance that may be within the same general locations as those facilities associated with the Proposed Project. Impacts to biological, cultural, and geological resources, air quality, public services and utilities, transportation, hazardous materials, and noise would be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Coachella Valley Multi-Species Habitat Conservation Plan (MSHCP)	Potential short-term localized impacts to biological resources. Long-term beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Whitewater River Basin Flood Control Project	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Flood Mitigation and Riverine Restoration Program	Beneficial impacts to flood control and biological resources.	No significant cumulative impacts would occur.
Peninsular Bighorn Sheep Recovery Plan	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Mission Creek Subbasin Recharge Project	Beneficial impact from decrease in groundwater overdraft conditions within the Coachella Valley.	No significant cumulative impacts would occur.
Caltrans Route 86 Expressway Mitigation	Beneficial biological impact.	No significant cumulative impacts would occur.
Te'Ayawa Energy Center	Potentially significant impacts, including impacts to geologic hazards, water resources, biological resources, traffic and transportation, noise, air quality, hazardous materials, hazardous waste, and visual resources would be reduced to less than significant impacts through application of mitigation measures.	Potentially significant impacts could result from the construction of the energy center and Proposed Project facilities, such as recharge basins, pipelines, and pumping stations. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Coachella Valley/Salton Sea Non-Point Source Project	Beneficial impact to water quality of the Salton Sea. Short-term construction related impacts.	No significant cumulative impacts would occur.
Cabazon Resource Recovery Park	Short-term, localized construction impacts. Potential for contamination of surface and groundwater supplies due to hazardous spills.	Both the Proposed Project and the Cabazon Resources Recovery Park could result in significant impacts from construction. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Cabazon Power Plant	Potential impact to water quality in the CVSC dependent on the salinity of the discharge from the plant.	Water quality impacts are speculative. Both the Proposed Project and the power plant project could result in significant impacts from construction. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Hayfield Groundwater Storage Program	Short-term construction related impacts to biological resources, hazardous waste, soils, noise, and air quality.	No significant cumulative impacts would occur.
Cadiz Groundwater Storage and Dry-Year Supply Program	Potential impact to groundwater quality. Short-term, construction-related impacts to biological, air, hazardous materials, and paleontological resources.	No significant cumulative impacts would occur.

Table ES-2. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Palo Verde Land Management, Crop Rotation, and Water Supply Program	Potentially minor loss of marsh and riparian habitat between Parker Dam and the Palo Verde Diversion Dam. Land fallowing could cause air quality impacts from fugitive dust emissions.	The Proposed Project and the Land Management, Crop Rotation, and Water Supply Program together would slightly lower the Colorado River median groundwater and surface elevation between Parker Dam and the Palo Verde Diversion Dam. This would not significantly affect water resources, but would result in a significant cumulative impact to biological resources. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.

1.0 INTRODUCTION

This Program Environmental Impact Report (PEIR) evaluates the potential environmental impacts from the implementation of the Proposed Project, the Quantification Settlement Agreement (QSA). The QSA would implement major components of California's draft Colorado River Water Use Plan (California Plan) and provide part of the mechanism for California to reduce its diversions of Colorado River water to the state's normal year apportionment of 4.4 million acre-feet (MAF) (Colorado River Board of California, 2000). The QSA components would provide a framework for conservation measures and water transfers for a period of up to 75 years (referred to as the quantification period). The Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), and the Metropolitan Water District of Southern California (MWD) are signatory to the QSA. The QSA is described in detail in section 2.3, and a summary is included in Appendix A.

The California Environmental Quality Act (CEQA) requires preparation of an Environmental Impact Report (EIR) when an agency action, such as implementation of the QSA, is believed to have a potential for significant impacts on the environment. An EIR is "a public document used by the governmental agency to analyze the significant environmental effects of a Proposed Project, to identify alternatives, and to disclose possible ways to reduce or avoid the possible environmental damage" (Title 14, California Code of Regulations, §15002). An EIR serves as an informational document for decisionmakers and the general public alike.

CVWD, IID, MWD, and the San Diego County Water Authority (SDCWA) have entered into an agreement to be co-lead agencies for the preparation of an EIR in accordance with §15051 of the State CEQA Guidelines. Although not a signatory to the QSA, SDCWA would benefit from the agreement since the QSA would facilitate the transfer of up to 200 thousand acre-feet per year (KAFY) of Colorado River water from IID to SDCWA under the IID/SDCWA Water Conservation and Transfer Agreement dated April 29, 1998. The decision to prepare an EIR to assess the potential environmental impacts of implementation of the QSA was made following the completion of an Initial Study/Environmental Checklist. A Notice of Preparation (NOP) was published on June 6, 2000, and distributed to the California State Clearinghouse and other potentially interested parties (see Appendix B).

1.1 PROJECT LOCATION

The water service areas of CVWD, IID, MWD, and SDCWA (which include parts of Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial counties) are shown in Figure 1.1-1. The region of influence (ROI) comprises the areas that are affected by the QSA water conservation and transfer components, i.e., the water service areas of the four co-lead agencies. The ROI also includes areas adjacent to the Colorado River between Lake Mead and Imperial Dam and the areas of conveyance and distribution of Colorado River water by the co-lead agencies, particularly the Colorado River Aqueduct (CRA), All American Canal, and Coachella Canal. The locations of other entities within the State of California that hold interests in Colorado River water are shown on Figure 1.1-2.

1.2 OVERVIEW OF THE AFFECTED WATER SERVICE AGENCIES

The following discussion provides an overview of the roles and responsibilities of the four co-lead agencies, along with their primary sources of water and distribution facilities. The significance of Colorado River water to IID, CVWD, MWD, and SDCWA varies, but in all cases the Colorado River constitutes a principal supply of water (in IID's case, it is the only water supply).

Imperial Irrigation District

IID was organized in 1911 under the California Irrigation District Act *(*California Water Code §20510 *et seq.)*. IID diverts and distributes Colorado River water to nine cities and nearly 500,000 acres of agricultural lands in the Imperial Valley, which is located in Imperial County. IID also provides power to more than 90,000 customers in Imperial County and parts of Riverside and San Diego counties. For the purposes of this PEIR, references to IID's service area refer to the water service area unless otherwise specified. Approximately 98 percent of the water transported by IID is used for agriculture; the remaining 2 percent is delivered to the nine cities and distributed to residential customers. This water is diverted at Imperial Dam and conveyed through the All American Canal, both of which are operated and maintained by IID (see Figure 1.1-1). The All American Canal delivers water to a 1,667-mile network of main and lateral canals in the IID service area. Seven regulating reservoirs are included within the distribution system. The drainage system within the IID service area generally discharges into either the New or Alamo rivers or directly into the Salton Sea.

Coachella Valley Water District

CVWD was organized in 1918 under the County Water District Act *(*California Water Code §30000 *et seq.)* to conserve and protect the Coachella Valley's water supplies. The CVWD service area consists of approximately 637,600 acres, mainly in eastern Riverside County, with small parts of the service area in northern Imperial and San Diego counties. CVWD is responsible for importation and distribution of domestic water; wastewater collection, reclamation, and redistribution; regional flood protection; importation and distribution of irrigation water; irrigation drainage collection and disposal; groundwater management; and water conservation.

For planning purposes, the Coachella Valley is divided into the Upper Valley and Lower Valley. Water in the Upper Valley is supplied by several sources, including groundwater, surface water, California State Water Project (SWP) water by exchange, canal water, and recycled water. Canal water refers to Colorado River water supplied via the Coachella Canal (refer to Figure 1.1-1). The Lower Valley sources consist of canal water and groundwater. Of the Colorado River water reaching the Coachella Valley, 98.5 percent is delivered to farmers. Several conservation and management activities are incorporated into CVWD's irrigation system, including but not limited to, lining the Coachella Canal within the CVWD service area, burying distribution pipelines, and building Lake Cahuilla to provide storage for Colorado River water.

Other measures include operating the canal system through telemetry control, using water-efficient irrigation techniques, and restructuring water-ordering procedures. All agricultural drains empty into the Coachella Valley Stormwater Channel (CVSC), which drains to the Salton

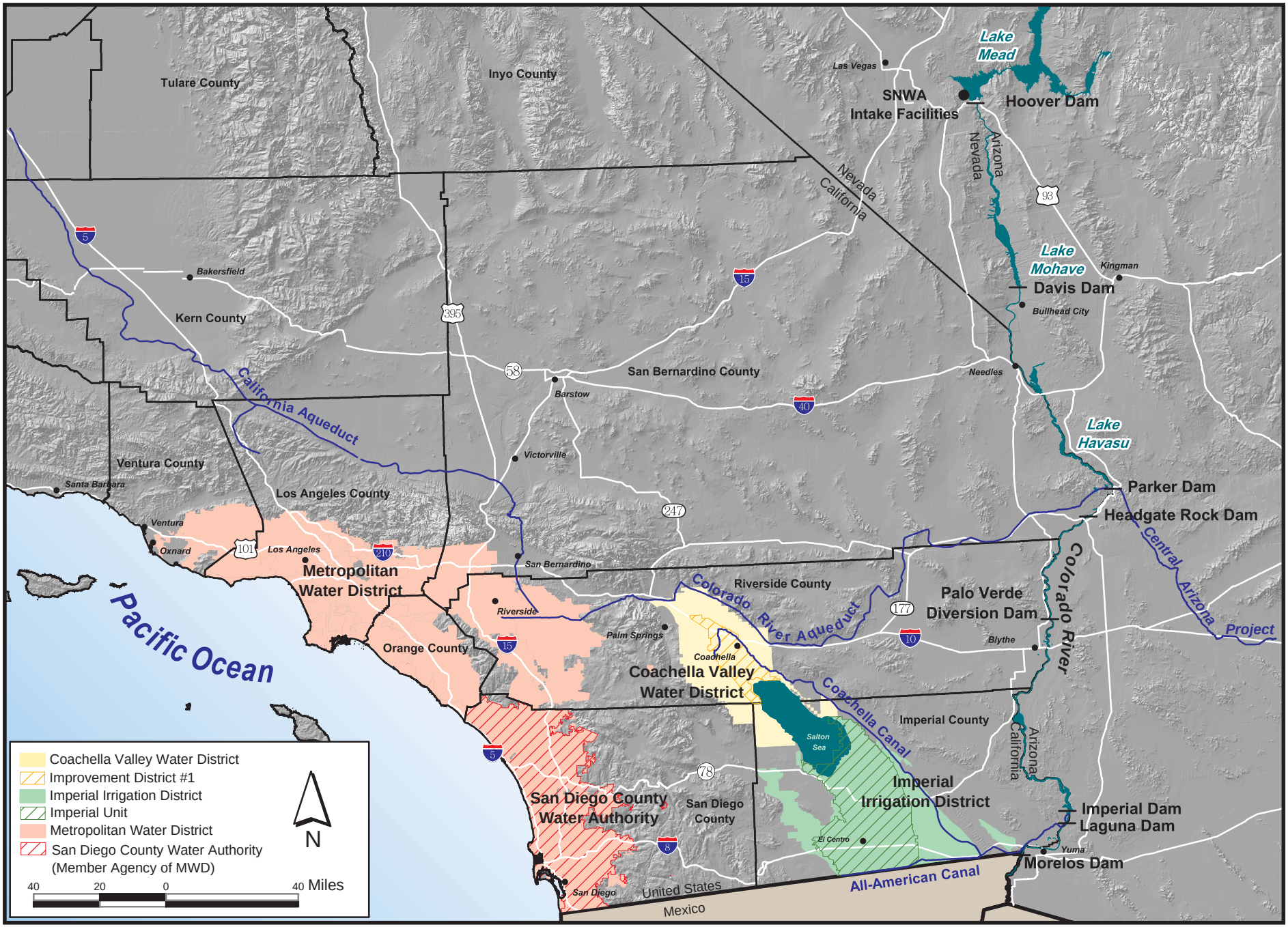

Figure 1.1-1. Water Service Areas of CVWD, IID, MWD and SDCWA

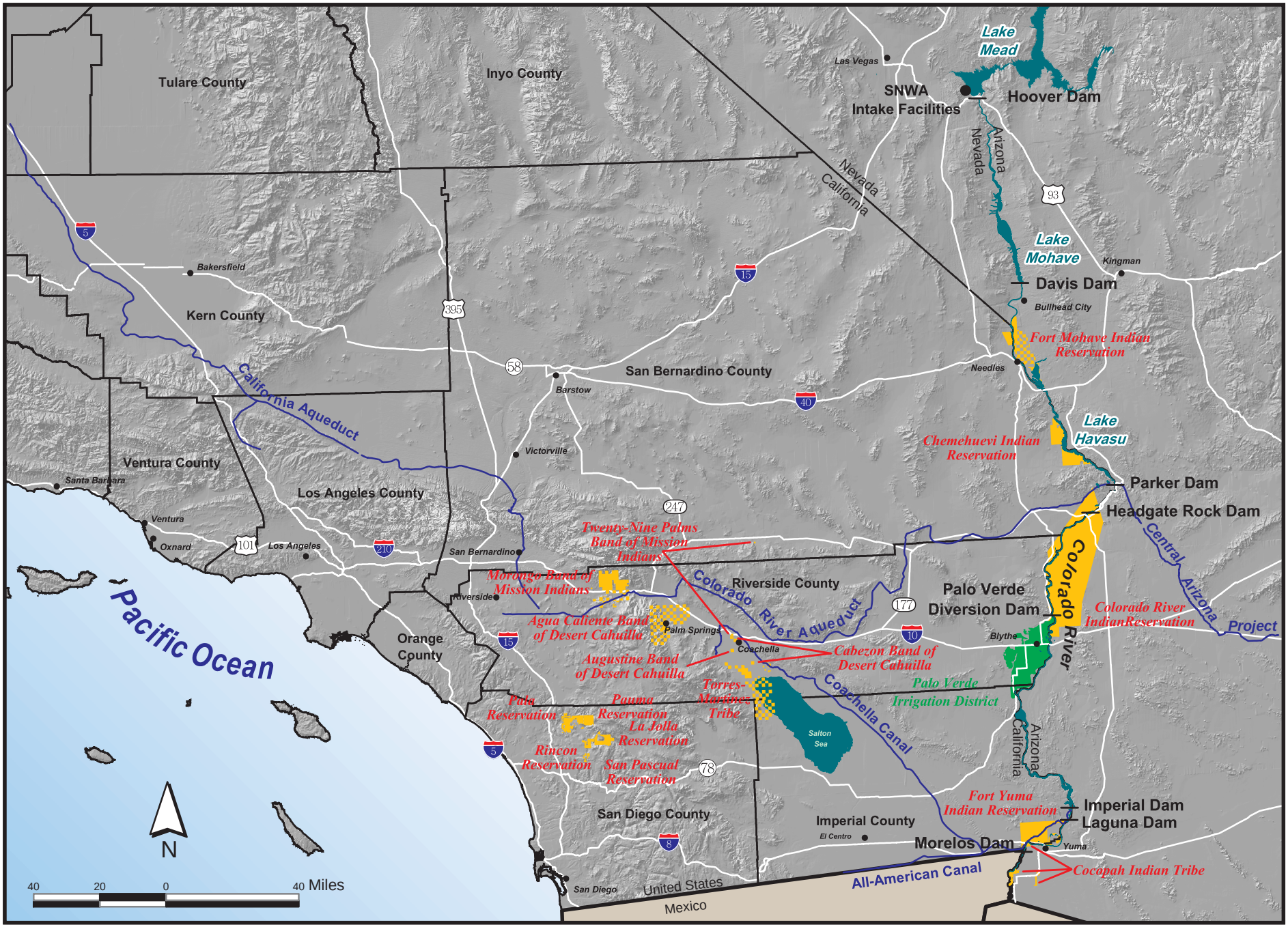

Figure 1.1-2. Other Potentially Affected Water Agencies and Selected Tribes

Sea, with the exception of those at the southern end of the Valley. Agricultural drains at the southern end of the Coachella Valley flow directly to the Salton Sea.

The Metropolitan Water District of Southern California

MWD was organized in 1928 under the authority of the Metropolitan Water District Act (Chapter 429, California Statutes of 1927, page 694). Historically, MWD has provided supplemental water to the coastal plain of Southern California. MWD's deliveries augment local and imported water supplies developed through surface catchment, groundwater production, and water recycling. This supplemental water is provided to MWD's 26 member agencies through a regional network of canals, pipelines, reservoirs, treatment plants, and related facilities. In recent years, MWD has broadened its mission to include funding a number of regional water management activities, including groundwater and recharge facilities, water recycling projects, water conservation programs, and groundwater recovery and reclamation projects. MWD contracts with federal and state agencies for water supplies. Water from the Colorado River is diverted at the MWD facility at Lake Havasu under contract with the United States (U.S.) Department of Interior, Bureau of Reclamation (Reclamation). Colorado River water is conveyed to the MWD service area via the CRA, an MWD-owned and -operated facility. Lake Havasu and the CRA are shown on Figure 1.1-1. Water from the SWP is delivered via the state-owned Governor Edmund G. Brown California Aqueduct (California Aqueduct) under contract with the California Department of Water Resources. The California Aqueduct is shown on Figure 1.1-1. From the terminal points of these aqueducts, water is delivered to MWD's member agencies via 775 miles of pipelines, five regional water treatment plants, Lake Mathews, Diamond Valley Lake, and several smaller regulating facilities. Water from these and other sources is delivered to approximately 240 cities and unincorporated municipalities in the 5,200 square-mile MWD service area. MWD currently provides approximately 60 percent of the total water used in its service area.

San Diego County Water Authority

SDCWA was organized in 1944 under the County Water Authority Act (California Statutes of 1943, Chapter 545, as amended) in order to bring imported water supplies to the San Diego region. SDCWA provides wholesale water supplies to its 23 member agencies, which are all public agencies delivering water to retail customers or other public agencies within San Diego County. SDCWA joined MWD in 1946 and is today one of 26 member agencies of MWD. SDCWA purchases more water from MWD than any other MWD member agency. In calendar year 1999, SDCWA received approximately 27 percent of MWD's total deliveries and provided approximately 27 percent of MWD's revenue. Currently, SDCWA's entire imported water supply is purchased from MWD. Although MWD imports water from the Colorado River and the SWP, the majority of water delivered by MWD to SDCWA is from the Colorado River. Depending on the availability of local water in any given year, imported water accounts for between 75 and 95 percent of all water utilized in the SDCWA service area.

SDCWA delivers water to its member agencies through two main aqueducts composed of five large-diameter pipelines, along with numerous branch lines. The two aqueducts follow north-to-south alignments extending through the SDCWA service area from the MWD point of delivery located about 6 miles south of the Riverside/San Diego County line. Municipal and

industrial use constitutes between 80 and 85 percent of regional water consumption, and agricultural use accounts for the remainder.

1.3 COLORADO RIVER WATER MANAGEMENT OVERVIEW

This section provides a general description of the Colorado River system and its associated reservoirs and diversion facilities, summarizes the water supply available in the Colorado River Basin from natural runoff, and describes how that water supply is distributed under the Law of the River, including the water order and accounting process. The Colorado River Basin, major tributaries, dams and reservoirs are shown in Figure 1.3-1.

1.3.1 Colorado River System and Water Supply

The Colorado River system serves as a source of water for irrigation, domestic, and other uses in Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and in the Republic of Mexico (Mexico). The Colorado River also serves as a source of water for a variety of recreational activities, hydroelectric power, and environmental benefits.

Most of the total annual flow into the Colorado River Basin is a result of natural runoff from mountainous snowmelt. The natural flow of the Colorado River is high in the late spring and early summer, diminishing rapidly by mid-summer. "Natural flow" is an estimate of flows that would exist without reservoir regulation, depletion[1], or transbasin diversion by humans. While flows in the late summer through autumn may increase following rain events, natural flow in the later summer through winter is generally low. Major tributaries to the Colorado River include the Green, San Juan, Yampa, Gunnison, and Gila rivers.

The annual flow of the Colorado River varies considerably from year to year. The natural flow at the Lees Ferry gaging station, located 17 river miles below Glen Canyon Dam and above Lee Ferry, Arizona (the division point between the Upper and Lower basins of the Colorado River as described in section 1.3.3 below), has varied annually from 5 million acre feet (MAF) to 24 MAF.

Most of the water in the lower Colorado River flows into the Lower Basin from the Upper Basin and is measured at Lee Ferry, Arizona. In years when the minimum objective release is being made from Glen Canyon Dam, about 92 percent of the annual natural supply is attributed to the releases from the Upper Basin. The remaining 8 percent of the water in the lower Colorado River is attributed to sidewash inflows due to rainstorms and tributary rivers in the Lower Basin. In the Lower Basin, the Colorado River mean annual tributary inflow is approximately 1.3 MAF, excluding the intermittent Gila River inflow. Actual Lower Basin tributary inflows are highly variable from year to year.

1.3.2 Colorado River Reservoirs and Diversion Facilities

The Colorado River system contains numerous reservoirs and facilities constructed by Reclamation that combined provide approximately 60 MAF of active storage. The Lower Basin

1 Depletion is defined as consumptive use of Colorado River water plus system losses.

Figure 1.3-1. Upper and Lower Basins of the Colorado River

dams and reservoirs include Hoover, Davis, Parker, Headgate Rock, Palo Verde Diversion, Imperial, Laguna, and Morelos dams. Hoover Dam created Lake Mead, which can store up to 27.4 MAF of storage. Davis Dam was constructed to re-regulate Hoover Dam's releases, and to aid in the annual U.S.-Mexico Water Treaty deliveries. Davis Dam forms Lake Mohave and provides 1.8 MAF of storage. Parker Dam forms Lake Havasu, which provides up to 0.648 MAF of storage. Headgate Rock Dam forms Lake Moovalya and is a run-of-the-river structure (i.e., it creates a small impoundment, but has no substantial storage capacity). Palo Verde Diversion Dam forms an unnamed impoundment and is a run-of-the-river structure. Imperial Dam, located approximately 28 miles northeast of Yuma, Arizona, is a diversion and desilting facility for the All American Canal and the Gila Main Gravity Canal. Laguna Dam forms an unnamed impoundment and can store up to 700 acre-feet (AF). Morelos Dam, near the Northerly International Boundary with Mexico, is the primary delivery point for Colorado River water under the U.S.-Mexico Water Treaty. Table 1.3-1 summarizes the storage facilities and major diversion dams from Hoover Dam to Morelos Dam (refer to Figure 1.3-1 for general locations).

California receives most of its Colorado River water at three diversion points: the Whitsett Pumping Plant, owned and operated by MWD in Lake Havasu; the Palo Verde Diversion Dam, which diverts water for the Palo Verde Irrigation District (PVID); and the All American Canal diversion at Imperial Dam, which diverts water for CVWD, IID, and the Yuma Project Reservation Division.

There are several points of diversion of Colorado River water in Arizona, including but not limited to the following: the Central Arizona Project facilities at Lake Havasu; Headgate Rock Dam near Parker, Arizona; Imperial Dam into both the Gila Gravity Main Canal and the All American Canal for subsequent release into the Yuma Main Canal. Arizona is also apportioned 50 KAFY of water from the Upper Basin. This water is diverted above Lee Ferry, Arizona.

Approximately 90 percent of Nevada's Colorado River water apportionment is diverted at Saddle Island in Lake Mead by the Southern Nevada Water Authority (SNWA); the remainder of the state's apportionment is diverted below Davis Dam in the Laughlin area.

1.3.3 Regulatory Framework

1.3.3.1 The Law of the River

The use of Colorado River water is governed by a group of federal and state laws, interstate compacts, an international treaty, court decisions, federal contracts, federal and state regulations, and multi-party agreements. This body of law is commonly referred to as the "Law of the River." Selected documents that comprise the Law of the River are discussed below, and a more comprehensive list is included in Table 1.3-2.

Colorado River Compact of 1922 (Compact)

The Compact divided the Colorado River into the Upper Basin and the Lower Basin. As shown on Figure 1.3-1, the Upper Basin includes those portions of Arizona, Colorado, New Mexico, Utah, and Wyoming within and from which waters drain naturally into the Colorado River above Lee Ferry, Arizona. The Lower Basin consists of those portions of Arizona, California, Nevada, New Mexico, and Utah within and from which waters drain naturally into the

Table 1.3-1. Colorado River Storage Facilities and Major Diversion Dams from Hoover to Morelos Dam

Facility	*Reservoir*	*Location*	*Storage Capacity (AF)*
Hoover Dam	Lake Mead	Nevada and Arizona near Las Vegas, 270 miles downstream of Glen Canyon Dam	27,400,000
Davis Dam	Lake Mohave	70 miles downstream of Hoover Dam	1,818,000
Parker Dam	Lake Havasu[1]	150 miles downstream of Hoover Dam	648,000
Headgate Rock Dam	Lake Moovalya	164 miles downstream of Hoover Dam	N.A.[3]
Palo Verde Diversion Dam	Unnamed impoundment	209 miles downstream of Hoover Dam	N.A.[3]
Senator Wash regulating facility	Senator Wash Reservoir[2]	290 miles downstream of Hoover Dam near Imperial Dam	13,800[4]
Imperial Dam	Unnamed impoundment	290 miles downstream of Hoover Dam	1000
Laguna Dam	Unnamed impoundment	300 miles downstream of Hoover Dam	700
Morelos Dam	Unnamed impoundment	320 miles downstream of Hoover Dam	N.A.[3]

1. Lake Havasu provides a relatively constant water level for water diversions.
2. Senator Wash Reservoir is an offstream reservoir with a pumping/generating plant.
3. Not applicable, Run-of-river diversion structure.
4. Current operating restrictions limit storage of water.

Colorado River system below Lee Ferry. The Compact apportioned to each basin, in perpetuity, the exclusive beneficial consumptive use of 7.5 million acre-feet per year (MAFY). In addition to the 7.5 MAFY apportioned to the Lower Basin, the Lower Basin was given the right to increase its beneficial consumptive use by 1.0 MAFY.

The Compact also divided the seven Colorado River Basin States into the Upper Division and Lower Division. The Upper Division states are Colorado, New Mexico, Utah, and Wyoming. The Lower Division states are Arizona, California, and Nevada.

Boulder Canyon Project Act of 1928 (BCPA)

In 1928, Congress enacted the BCPA (45 Stat. 1057), which authorized the Secretary of the Interior (Secretary) to construct Hoover Dam and the All American Canal, and to contract for the delivery and use of water from these facilities for irrigation and domestic uses. Congress conditioned the BCPA upon the ratification of the Compact by at least six of the Colorado River Basin states, including California. The BCPA authorized the States of Arizona, California, and Nevada to enter into an agreement in which Nevada would be entitled to 0.3 MAFY and Arizona 2.8 MAFY of the 7.5 MAFY apportioned to the Lower Basin for beneficial use by Article III, paragraph A of the Compact, leaving 4.4 MAFY available for California. The authorized

Table 1.3-2. Selected Documents Included in the Law of the River

The River and Harbor Act, March 3, 1899.

The Reclamation Act of June 17, 1902.

Reclamation of Indian Lands in Yuma, Colorado River, and Pyramid Lake Indian Reservations Act of April 21, 1904.

Yuma Project authorized by the Secretary of the Interior on May 10, 1904, pursuant to Section 4 of the Reclamation Act of June 17, 1902.

Protection of Property Along the Colorado River Act of June 25, 1910.

Warren Act of February 21, 1911.

Patents and Water-Right Certificates Acts of August 9, 1912 and August 26, 1912.

Yuma Auxiliary Project Act of January 25, 1917.

Availability of Money for Yuma Auxiliary Project Act of February 11, 1918.

Sale of Water for Miscellaneous Purposes Act of February 25, 1920.

Federal Power Act of June 10, 1920.

The Colorado River Compact, 1922.

The Colorado River Front Work and Levee System Acts of March 3, 1925, June 21, 1927, June 28, 1946

The Boulder Canyon Project Act of December 21, 1928.

The California Limitation Act of March 4, 1929.

The California Seven Party Agreement of August 18, 1931.

The Rivers and Harbors Act of August 30, 1935.

The Parker Dam Power Project Appropriation Act of May 2, 1939.

The Reclamation Project Act of August 4, 1939.

The Boulder Canyon Project Adjustment Act of July 19, 1940.

The Flood Control Act of December 22, 1944.

U.S.–Mexico Water Treaty, February 3, 1944.

Gila Project Act of July 30, 1947.

The Upper Colorado River Basin Compact of October 11, 1948.

Consolidate Parker Dam Power Project and Davis Dam Project Act of May 28, 1954.

43 CFR Part 414.

43 CFR Part 417.

The Parker and Grand Coulee Dams Authorization Act of August 30, 1935.

Palo Verde Diversion Dam Act of August 31, 1954.

Change Boundaries, Yuma Auxiliary Project Act of February 15, 1956.

The Colorado River Storage Project Act of April 11, 1956.

Water Supply Act of July 3, 1958.

Boulder City Act of September 2, 1958.

Report of the Special Master, Simon H. Rifkind, *Arizona* v. *California*, et al., December 5, 1960.

United States Supreme Court Decree, *Arizona* v. *California*, March 9, 1964.

International Flood Control Measures, Lower Colorado River Act of August 10, 1964.

Southern Nevada (Robert B. Griffith) Water Project Act of October 22, 1965.

The Colorado River Basin Project Act of September 30, 1968.

Criteria for the Coordinated Long Range Operation of Colorado River Reservoirs, June 8, 1970.

Supplemental Irrigation Facilities, Yuma Division Act of September 25, 1970.

Minutes 218, March 22, 1965; 241, July 14, 1972, (replaced 218); and 242, August 30, 1973, (replaced 241) of the International Boundary and Water Commission, pursuant to the U.S.–Mexico Water Treaty.

The Colorado River Basin Salinity Control Act of June 24, 1974, as amended.

United States Supreme Court Supplemental Decrees, *Arizona* v. *California*, January 9, 1979, April 16, 1984, and June 19, 2000.

Hoover Powerplant Act of August 17, 1984.

The Numerous Colorado River Water Delivery and Project Repayment Contracts with the states of Arizona and Nevada, cities, water districts, and individuals.

Hoover and Parker-Davis Power Marketing Contracts.

The Grand Canyon Protection Act of 1992.

The Reclamation States Emergency Drought Relief Act of March 5, 1992, as extended by the Act of January 24, 2000.

agreement would have also provided Arizona with one-half of the excess or surplus waters unapportioned by the Compact. Such an agreement was never executed by Arizona, California, and Nevada. The BCPA's taking effect was conditioned upon the State of California irrevocably and unconditionally agreeing to the following if Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming had not ratified the Compact within six months of passage of the BCPA:

- limit annual consumptive use (diversions less return to the Colorado River) in California to no more than 4.4 MAF of the 7.5 MAF of the waters apportioned to the Lower Division States by the Compact; plus,

- utilizing not more than one-half of any excess or surplus waters unapportioned by the Compact.

California met this requirement by passing the California Limitation Act in 1929.

Section 5 of the BCPA authorizes the Secretary to contract with entities and individuals in the Lower Division States (including the states themselves) for delivery of Colorado River water. These contracts are generally referred to as "Section 5 Contracts," and are for permanent service.

California Seven Party Agreement of 1931 (Seven Party Agreement)

Neither the Compact, the BCPA, nor the California Limitation Act apportion the use of water among agencies within California. Prior to entering into Section 5 Contracts with California agencies, the Secretary requested that the State of California recommend to the Secretary an apportionment of California's share of Colorado River water among California water users. In response, seven major California entities executed the California Seven Party Agreement of 1931, in which the California entities agreed to an apportionment of California's share of Colorado River water, and agreed to priorities among the seven parties. The State of California recommended that the Secretary adopt such apportionments, which the Secretary did. The terms of the Seven Party Agreement were incorporated into the Section 5 Contracts with the Secretary, thereby placing the recommended apportionments into effect.

The California water delivery contracts, executed from 1930 to 1934 between the United States and California public agencies, provided for storage and delivery of water from Lake Mead in excess of 5.362 MAFY, the amount shown in the Seven Party Agreement. The Seven Party Agreement sets the priorities among the signatory agencies relative to their use of Colorado River water. The first three priorities are for a total beneficial consumptive use of up to 3.85 MAFY, with PVID having the first priority to irrigate 104,500 acres of Valley lands (Priority 1); the Yuma Project Reservation Division, having second priority to irrigate not more than 25,000 acres (Priority 2); and the third priority being shared amongst IID, CVWD, and PVID, the latter being for 16,000 acres of adjoining lower Palo Verde Mesa lands (Priority 3a and 3b); pursuant to the 1934 Compromise Agreement, IID has priority over CVWD within Priority 3a. The fourth priority is for beneficial consumptive use of 0.55 MAFY held by MWD (Priority 4). The first four priorities allocate a total of 4.4 MAFY, which is equal to California's normal year apportionment of Colorado River water. The fifth priority for 0.662 MAFY was originally allocated to the City and County of San Diego, but later transferred to MWD when SDCWA

joined MWD (Priority 5a and 5b). The sixth priority is held by CVWD, IID, and PVID for 0.3 MAF (Priority 6a and 6b). The seventh priority is for agricultural use in the Colorado River Basin in California (Priority 7). The Seven Party Agreement priority provisions were incorporated verbatim by the Secretary into each of the water delivery contracts. There is no further written division of the first three priorities' right (Priority 1, 2, 3a, and 3b) to the use of the 3.85 MAFY under the priority provision of the Seven Party Agreement.

Figure 1.3–2 schematically shows the allocation, by priority, of Colorado River water to entities within California under the Seven Party Agreement. Many of California's major diverters on the Colorado River do not have exact quantified apportionments, although their entitlements are capped at an overall maximum by priority. The amount of Colorado River water apportioned under the Seven Party Agreement totals 5.362 MAFY, or 0.962 MAFY more than California's normal year apportionment of 4.4 MAF. Therefore, diversions of more than 4.4 MAF under Priorities 5a, 5b, 6a, and 6b in any given year are dependent upon one or more of the following conditions: surplus water is available; Arizona and/or Nevada do not divert their full apportionments or less than 4.4 MAF is used within California by entities with higher priorities.

United States-Mexico Water Treaty of 1944 (U.S.-Mexico Water Treaty)

Under Article 10(a) of the *Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande - Treaty between the United States of America and Mexico* dated February 3, 1944, Mexico is entitled to an annual amount of 1.5 MAF of Colorado River water. Under Article 10(b) of the U.S.-Mexico Water Treaty, Mexico may schedule up to an additional 0.2 MAF when "there exists a surplus of waters of the Colorado River in excess of the amount necessary to satisfy uses in the United States."

Arizona v. California, 1964 Supreme Court Decree (Decree)

In 1964, the Supreme Court of the United States entered its Decree in *Arizona v. California* (376 U.S. 340), and supplemental Decrees were entered in 1979 (439 U.S. 419), 1984 (460 U.S. 605), and 2000 (531 U.S. 1). The Decree resolved disputes over how apportioned water available for release from Colorado River water controlled by the United States for use in Arizona, California, and Nevada should be determined. The Decree recognized certain Federal Reserved Rights and provided a process for the quantification of all claimed Present Perfected Rights (PPRs), all to be supplied from the existing apportionments of the respective states. As set forth in the Decree, the term "PPRs" refers to water rights based upon diversion and beneficial use prior to the effective date of the BCPA (June 25, 1929).[2] All PPRs are numbered, and their relative priorities are set forth within the supplemental Decree entered January 9, 1979, although some of the Federal Reserved Rights have been further modified by the supplemental Decrees entered in 1984 and 2000. During a shortage, the Federal Reserved Rights identified in Article II(D)(1)-(5) of the Decree have the highest priority. The Federal Reserved Rights so identified in Article II(D)(1)-(5) of the Decree are identified in the 1979 supplemental Decree as numbers 1-3, 22-25, and 81. After Federal Reserved Rights and Miscellaneous PPRs are

2 Federal Reserved Rights do not require diversion and use to be considered valid water rights under the concepts embodied in the Federal Reserved Rights Doctrine.

Priority	Allocation	Volume of Allocation (Acre Feet)
1	PVID	3,850,000
2	USBR Yuma Project	
3a	IID and CVWD[a] for Imperial and Coachella Valleys	
3b	PVID	
4	MWD	550,000
Total Priorities 1 - 4		**4,400,000**
5a	MWD	550,000
5b	City & County of San Diego[b]	112,000
6a	IID and CVWD for Imperial and Coachella Valley	300,000
6b	PVID	
Total Priorities 1 - 6		**5,362,000**
7[c]	Remaining Water for Agricultural use in the Colorado River Basin in California	

[a] Pursuant to the 1934 Compromise Agreement, IID has priority over CVWD within Priority 3a.
[b] Later transferred to MWD when SDCWA joined MWD.
[c] The Colorado River Basin in California is shown on USBR Map no. 23000.

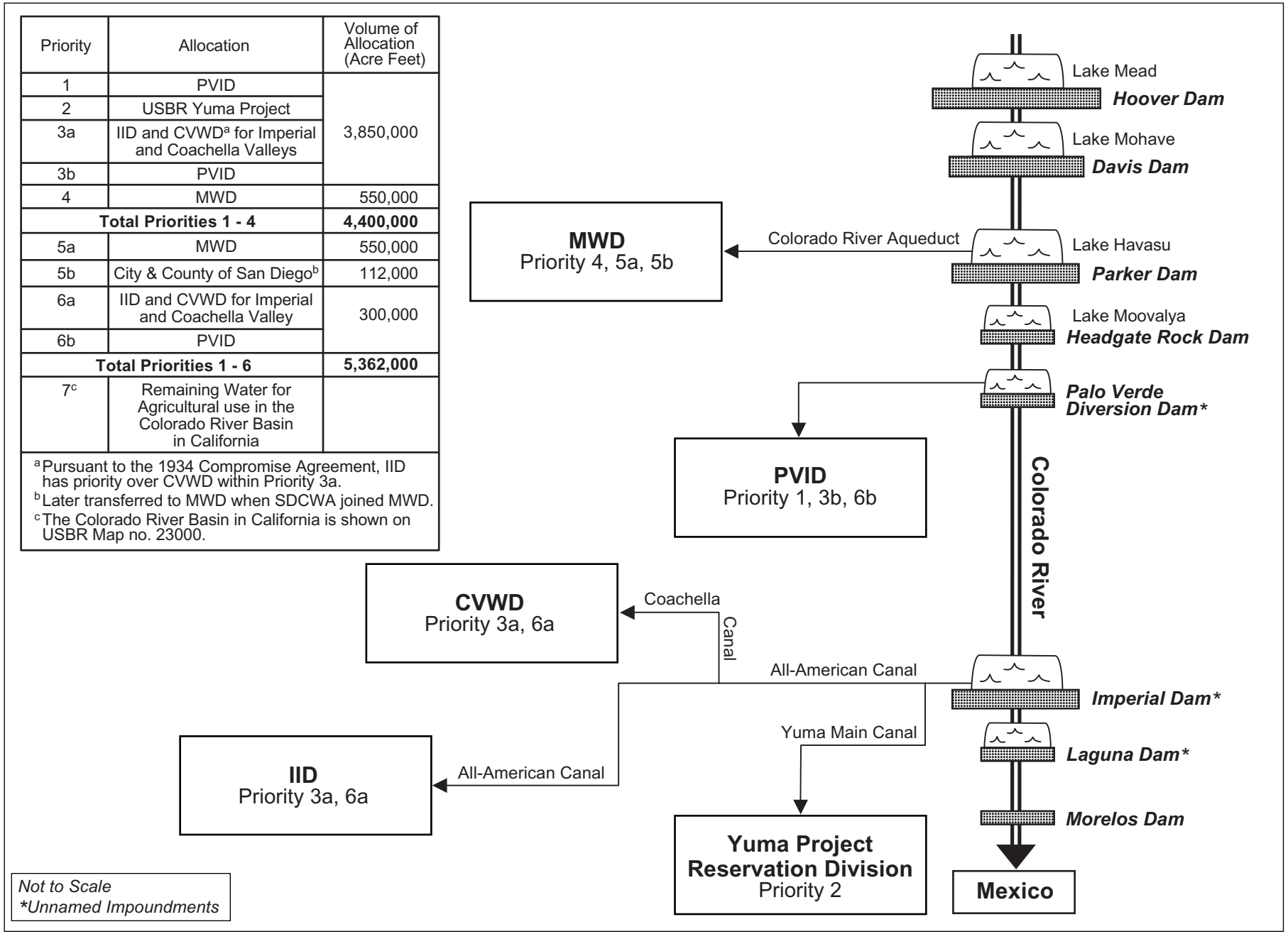

Figure 1.3-2. Colorado River Water Allocation Under the Seven Party Agreement

satisfied, the next category of water rights to be satisfied is PPRs for water projects and water districts, which are identified in the 1979 supplemental Decree as numbers 4-6, 26-28, and 82. The Miscellaneous PPRs identified in the 1979 supplemental Decree as numbers 7-21 and 29-80 have the next highest priority.

The Decree enjoins the Secretary from releasing or delivering water other than to water users in the United States with valid contracts made pursuant to Section 5 of the BCPA or to specified federal reservations. The Decree provides the parameters for delivering water in "normal," "surplus," and "shortage" years. The Decree directs the Secretary to release 4.4 MAF of mainstream water controlled by the United States to California in a normal year. Holders of Federal Reserved Rights and certain PPRs are not parties to the Seven Party Agreement, and their rights must be satisfied out of California's 4.4 MAFY apportionment in a normal year. In addition to the normal year allocation, in a surplus year as determined by the Secretary, the Secretary shall apportion 50 percent of the water in excess of 7.5 MAF for use in California. In a shortage year, the Secretary must first satisfy all of the PPRs pursuant to the 1964 Decree and subsequent Decrees. The Secretary must then apportion the remaining water consistent with the BCPA and the Decree, but in no event shall more than 4.4 MAF be apportioned for use in California, including use by all PPRs. The Decree also provides that Colorado River water apportioned to a Lower Division State but not used by that state may be made available to another Lower Division State (this water is generally termed "unused apportionment"). California therefore has historically been allowed to divert water that was apportioned to, but not used by, Arizona and Nevada.

Colorado River Basin Project Act of 1968 (CRBPA)

This Act authorized construction of a number of water development projects, including the Central Arizona Project and required the Secretary to develop the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs (LROC).

1.3.3.2 Recent Reclamation Guidelines and Rules

Interim Surplus Guidelines

As discussed above, California has been legally diverting more than its normal year apportionment of 4.4 MAF of Colorado River water for many years. The Secretary has adopted specific Interim Surplus Guidelines that provide users of Colorado River water, particularly those in California who currently utilize surplus water, a greater degree of predictability with respect to the likely existence, or lack thereof, of a surplus determination in a given year for the interim period (2002 to 2016). The Interim Surplus Guidelines facilitate California's transition to use of a reduced supply of Colorado River water. A Final Environmental Impact Statement (EIS) was released that assesses the impacts of these guidelines (United States Bureau of Reclamation [USBR] 2000b) and a Record of Decision (ROD) was adopted (*Federal Register*, Vol. 66, No. 17, January 25, 2001, Notices).

The Interim Surplus Guidelines will be used annually during the interim period to determine the conditions under which the Secretary may declare the availability and volume of surplus water for use within the states of Arizona, California, and Nevada. The Interim Surplus

Guidelines are consistent with both the Decree and the LROC. The water conservation and transfer projects that are part of the QSA would facilitate compliance with the benchmarks or milestones as identified in the Interim Surplus Guidelines ROD, described below. Subject to suspension as described below, the Interim Surplus Guidelines will remain in effect for determinations made through calendar year 2015 regarding the availability and volume of surplus water through calendar year 2016. The Interim Surplus Guidelines may be subject to 5-year reviews conducted concurrently with LROC reviews. The Interim Surplus Guidelines would be applied each year as part of the Annual Operating Plan for Colorado River Reservoirs.

The Interim Surplus Guidelines, as adopted in the ROD, provide for a number of actions and certain benchmarks for reduction of California's Colorado River water use. In the event that California contractors have not executed the QSA by December 31, 2002, the Interim Surplus determinations identified in the Interim Surplus Guidelines ROD will be suspended and surplus determinations will be based upon the 70R Strategy[3], until such time that California completes all actions and complies with reductions in water use identified in Section 5(c) of the Interim Surplus Guidelines ROD. Section 5(c) establishes benchmark quantities and dates for reductions in California agricultural usage, and states that in the event California has not reduced its use to meet the benchmark quantities, the Interim Surplus determinations identified in the Interim Surplus Guidelines ROD will be suspended and determinations will be based on the 70R strategy. Section 5(c) also provides conditions regarding reinstatement of Interim Surplus determinations if missed benchmarks are later met.

Rule for Offstream Storage of Colorado River Water

Reclamation developed and the Department of the Interior adopted a rule to facilitate interstate contractual distribution of Colorado River water among Arizona, California, and Nevada. Reclamation prepared an Environmental Assessment to assess the environmental impacts of the rule, and a Finding of No Significant Impact was issued on October 1, 1999. The final rule was published in the *Federal Register* on November 1, 1999, and became effective December 1, 1999. The Rule establishes a procedural framework for an expressly authorized storing entity to enter into storage agreements with authorized entities to store Colorado River water offstream.

The Arizona Water Banking Authority (AWBA) has entered into an initial interstate banking agreement with SNWA and the Colorado River Commission of Nevada (CRC) under which Colorado River water will be stored by AWBA for the benefit of Nevada. AWBA, SNWA, CRC, and Reclamation are developing a Storage and Interstate Release Agreement that would cover the actions to be taken by the United States. AWBA is developing a third agreement with Central Arizona Water Conservation District (CAWCD) for development of "intentionally created unused apportionment" under which Arizona would be committed to reduce its consumptive use of Colorado River water when water is recovered from offstream storage. Under these agreements, when SNWA wants to receive the benefit of the stored water, AWBA

3 The "70R" Strategy is an operating strategy for distributing surplus water and avoiding spills. The 70R strategy assumes a particular percentile historical runoff, along with a normal year, or 7.5 MAF delivery to the Lower Division States, for the next year. Applying these values to current reservoir storage, the projected reservoir storage at the end of next year is calculated. If the calculated space available at the end of next year is less than the space required by flood control criteria, then a surplus condition is determined to exist.

would recover the stored water that would be used in Arizona, permitting CAWCD to reduce its consumptive use of Colorado River water and thereby allowing the Secretary to release the intentionally created unused apportionment to SNWA under Article II (B)(6) of the Decree.

1.3.4 Operation of the Colorado River

Long-Range Operating Criteria

The CRBPA required the Secretary to adopt operating criteria for the Colorado River by January 1, 1970. The LROC, adopted in 1970, controls the operation of the Colorado River reservoirs in compliance with requirements set forth in the Compact, the Colorado River Storage Project Act of 1956, the BCPA, the U.S.-Mexico Water Treaty and other applicable federal laws. Under the LROC, the Secretary makes annual determinations published in the Annual Operating Plan (discussed in the following section) regarding the availability of Colorado River water for deliveries to the Lower Division States. A requirement to equalize the active storage between Lake Powell and Lake Mead when there is sufficient storage in the Upper Basin is also included in the LROC. The LROC call for formal reviews at least every 5 years and can only be modified after correspondence with the governors of the seven Basin States and appropriate consultation with such state representatives as each governor may designate.

Annual Operating Plan

The CRBPA also requires the preparation of an Annual Operating Plan for the Colorado River reservoirs that guides the operation of the system for the following year. The Annual Operating Plan describes how Reclamation will manage River resources over the 12-month period, consistent with the LROC and the Decree. The Annual Operating Plan is prepared annually by Reclamation in cooperation with the Basin States, other Federal agencies, Indian tribes, state and local agencies and the general public, including governmental interests as required by federal law. As part of the Annual Operating Plan process, the Secretary makes annual determinations regarding the availability of Colorado River water for deliveries to the Lower Division States as described below.

Normal, Surplus, and Shortage Determinations

The Secretary is required to determine when "normal," "surplus," and "shortage" conditions occur. These conditions are determined in the Annual Operating Plan and are referred to as "normal," "surplus," and "shortage" years. As generally set forth in the Decree, a "normal year" occurs if sufficient mainstream Colorado River water is available to satisfy 7.5 MAF of annual consumptive use in the three Lower Division States (Arizona, California, and Nevada); a "surplus year" occurs if sufficient mainstream water is available for release to satisfy in excess of 7.5 MAF of annual consumptive use in the Lower Division States; a "shortage year" occurs if insufficient mainstream water is available for release to satisfy 7.5 MAF of annual consumptive use in the Lower Division States. The Secretary makes an annual determination of the water supply conditions, in consultation with the Basin States, Indian tribes, and other parties, as described in more detail below.

For the interim period, surplus conditions are determined based on the Interim Surplus Guidelines as described in section 1.3.3.2 above.

Water Orders and Decree Accounting

Water Orders

Each September, Reclamation requires water users to submit diversion schedules, commonly referred to as annual water orders. Annual water orders are estimates of monthly diversions required by the water user for the following calendar year. Reclamation uses these annual water orders to determine a tentative schedule of monthly releases for Hoover Dam, Davis Dam, and Parker Dam. In addition to the annual water order, weekly water orders are also submitted to Reclamation each Wednesday for the following week's (Monday through Sunday) water requirement. In December of each year, Mexico provides the United States with a monthly water order for the upcoming year.

Decree Accounting

In accordance with Article V of the Decree (376 U.S. 340), the Secretary compiles and maintains records of the following: diversions of water from the mainstream of the Colorado River; return flow of such water to the mainstream of the Colorado River as is available for consumptive use in the United States or in satisfaction of the U.S.-Mexico Water Treaty obligation; and, consumptive use of such water, for each state and diverter. Reclamation reports these data for each calendar year in the Decree Accounting Report. The Decree Accounting Report is released within the calendar year following the calendar year of water use (for example, the Decree Accounting Report for calendar year 1999 was released in July of 2000).

1.4 HISTORY AND BACKGROUND

Key Concepts

The concepts of "apportionment," "entitlement," "beneficial use as reasonably required," and "priority" are key to understanding the Law of the River. "Apportionment" refers to the distribution of Colorado River water between the Upper and Lower Basin States as identified in the Compact, within the Lower Division States as identified in the BCPA and the Decree, and within the State of California as identified in the Seven Party Agreement. "Entitlement" is a legal authorization to beneficially consume Colorado River water and is obtained through historical diversion rights under state law and a right recognized in the Decree, a contract with the United States through the Secretary or a Secretarial reservation of water. It is the entitlement, not the apportionment that establishes a right to consumptively use Colorado River water. "Beneficial use as reasonably required" refers to the standard for consumptive use of water by an entitlement holder based on a variety of factors such as, location of use, land classification, purpose of use, types of crops, condition of delivery facilities, and past record of water orders (see 43 Code of Federal Regulations [CFR] Part 417). As stated in the Seven Party Agreement, and the 1931 Secretarial regulations, "Priority" refers to the relative entitlement to divert Colorado River water relative to other entities (i.e., in times of shortage, a lower priority entitlement holder must reduce its diversions before a higher priority entitlement holder must).

The flow in the Colorado River is variable, and it may not always be possible to meet all water demands. When water demands cannot be met in the aggregate, the entity with the highest priority water rights is entitled to have its request for beneficial use as reasonably required met

first. The entity with the next highest priority is entitled to have its request met second, and so on through all subordinate users, as long as supplies are available. In the Seven Party Agreement (described above), priority is ranked numerically, with Priority 1 being the highest. When insufficient water supplies are available to meet all of California's beneficial uses, a reduction in the amount of water available to California for beneficial use as reasonably required would impact those entities with the lowest water priority. Under such circumstances, the entities with lower priorities may have only some, or none, of their request met.

Historic Water Diversions by California

The Decree Accounting process established after the 1964 Decree forms the basis for comparing years of California use of Colorado River water. California's use of Colorado River water from 1964 to 1999 varied from 4.2 to 5.4 MAFY, with an average of 4.9 MAFY. The 1990 to 1999 period includes ranges of 4.5 to 5.2 MAFY, with an average of 5.0 MAFY. The infrastructure and land use patterns that were present during the 1990 to 1999 time period are comparable to current conditions; therefore, the water diversions that occurred during this time are assumed to be representative of the current demand. Water diversions by California's major Colorado River diverters for the period 1990 through 1999 as reported in the Decree Accounting Records, are illustrated in Table 1.4-1.

To date, California's demands in excess of 4.4 MAFY have been met in part by Colorado River water apportioned to Arizona and Nevada but not used by those states, and by water designated as surplus by the Secretary. The amount of unused apportionment that previously was available to California is diminishing, and unused apportionment is not likely to be available in future years. This is due to the commencement of operation of the Central Arizona Project in 1985 (a project that delivers Colorado River water to central Arizona irrigation districts, cities, and Indian tribes), its substantial completion in 1993, and growing demand for water in Nevada. Recently, California water agencies completed a major step toward reducing California's reliance on Colorado River water in excess of its apportionment of 4.4 MAFY in a normal year when they negotiated the Quantification Settlement Agreement, and worked with the Colorado River Board of California to develop the California Plan. The California Plan describes an overall program that would assist California in limiting the state's use of Colorado River water to its 4.4 MAF apportionment in a normal year, and is described below.

California's Colorado River Water Use Plan

The California Plan was developed by the Colorado River Board of California (CRB) to prepare for likely reductions of Colorado River water available to California. The California Plan, which was released in draft form in May 2000, is available at http://ceres.ca.gov/crb/reports.htm. The goal of the California Plan is to put in place a realistic strategy to assure that California will be able to reduce its use of Colorado River water to its 4.4 MAFY apportionment in normal years, and to meet its needs from sources that do not jeopardize the apportionments of other states.

The California Plan provides a policy framework by which programs, projects, and other actions would be coordinated and cooperatively implemented, allowing California to most effectively satisfy its annual water supply needs within its annual apportionment of Colorado River water. It includes the conservation of water within Southern California and the transfer

Table 1.4-1. California's Consumptive Use of Colorado River Water, 1990 to 1999

All Values in Acre Feet

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Min.	Ave.	Max.
Agricultural District Net Diversions													
Palo Verde Irrigation District (PVID)	459,615	412,965	334,689	334,467	382,476	426,599	493,572	421,851	427,113	468,888	334,467	416,224	493,572
Yuma Project Reservation Division	67,711	61,862	51,319	57,624	56,208	50,168	46,516	41,591	45,003	42,419	41,591	52,042	67,711
Imperial Irrigation District (IID)	3,054,188	2,898,963	2,572,659	2,772,148	3,048,076	3,070,582	3,159,609	3,158,486	3,101,548	3,088,980	2,572,659	2,992,524	3,159,609
Coachella Valley Water District (CVWI	369,685	317,563	309,367	318,990	326,102	326,697	331,473	338,028	337,466	333,810	309,367	330,918	369,685
Metropolitan Water District (MWD)	1,214,971	1,252,352	1,193,830	1,204,003	1,300,203	994,373	1,227,279	1,238,660	1,073,125	1,212,067	994,373	1,191,086	1,300,203
California Other [1]	51,452	60,083	53,904	54,796	56,335	57,065	64,205	51,504	60,975	48,216	48,216	55,854	64,205
Unmeasured Return Flow Credit[2]	N/A	N/A	N/A	N/A	44,669	88,679	96,487	88,227	91,996	87,203	44,669	82,877	96,487
Total California Net Diversions[3]	**5,217,622**	**5,003,788**	**4,515,768**	**4,742,028**	**5,124,731**	**4,836,805**	**5,226,167**	**5,161,893**	**4,953,234**	**5,107,177**	**4,515,768**	**4,988,921**	**5,226,167**
PVID Test Land Fallowing Savings to Storage in Lake Mead[4]	0	0	28,301	92,989	64,689	0	0	0	0	0	0	18,598	92,989
IID/MWD Water Conservation Program	6,110	26,700	33,929	54,830	72,870	74,570	90,880	97,740	107,160	108,500	6,110	67,329	108,500

Notes: N/A = Not Applicable

Source: Based on Reclamation's Annual Decree Accounting Reports for Calendar Year 1990 to 1999.

1. All other uses in California by Colorado River water users not encompassed by the Seven Party Agreement, a portion of which are made under Present Perfected Rights.
2. Unmeasured return flows are not credited to individual users but reported as a State total since 1994.
3. Total California Net Diversions = Agricultural District Net Diversions + MWD + California Other - Unmeasured Return Flow Credit
4. Saved water was stored in Lake Mead and subsequently discharged in flood control releases made in 1997.

of conserved water from agricultural to predominantly urban uses. It also identifies future groundwater conjunctive use projects that could be used to store Colorado River water when available. In addition, the California Plan outlines how California could continue to use surplus Colorado River water during the Interim Surplus Guidelines period (2002 to 2016).

1.5 RELATED PLANS, PROGRAMS AND ACTIONS

Several planned water resources management plans, programs, and actions may affect the allocation, distribution, and/or use of Colorado River water and associated environmental resources in California and adjacent states. A description of these plans, programs, and actions is provided below for background information. As appropriate, these same plans, programs, and actions are included in the Chapter 4 analysis of cumulative impacts.

Implementation Agreement

The IA, an agreement between CVWD, IID, MWD, SDCWA, and the Secretary, specifies the federal actions that are necessary to implement the QSA. Execution of the IA would commit the Secretary to making Colorado River water deliveries in accordance with the terms and conditions of the IA to enable the implementation of the QSA. The execution of the IA would authorize changes in the amount and/or location of deliveries of up to 388 KAFY of Colorado River water. Execution of the IA is a condition precedent to the QSA. A Draft EIS that evaluates the environmental impacts of the execution of the IA and related accounting and environmental actions was issued by Reclamation in January 2002. These related actions (the Inadvertent Overrun and Payback Policy and biological conservation measures) are described below. The Secretary will make a decision on the IA EIS concurrent with a decision on the IID Water Conservation and Transfer Project EIR/EIS.

Inadvertent Overrun and Payback Policy

Reclamation is proposing to adopt the Inadvertent Overrun and Payback Policy (IOP), which would identify inadvertent overruns of Colorado River water and define subsequent payback requirements to the Colorado River. The IOP would not be materially modified for a 30-year period. Adoption of the IOP is a condition precedent to the IA and QSA; that is, the IOP must be in place prior to implementation of the IA and QSA. A Draft EIS that evaluates the environmental impacts of the IOP and related actions was issued by Reclamation in January 2002.

An inadvertent overrun is defined as Colorado River water that is diverted, pumped, or received by an entitlement holder in excess of the water user's entitlement for that year and is a result of circumstances not anticipated by the water user. The IOP does not create any right or entitlement to this water, nor does it expand the underlying entitlement in any way. The IOP applies to all quantified Colorado River water entitlements in the Lower Division States and can only be applied to quantified consumptive use entitlements or entitlements that would take the remaining quantity of a state's fixed apportionment. A procedure has not been established for applying the IOP to un-quantified Colorado River water entitlements since entitlements that are not quantified would have no baseline from which to make a determination that an overage

occurred. Un-quantified Colorado River water entitlements are entitlements that specify the diversion of Colorado River water for irrigation of a certain acreage or specific area of land.

Under the IOP, payback would be required to begin in the calendar year that immediately follows the release date of the Decree Accounting Record that reports inadvertent overruns for a Colorado River water user. The IOP includes the following provisions:

- Payback must be made only from water management measures that are above and beyond the normal consumptive use of water; actions must be taken to conserve water that otherwise would not return to the mainstream of the Colorado River and be available for beneficial consumptive use in the United States.

- Maximum cumulative inadvertent overrun accounts for individual entitlement holders are approximately 10 percent of an entitlement holder's normal year consumptive use entitlement.

- The number of years within which an overrun, calculated from consumptive uses reported in final Decree Accounting Records, must be paid back, and the minimum payback required for each year shall be as follows:

  - In a year in which the Secretary makes a flood control release[4] or a space building release[5], any accumulated amount in the overrun account would be forgiven.
  - If the Secretary has declared a 70R surplus in the Annual Operating Plan, any payback obligation would be deferred at the entitlement holder's option.
  - When Lake Mead's elevation is between the elevation for a 70R surplus declaration and elevation 1,125 feet above mean sea level on January 1, the payback obligation must be paid back in full within 3 years. The minimum payback that year would be the greater of 20 percent of the individual entitlement holder's maximum allowable cumulative overrun account amount, or 33.3 percent of the total account balance.
  - When Lake Mead's elevation is at or below elevation 1,125 feet above mean sea level on January 1, the total account balance must be paid back in full in that calendar year.

Biological Conservation Measures

In August 2000, Reclamation released its *Biological Assessment for Proposed Interim Surplus Criteria, Secretarial Implementation Agreements for California Water Plan Components, and Conservation Measures on the Lower Colorado River (Lake Mead to the Southerly International Boundary)* (Biological Assessment). The Biological Assessment identified potential impacts that could occur to federally listed fish and wildlife species and their associated critical habitats within the historic floodplain of the Colorado River between Parker Dam and Imperial Dam

4 Flood control release is a release of water from Lake Mead for the purpose of meeting specific criteria as specified by the U.S. Army Corps of Engineers (USACE).

5 Space building release is a release of water from Lake Mead for the purpose of obtaining the required August 1 to January 1 available flood control storage space in Lake Mead as specified by the USACE.

from implementing a change in point of delivery and diversion of Colorado River water from Imperial Dam to Lake Havasu of 400 KAFY. The biological conservation measures to offset potential impacts from the change in point of delivery and diversion were developed and agreed to by Reclamation and the U.S. Fish and Wildlife Service (Service) and were incorporated into the Service's January 2001 *Biological Opinion for Interim Surplus Criteria, Secretarial Implementation Agreements, and Conservation Measures on the Lower Colorado River, Lake Mead to the Southerly International Boundary, Arizona, California, and Nevada* (Biological Opinion). A Draft EIS that evaluates the environmental impacts of the biological conservation measures and related actions including the IA and IOP, was issued by Reclamation in January 2002.

Interim Surplus Guidelines

The Interim Surplus Guidelines are discussed above in section 1.3.3.2.

Coachella Valley Water Management Plan

CVWD prepared the Coachella Valley Water Management Plan (CVWMP) (CVWD 2000) to establish an overall program for managing its surface and groundwater resources in the future. The CVWMP involves a number of actions to reduce the current overdraft of the groundwater basin in the Coachella Valley. These actions include: increased use of Colorado River water to reduce groundwater pumping; water recycling; and, conservation measures to decrease the overall consumption of water. The CVWMP is available from CVWD, Highway 111 at Avenue 52, Coachella, CA 92236, and is published on the Internet at http://www.cvwd.org/Public_Docs.htm. CVWD is currently preparing a PEIR to address the potential environmental impacts of the CVWMP implementation.

The CVWMP consists of both QSA and non-QSA components. Water that becomes available through implementation of the QSA will be used to reduce groundwater overdraft in the Coachella Valley. The QSA-related elements of the CVWMP are described in detail in Chapter 2 of this PEIR. Under the QSA, from 52 to 152 KAFY of additional Colorado River and an exchange of SWP water would be used to replace an equivalent portion of the groundwater now used, or would be used for direct groundwater recharge. Reducing the amount of groundwater pumpage and increasing the use of imported water would allow the overdrafted aquifer to recover. Other elements of the CVWMP that are not directly related to the implementation of the QSA are described in detail in Chapter 4, Cumulative Impact Analysis. Components of the CVWMP could proceed regardless of whether the QSA is implemented.

IID Water Conservation and Transfer Project

IID and SDCWA have executed an Agreement for Transfer of Conserved Water dated April 29, 1998, as subsequently amended (for the purposes of this document, the Agreement, as amended, is collectively referred to as the IID/SDCWA Water Conservation and Transfer Agreement), which provides parameters for water conservation in the IID service area and transfer of conserved water to SDCWA. The IID/SDCWA Water Conservation and Transfer Agreement calls for IID to conserve and transfer an annual amount of water (termed primary transfer) not less than 130 KAFY, or more than 200 KAFY. The quantity transferred in the first year will be 20 thousand acre-feet (KAF), increasing each year by approximately 20 KAF until a "stabilized primary quantity" (e.g., maximum annual primary transfer) is reached. The

stabilized primary quantity to be conserved and transferred to SDCWA is between 130 KAFY and 200 KAFY, as determined by the IID in its complete discretion. After at least 10 years of primary transfers, an additional discretionary transfer, not to exceed 100 KAFY may be transferred to SDCWA. The initial term of the agreement is 45 years after the transfers commence. Both IID and SDCWA have the option, under certain conditions, to extend the term for an additional 30 years.

In the event that the QSA is executed, SDCWA would be limited to the primary transfer (up to 200 KAFY) of conserved water under the IID/SDCWA Water Conservation and Transfer Agreement, and CVWD and/or MWD would have the option to acquire the discretionary amount (up to 100 KAFY) pursuant to the terms of the QSA. Under a proposed amendment to the IID/SDCWA Water Conservation and Transfer Agreement, which amendment would be conditioned upon implementation of the QSA, IID would make an additional 10 KAFY (called the "early water transfer") available to SDCWA in the following increments: 2.5 KAF in 2005, 5 KAF in 2006, and 2.5 KAF in 2007.

San Luis Rey Indian Water Rights Settlement

On November 17, 1988, the President approved the San Luis Rey Indian Water Rights Settlement Act (Title I of Public Law [PL] 100-675) which has since been amended. The San Luis Rey Indian Water Rights Settlement Act authorizes a source of water to settle the reserved water rights claims of the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians; the City of Escondido; the Escondido Mutual Water Company (which is no longer in existence); and Vista Irrigation District. The La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, the City of Escondido (successor in interest to the Escondido Mutual Water Company), and Vista Irrigation District are collectively termed the San Luis Rey Indian Water Rights Settlement Parties in this PEIR. The Act authorizes the Secretary to arrange for development of a water supply for the benefit of the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of not more than 16 KAFY and authorized the Secretary to use water conserved from the works authorized by Title II of the same Act for this purpose. Implementation of the QSA, including the All American Canal and Coachella Canal lining projects would make water available to facilitate the San Luis Rey Indian Water Rights Settlement Act.

Lower Colorado River Multi-Species Conservation Program

The Lower Colorado River Multi-Species Conservation Program (MSCP) is a partnership of state, federal, tribal, and other public and private stakeholders with an interest in managing the water and related resources of the Colorado River in the Lower Basin. The underlying need for the MSCP is to implement a conservation plan that enhances the status of protected species and provides the basis for incidental take authorizations under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), as amended, for ongoing operations and maintenance and proposed future operations of the lower Colorado River.

The purpose of the MSCP is to develop a Conservation Plan that will:

- Conserve habitat and contribute to the recovery of "covered species" within the historic floodplain of the lower Colorado River, pursuant to the ESA and attempt to reduce the likelihood of additional species listings under the ESA; and

- Accommodate current water diversions and power production and optimize opportunities for future water and power development, to the extent consistent with law.

The MSCP covers the mainstem of the lower Colorado River from below Glen Canyon Dam to the Southerly International Boundary with Mexico. The program area includes the historic floodplain and reservoir full-pool elevations. Specific conservation measures are being developed, but include the following categories:

- Protection of existing habitat;
- Enhancement of existing habitat;
- Restoration to create new habitat;
- Management of habitat to maintain and preserve ecological functions;
- Avoidance and minimization of direct impacts on individuals and populations of covered species; and
- Population enhancement measures that directly or indirectly increase population levels of covered species.

Conservation measures would be implemented over a 50-year period and would focus on the lower Colorado River from Lake Mead to the Southerly International Boundary. The MSCP is intended to cover any incidental take associated with a number of actions, including changes in point of diversion of up to 1.574 MAF (which would include transfers contemplated under the QSA) of Colorado River water from below Parker Dam. This volume was based on a series of conceptual transfers and changes in points of diversion. Although long-term ESA and CESA compliance for the Proposed Project would be provided by the MSCP, the Section 7 consultation by Reclamation and the USFWS Biological Opinion will provide ESA authorization. A Section 2081 permit will provide CESA authorization for the Proposed Project, as described in section 2.6.1. An EIS/EIR is being prepared to analyze the potential impacts of the MCSP Conservation Plan. Reclamation and the Service are the lead agencies under the National Environmental Policy Act (NEPA), and MWD is the lead agency under CEQA.

Hayfield Groundwater Storage Program and Cadiz Groundwater Storage and Dry-Year Supply Program

MWD has proposed to store between 500 and 800 KAF of water in the Hayfield groundwater basin located between Chiriaco Summit and Desert Center in the eastern Mojave Desert. Colorado River water from the CRA would be stored in the Hayfield basin in years when sufficient water is available. The annual storage capacity of the project is approximately 150 KAF and the annual withdrawal capacity would be 150 KAF. When needed, the stored water would be delivered to the MWD's service area via the CRA. This water would be used to partially compensate for reduced Colorado River water diversions in a normal year.

The environmental documentation for this project was approved by MWD's Board of Directors in April 1999, followed by approval of the project itself. Construction is scheduled to begin in 2004, and program operation is scheduled to commence by the year 2005.

MWD has also proposed to store up to 1 MAF of water in the Cadiz and Fenner valleys in eastern San Bernardino County, under a cooperative agreement with Cadiz Inc. Colorado River water would be delivered to the Cadiz Inc. property for storage in the Cadiz and Fenner basins in years when sufficient water is available. When needed, this water would be withdrawn from storage and delivered to the MWD service area via the CRA. Another objective of the project is to provide the maximum amount of indigenous groundwater for transfer consistent with the Groundwater Monitoring and Management Plan (Management Plan). Two additional project objectives are to provide: delivery capability to storage of up to 150 KAFY of Colorado River water, and recovery capability of stored or indigenous water at a rate of up to 150 KAFY for delivery to the MWD service area. The term of the project is 50 years. The accomplishment of project objectives will depend on the availability of Colorado River water for storage and the natural recharge of the groundwater basin, and will be governed by the Management Plan.

The Bureau of Land Management (BLM) and MWD released a Final EIS/EIR for the Cadiz Groundwater Storage and Dry-Year Supply Program in September 2001.

These Proposed Projects are important elements of both MWD's long term water planning and the California Plan. These Proposed Projects would be one source of water to supplement Colorado River supplies during years in which surplus water is unavailable and California is limited to its 4.4 MAF normal year apportionment.

Salton Sea Restoration Project

As described in the Draft Salton Sea Restoration Project EIS/EIR (USBR and Salton Sea Authority [SSA] 2000), the Salton Sea is an excessively saline, nutrient-rich lake in a closed basin. The Salton Sea was formed by an accidental breach of an irrigation structure in 1905, which resulted in an uncontrolled flow from the Colorado River into the basin for 18 months. The Salton Sea is sustained by drainage from the Imperial, Mexicali, and Coachella valleys. In discussing the legislation to reclaim the Salton Sea, House Report No. 105-621, released on July 14, 1998 by the U.S. House of Representatives Committee on Resources states the following:

> *Land, recreational, and ecological values associated with the Sea have declined over the last decade, due in large part to the rising salinity and surface elevation. Without efforts to reduce and stabilize the salinity level, it will continue to rise and will have severe impacts on the existing fish and wildlife resources, as well as causing odor and land value impacts.*

The Salton Sea Reclamation Act of 1998 (PL 105-372), developed in response to these conditions, directs the Secretary to do the following:

> *…complete all studies, including, but not limited to environmental and other reviews, of the feasibility and benefit-cost of various options that permit the continued use of the Salton Sea as a reservoir for irrigation drainage and: (i) reduce and stabilize the overall salinity of the Salton Sea; (ii) stabilize the surface elevation of the Salton Sea; (iii) reclaim, in the long term, healthy fish and wildlife resources and their habitats; and (iv) enhance the potential for recreational uses and economic development of the Salton Sea.*

The Salton Sea study is separate from the Proposed Project, and can proceed with or without implementation of the QSA. PL 105-372 specifically directs the Secretary not to include any option that (1) relies on the importation of any new or additional water from the Colorado River; or (2) is not consistent with existing rights and obligations of persons under treaties, laws, decrees, contracts, and agreements that make up the Law of the River. In furtherance of this limitation, PL 105-372 directs the Secretary to:

> *…apply assumptions regarding water inflows into the Salton Sea Basin that encourage water conservation, account for transfers of water out of the Salton Sea Basin, and are based on a maximum likely reduction in inflows into the Salton Sea Basin which could be 800,000 acre-feet or less per year.*

House Report No. 105-621 specifically refers to efforts underway that would transfer between 130 and 300 KAFY of water from IID to SDCWA and acknowledges that this would reduce the inflow to the Salton Sea.

To implement the directive provided in PL 105-372, the Salton Sea Authority, as the California lead agency under CEQA, and Reclamation, as the federal lead agency under NEPA, released a Draft EIS/EIR in January, 2000, that evaluated alternative methods of restoring the Salton Sea. A revised Draft EIS/EIR including different alternatives and revised modeling and impact analysis is being prepared. Alternatives that are currently being considered for inclusion in the revised Draft EIS/EIR include: No Action; Evaporation Ponds; Enhanced Evaporation System (EES) at Bombay Beach; EES at Salton Sea Test Base; Evaporation Ponds and EES; and In-Sea EES in Evaporation Ponds.

Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Valley

MWD and PVID are developing a land management, crop rotation, and water supply program in the Palo Verde Valley. The program's objective is to develop a flexible and reliable water supply for MWD of approximately 100 KAFY for 35 years and to assist in stabilizing the farm economy within the Palo Verde Valley through sign-up payments and annual payments for participating farmers and through implementation of specific community improvement programs. Participation in the program would be voluntary. Participating farmers would, at MWD's request and with specific notice periods, not irrigate a portion of their farmland. The same land would not be irrigated for a minimum of a one-year term and a maximum of a three-year term at the farmer's option. A base area of 6,000 acres would not be irrigated each year of the 35 years. Under certain options, the amount of nonirrigated area could increase from 6,000 acres up to a maximum of 26,500 acres per year. Overall, a maximum of 24,000 acres per year in any 25-year period or 26,500 acres per year in any 10-year period during the 35-year program would be dedicated to the program. MWD would provide financial compensation to the participating farmers. Not irrigating a portion of the Palo Verde Valley's farmland would result in less Colorado River water being used by PVID. The amount of water conserved by the program would be determined on an annual basis. An EIR assessing the impacts of this program is being prepared by PVID, and was released for public review in May 2002.

1.6 CEQA DOCUMENTATION

Several types of EIRs are defined under CEQA. Each is tailored to a different situation or intended use; e.g., Project EIR, Subsequent EIR, Staged EIR, and Program EIR (PEIR). The QSA EIR is a PEIR, the purpose of which is to document a series of inter-related actions that can be assessed as one project for the purpose of CEQA analysis. The actions may be related in one or more of the following ways:

- by geographical proximity;
- as logical parts in a chain of contemplated actions;
- in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or
- as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

The proposal to implement the QSA fulfills the second criterion above (i.e., it consists of logical parts in a chain of contemplated actions) since it is composed of a number of terms, agreements, and projects, that when taken together, support the consensual agreement among CVWD, IID, MWD, and SDCWA regarding the allocation of Colorado River water among the agencies. This PEIR assesses the impacts of all of the components of the QSA. It is being prepared to ensure that the combined effects of the QSA components are evaluated and that where appropriate, program-wide mitigation measures are developed.

This PEIR also provides project-level CEQA compliance for several components of the Proposed Project, as identified in Table 2.3-1. Several other components of the Proposed Project have already been analyzed in approved CEQA documents. Although CEQA compliance has already been completed for these project components, this PEIR considers the aggregate impacts of the whole of the action as required by CEQA. Project-specific environmental documents addressing other specific QSA components are currently being prepared or will be prepared at the appropriate time once site-specific locations have been identified. If approved, these projects may be implemented independently from the QSA. These separate analyses are in various stages of the CEQA and/or NEPA process and are under the direction of the individual lead agencies that have the principal authority for carrying out these actions.

Potential mitigation measures have been identified for impacts that would result from the implementation of Project components that are receiving program-level analysis. Individual agencies that are responsible for implementing specific components of the QSA will be responsible for refining and adopting specific mitigation measures for these components in the project-level analyses being performed.

1.7 PURPOSE OF AND INTENDED USES OF THE PROGRAM EIR

This PEIR addresses the impacts associated with implementing the proposed QSA. This PEIR will serve as an informational document for decisionmakers, other public agencies and the

general public regarding the potential direct and indirect environmental consequences of implementing the proposed QSA. It will also serve as an information source evaluating broad alternatives and cumulative impacts to be incorporated in ongoing and future CEQA compliance documents. The PEIR complies with CEQA (PRC 21000 *et seq*.), the State CEQA Guidelines (Title 14, California Code of Regulations, 15000 et seq.), and any CEQA guidelines adopted by the co-lead agencies, where appropriate, which provide guidance for assessing project impacts.

1.8 PUBLIC INVOLVEMENT PROCESS

The public involvement process for this PEIR included the distribution of the NOP, the analysis of comments on the NOP and accompanying environmental checklist, and public and agency comments on the Draft PEIR. An NOP was distributed to the California State Clearinghouse and 284 potentially concerned agencies and other interested parties on June 6, 2000.

Comment letters on the NOP and environmental checklist were received from federal agencies, state agencies, regional authorities, local government agencies, and non-governmental organizations or individuals. Table 1.8-1 identifies the commenting parties and a summary of issues and potentially affected environmental resources raised by each comment. The comments received on the NOP were considered by the co-lead agencies and helped define the scope of analysis of the PEIR. A copy of the NOP and comments received are provided in Appendix B.

The Draft PEIR was circulated for a 45-day public review period, as mandated by CEQA. In response to public comments this review period was extended for 11 more days. The public review period began on January 30, 2002 and ended on March 26, 2002. Comments received during the public review period were considered by the co-lead agencies, and responses to comments raising environmental issues are included in the Final PEIR. As required by CEQA, responses to comments submitted by public agencies were distributed to those agencies for review prior to certification of the Final PEIR by the boards of directors of the co-lead agencies. Responses to comments by Indian tribes, organizations, and individuals were provided at this time, as well. The board of directors of each co-lead agency will independently consider whether the Final PEIR should be certified and adopt appropriate findings relative to each agency's respective responsibility for the QSA's environmental effects with the implementation of mitigation measures, prior to taking action on the Proposed Project.

1.9 PEIR ORGANIZATION

The QSA and the schedule for its implementation are described in detail in Chapter 2 of this PEIR; the affected environment, environmental impacts of the QSA as a whole, and mitigation measures for potentially significant effects are described in Chapter 3 for each resource considered; cumulative impacts of the QSA in combination with other related projects are addressed in Chapter 4; project alternatives, including alternatives eliminated from consideration, the no project alternative, and the environmentally superior alternative, are considered in Chapter 5; and growth inducing impacts are discussed in Chapter 6.The remaining sections include a list of preparers (Chapter 7); references (Chapter 8); list of persons, agencies, and organizations consulted (Chapter 9); and a list of acronyms and glossary of technical terms (Chapter 10).

Table 1.8-1. Summary of Comments Received in Response to the Notice of Preparation

Commenting Party	*Issues and Potentially Affected Environmental Resources*
FEDERAL	
U.S. Environmental Protection Agency (EPA)	Project description, water resources, biological resources, growth inducement, alternatives, utilities, recreation, socioeconomics, cultural resources, air quality, monitoring/mitigation, cumulative impacts, permits.
U.S. Fish and Wildlife Service (Service)	Biological resources.
STATE	
California Department of Fish and Game (CDFG)	Biological resources, water, land use planning, recreation, socioeconomics, geology, other (cumulative impacts, mitigation measures, permits).
California Department of Parks and Recreation	Recreation, water, air quality, aesthetics, biological resources, odors, cultural resources, population and housing.
California Regional Water Quality Control Board (RWQCB), Colorado River Basin Region	Water, biological resources, agriculture.
State of California Native American Heritage Commission	Cultural resources.
REGIONAL	
Southern California Association of Governments (SCAGs)	Land use planning (policies addressing socioeconomics, utilities, public services, traffic, air quality, water, recreation), alternatives.
South Coast Air Quality Management District (SCAQMD)	Air quality.
Salton Sea Authority	Water, aesthetics, geology, air quality, biological resources, recreation, land use planning, mitigation measures.
COUNTY, MUNICIPAL, AND LOCAL	
County of Imperial (Antonio Rossman, Special Counsel)	Responsible and lead agencies, cumulative impacts, project description.
County of Imperial Planning Department	Agriculture, land use planning, socioeconomics, aesthetics, biological resources, water, air quality, geology, cultural resources, hazardous materials/waste, recreation, utilities, growth inducement.
County of San Diego Department of Public Works	No comments relating to the scope of the analysis were provided.
City of San Diego Planning and Development Review	No comments relating to the scope of the analysis were provided.
City of Needles	Water, socioeconomics.
ORGANIZATIONS AND INDIVIDUALS	
California Audubon (Fred Cagle)	Agriculture, water, biological resources, cumulative impacts.
Pacific Institute for Studies in Development, Environment, and Security	Agriculture, water, socioeconomics, growth inducement, biological resources, cumulative impacts.
Harvey and Eleanor Roy	Growth inducement, land use planning.
Cliff Hurley	Project description, other (comment period extension).

1.10 DOCUMENTS INCORPORATED BY REFERENCE

A number of documents are incorporated by reference into the QSA PEIR in compliance with State CEQA Guidelines, §15150. The executive summaries from each of the documents incorporated by reference are included in Appendix C. A brief description of each project, and its status is provided below. All documents can be viewed at each of the following locations:

CVWD Headquarters	IID Headquarters	MWD Headquarters	SDCWA Headquarters
Highway 111 at Avenue 52	333 East Barioni Blvd.	700 North Alameda St.	4677 Overland Ave.
Coachella, CA 92236	Imperial, CA 92251	Los Angeles, CA 90012	San Diego, CA 92123

Final EIS/EIR for the All American Canal Lining Project

Reclamation prepared a Final EIS/EIR for the All American Canal Lining Project in March 1994 (State Clearinghouse Number 90010472). This EIS/EIR states that the approved project for reducing seepage from the All American Canal would conserve approximately 67.7 KAFY. The Final EIS/EIR was filed with the United States Environmental Protection Agency (EPA) on April 14, 1994 and noticed in the *Federal Register* on April 19, 1994. A ROD was prepared and signed by Reclamation's Regional Director for the Lower Colorado Region, on July 29, 1994. On November 22, 1999, Reclamation determined that the EIS and the ROD continued to meet the requirements of NEPA. The All American Canal Lining Project is a component of the QSA, and is evaluated at a program-level in this PEIR.

Final EIS/EIR for the Coachella Canal Lining Project

A revised and updated Draft EIS/EIR for the Coachella Canal Lining Project was circulated for public review by Reclamation and CVWD in September 2000; a Final EIS/EIR was released in April 2001 (State Clearinghouse Number 1990020408). The Final EIR was certified by CVWD in May 2001. The Coachella Canal lining project would conserve approximately 26 KAFY of Colorado River water for transfer purposes. The Coachella Canal Lining Project is a component of the QSA, and is evaluated at a program-level in this PEIR.

Final Program EIR on the Implementation of a Water Conservation Program and Initial Water Transfer

A Final Program EIR on the Implementation of a Water Conservation Program and Initial Water Transfer was prepared in 1986 by IID (State Clearinghouse Number 86012903). This document evaluates impacts associated with the existing water conservation program agreed to in the *Agreement for Implementation of a Water Conservation Program and Use of Conserved Water* (IID/MWD 1988 Agreement). Two additional agreements were implemented in 1989: (1) the IID/MWD/ PVID/CVWD 1989 Approval Agreement, which represents the approval of CVWD and PVID to the IID/MWD 1988 Agreement, and 2) the MWD/CVWD 1989 Agreement to Supplement Approval Agreement, which deals with a limitation on CVWD's net Colorado River diversions and the circumstances under which MWD would reduce its use of conserved water. The terms of the three agreements extend for a minimum of 35 years after full implementation of the conservation program and continue until terminated. As described in Chapter 2, under the terms of the QSA, the amounts of water available to MWD and CVWD under these agreements would be modified. Modifications to the IID/MWD 1988 Agreement

and subsequent agreements are a component of the QSA, and their implementation is evaluated at a project-level in this PEIR.

Final EIR for Modified East Lowline and Trifolium Interceptors, and Completion Projects

It was initially assumed that the 14 projects approved as part of the 1986 EIR described immediately above would adequately meet the conservation terms of the IID/MWD 1988 Agreement and subsequent agreements. It was subsequently determined, however, that additional water conservation measures would be needed. The Final EIR for Modified East Lowline and Trifolium Interceptors, and Completion Projects (State Clearinghouse Number 92071061) assesses the impacts of water conservation projects, including two new lateral interceptor systems (lined canals that extend across the lower reaches of lateral canals to capture unused flows) and a set of 13 potential "completion projects," such as additional lateral interceptor systems, seepage recovery, canal/lateral lining, water conservation/flood control through land retirement, and new reservoir construction. The IID Board of Directors certified the Final EIR on June 7, 1994. Modifications to the IID/MWD 1988 Agreement and subsequent agreements are a component of the QSA, and their implementation is evaluated at a project-level in this PEIR.

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

California's apportionment of Colorado River water is divided among Southern California water agencies in accordance with the Law of the River (refer to section 1.3.3.1). This water has been put to beneficial use to meet the water needs of agricultural and urban water users within the various agencies' service areas. From 1990 to 1999, the amount of Colorado River water used by California has varied between 4.5 MAFY and 5.2 MAFY (refer to Table 1.4-1). Quantities in excess of California's normal year apportionment of 4.4 MAF have been made available to California's Colorado River water users through the utilization of surplus water released to the Lower Division States and the use of water apportioned to, but unused by, Arizona and Nevada.

The Secretary has the responsibility and authority to manage deliveries of Colorado River water under the Law of the River. In 1996, the Secretary declared that California must implement a strategy to enable the state to limit its annual use of Colorado River water to 4.4 MAF in a normal year and develop a means of meeting its water needs from sources that do not jeopardize the use or delivery of Colorado River water to other states. Development of a strategy to reduce California's use of Colorado River water is considered by the Secretary to be a prerequisite for Secretarial approval of any further cooperative Colorado River water transfers between California agencies for the quantification period. The QSA is a proposed agreement between CVWD, IID, and MWD for the use of Colorado River water, which includes making water conserved in the IID service area available to SDCWA for the quantification period. The QSA is based on a series of proposed agreements, which include water conservation/transfer and exchange projects among IID, CVWD, MWD, and SDCWA (these water agencies are collectively referred to as the participating agencies). Implementation of the QSA (the Proposed Project) is an important part of California's strategy to reduce the state's annual use of Colorado River water to 4.4 MAF in a normal year.

The geographic areas affected by the implementation of the Proposed Project are shown in Figure 1.1-1 and include:

- IID service area and the All American Canal;
- CVWD service area and the Coachella Canal;
- MWD service area and the CRA;
- SDCWA service area (which is part of the MWD service area); and
- other areas, such as the mainstem of the Colorado River from Lake Mead to Imperial Dam, and the Salton Sea.

2.2 GOALS AND OBJECTIVES

The proposed QSA is designed to maintain the reliability of Colorado River water supplies to the participating agencies and provide part of the mechanism for California to reduce its use of Colorado River water to 4.4 MAF in a normal year.

The Proposed Project's goals and objectives are as follows:

- to settle, by consensual agreement, longstanding disputes regarding the priority, use, and transferability of Colorado River water;
- to agree upon a plan for the future distribution of Colorado River water among CVWD, IID, MWD, and SDCWA for up to 75 years, based upon agreed-to Colorado River water budgets for CVWD, IID, MWD, and SDCWA;
- to facilitate agreements and actions which, when implemented, would ensure the certainty and/or reliability of Colorado River water supplies available to CVWD, IID, MWD, and SDCWA;
- to assist these agencies in meeting their water demands without exceeding California's apportionment of Colorado River water;
- to identify agreed-upon terms and conditions for the conservation and transfer of specific amounts of Colorado River water within California; and
- to provide incentives to promote conservation of Colorado River water.

2.3 KEY CONCEPTS AND PROVISIONS OF THE QSA

The QSA is a proposed agreement among CVWD, IID, and MWD to budget their portion of California's apportionment of Colorado River water among themselves and to make water principally conserved in the IID service area available to CVWD, MWD, SDCWA, and others. Implementation of the QSA would not affect the diversion, distribution, and/or use of Colorado River water except within California. Within California, the QSA would only affect the diversion, distribution, and/or use of Colorado River water by the participating agencies (CVWD, IID, MWD, and SDCWA). The QSA would not affect the diversion, distribution, and/or use of Colorado River water by other agencies within California that hold rights to Colorado River water under the Seven Party Agreement (i.e., Priorities 1, 2, 3b, 6b, and 7); nor would the QSA affect the delivery, distribution, and/or use of Colorado River water by any PPR holders (including PPR holders in Arizona and Nevada) as identified in the 1964 Decree, and supplemental Decrees.

The QSA quantifies, by agreement, the amount of Colorado River water available to the participating agencies and calls for specific, changed distribution of that water among the agencies for the quantification period. The quantification period extends for up to 75 years. The water agencies that are affected by the implementation of the QSA are the participating agencies (CVWD, IID, MWD, and SDCWA). Although not a signatory to the QSA, SDCWA would benefit from the QSA since the QSA would facilitate implementation of the 1998 IID/SDCWA Water Conservation and Transfer Agreement.

The QSA is composed of related agreements, activities and projects, which, when taken together, support the consensual agreement among the four co-lead agencies regarding the use of Colorado River water. Section 2.4 describes the QSA components and the various CEQA

and/or NEPA review documents that have been, are being prepared, or will be prepared in the future to address impacts of these components.

The QSA includes provisions that would:

- voluntarily cap the share of Colorado River water that may be diverted and put to beneficial use by CVWD and IID;
- facilitate the various conservation and transfer agreements;
- modify existing conservation agreements to fit within the terms of the QSA; and
- establish other conditions that must be in place before the approval of the QSA.

The quantification of agency-specific diversion rights and implementation of voluntary conservation measures and water transfers/exchanges by the participating agencies would result in the annual, collective transfer of water from agricultural uses, principally in the IID service area, to other participating agencies. Water conservation would be achieved through a variety of means, including on-farm and system improvement measures within the IID service area and by the lining of portions of the All American and Coachella Canals (refer to section 2.5 for additional detail).

The QSA would facilitate the implementation of the San Luis Rey Indian Water Rights Settlement Act. The settlement parties are the La Jolla, Rincon, San Pasqual, Pauma, and Pala bands of Mission Indians in San Diego County, as well as the City of Escondido and Vista Irrigation District. Both Escondido and the Vista Irrigation District are within the SDCWA service area. Refer to section 2.4 for further discussion of the San Luis Rey Indian Water Rights Settlement Act.

Under the QSA, CVWD, IID, and MWD have agreed to divide responsibility for forgoing use of water to permit the Secretary to satisfy Miscellaneous PPRs and Federal Reserved Rights that were not encompassed by the priority system contained in the Seven Party Agreement executed in 1931. Refer to section 2.4 for further discussion of the satisfaction of Miscellaneous PPRs and Federal Reserved Rights.

2.4 QSA COMPONENTS

The proposed QSA is made up of various agreements and related actions. The various QSA components are summarized in Table 2.4-1. Various CEQA and/or NEPA review documents have been, are currently being, or will be prepared in the future that address impacts of these components. This PEIR evaluates the impacts from the aggregate of the QSA components. This PEIR also provides project-level CEQA compliance for some QSA components, as shown in Table 2.4-1. Further, several of the QSA components, while covered at a program level in this PEIR, also have independent CEQA documentation as noted in Table 2.4-1.

The QSA anticipates a transition period of approximately 25 years for the full implementation of water conservation/transfers and exchange projects. Many of the water conservation and transfer components of the QSA would be implemented incrementally over a period of several years. For example, the water transferred under the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA, would be expected to begin in 2002, and

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
A. Priority 3a Colorado River water capped at 3.1 MAFY IID consensually limits its consumptive use of Priority 3a water to a specified amount of 3.1 MAFY, subject to adjustment as provided in the QSA and the IOP.	IID	1. This QSA PEIR provides program-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA. 2. Project-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, is included in the IID Water Conservation and Transfer Project EIR/EIS.
B. QSA Changes to IID/MWD 1988 Agreement, IID/MWD/PVID/CVWD 1989 Approval Agreement, and MWD/CVWD 1989 Agreement to Supplement Approval Agreement MWD would forego, and would not be charged with, the use of 20 KAFY of IID conserved water. CVWD would be allowed the use of this 20 KAFY under terms of the 1989 IID/MWD/PVID/CVWD Approval Agreement, and MWD/CVWD Supplemental Agreement, as amended.	CVWD/ IID/ MWD/ PVID	1. This QSA PEIR provides program-level CEQA analysis for the IID/MWD 1988 Agreement and subsequent agreements, as modified by the QSA. 2. Project-level CEQA analysis for IID/MWD 1988 Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR. 3. Project-level CEQA analysis for the final projects associated with the IID/MWD 1988 Agreement was included in the 1994 IID Modified East Lowline and Trifolium Interceptors, and Completion Projects EIR. 4. Project-level CEQA analysis for MWD's use of conserved water for the 1989 Approval Agreement and 1989 Agreement to Supplement Approval Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR. 5. Project-level CEQA analysis for CVWD use of conserved water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. 6. This QSA PEIR provides project-level CEQA analysis for MWD reduction in use of conserved water. 7. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion from Lake Havasu to Imperial Dam.
C. IID/SDCWA Transfer of conserved water (up to 200 KAFY) An amount of water equivalent to the amount of water conserved in IID service area would be transferred to SDCWA. At SDCWA's election, the water would be delivered to Lake Havasu.	IID/ SDCWA	1. This QSA PEIR provides program-level CEQA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the Proposed Project. 2. Project-level CEQA and NEPA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, including the change in point of diversion of up to 300 KAFY from Imperial Dam to Lake Havasu, SDCWA use of conserved water, water conservation by IID, and related Habitat Conservation Plan is included in the IID Water Conservation and Transfer EIR/EIS.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
D. MWD/SDCWA Exchange of conserved water (up to 200 KAFY) SDCWA would exchange water conserved by IID under the IID/SDCWA Water Conservation and Transfer Agreement with MWD; MWD would divert that water at Lake Havasu; MWD would deliver an equivalent amount of water to SDCWA at the SDCWA/MWD delivery point in San Diego County.	SDCWA/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the MWD/SDCWA Agreement for Exchange of Conserved Water. 2. This QSA PEIR provides project-level CEQA analysis for the MWD/SDCWA Agreement for Exchange of Conserved Water.. 3. Notice of Exemption for the MWD/SDCWA Exchange of Conserved Water Agreement was filed by SDCWA on November 19, 1998.
E. IID/CVWD/MWD Transfer of conserved water (up to 100 KAFY, also known as the First and Second 50 KAFY) **First 50 KAFY** An amount of water equivalent to the amount of water conserved in the IID service area, which CVWD elects to acquire, would be made available at Imperial Dam. Any amount not acquired by CVWD may be acquired by MWD, and could be diverted at Lake Havasu. **Second 50 KAFY** An amount of water equivalent to the amount of water conserved in the IID service area, which CVWD elects to acquire, would be made available at Imperial Dam. Any amount not acquired by CVWD may be acquired by MWD, and could be diverted at Lake Havasu. After Year 45, MWD would bear the obligation to provide the Second 50 KAFY to CVWD.	CVWD/ IID/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the IID/CVWD/MWD transfer of conserved water (First and Second 50 KAFY) component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for IID's proposed water conservation actions will be included in the IID Water Conservation and Transfer EIR/EIS. 3. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu. 4. Project-level CEQA analysis for CVWD use of conserved water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. 5. This QSA PEIR provides project-level CEQA analysis for MWD acquisition and use of any amount of water equivalent to the amount of water conserved, up to 100 KAFY, not acquired by CVWD. 6. After Year 45, MWD would bear the obligation to provide the Second 50 KAFY to CVWD. The source of water and mechanisms for MWD to fulfill this obligation are speculative at this time and may be subject to further CEQA analysis in the future.
F. Transfer of conserved water (67.7 KAFY) An amount of water equivalent to the amount of water conserved by lining a section of the All American Canal would be diverted by MWD and/or IID (56.2 KAFY), and the San Luis Rey Indian Water Rights Settlement Parties (11.5 KAFY) via MWD and SDCWA facilities.	IID/ MWD/ SDCWA/ San Luis Rey Settlement Parties	1. This QSA PEIR provides program-level CEQA analysis for the All American Canal Lining Project, a component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for the All American Canal Lining Project including the change in point of diversion of up to 67.7 KAFY from Imperial Dam to Lake Havasu, the diversion, transport, and use of conserved water in the MWD service area, and the diversion and transport of water by MWD and SDCWA and use of that water within the MWD and SDCWA service area for implementation of the San Luis Rey Indian Water Rights Settlement Act was included in the All American Canal Lining Project EIS/EIR.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
G. Priority 6a Colorado River priorities and volume allocations Diversion of Priority 6a water in the following priorities and volumes: 38 KAFY to MWD, 63 KAFY to IID and 119 KAFY to CVWD, when available.	CVWD/ IID/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the Priority 6a Colorado River priority and volume allocations. 2. This QSA PEIR provides project-level CEQA analysis for Priority 6a Colorado River priority and volume allocations, including quantification of Priority 6a water among CVWD, IID, and MWD and use of the water by CVWD, IID and MWD within their respective service areas.
H. Priority 3a Colorado River water capped at 330 KAFY CVWD consensually limits its consumptive use of Priority 3a water to a specified amount of 330 KAFY, subject to adjustment as provided in the QSA and the IOP. Water conserved and transferred to CVWD under the QSA shall not count against CVWD's Priority 3a cap.	CVWD	1. This QSA PEIR provides program-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA. 2. Project-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA, will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
I. Transfer of conserved water (26 KAFY) An amount of water equivalent to the amount of water conserved by lining a portion of the Coachella Canal would be diverted by MWD, and/or IID (21.5 KAFY), and the San Luis Rey Indian Water Rights Settlement Parties (4.5 KAFY) via MWD and SDCWA facilities.	CVWD/ MWD/ SDCWA/ San Luis Rey Settlement Parties	1. This QSA PEIR provides program-level CEQA analysis for the Coachella Canal Lining Project, a component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for the Coachella Canal Lining Project including the change in point of diversion of up to 26 KAFY from Imperial Dam to Lake Havasu, the diversion, transport, and use of conserved water in the MWD service area, and the diversion and transport of water by MWD and SDCWA and use of that water within the MWD and SDCWA service area for implementation of the San Luis Rey Indian Water Rights Settlement Act was included in the Coachella Canal Lining Project EIS/EIR.
J. Transfer of water (35 KAFY) MWD would transfer 35 KAFY of its SWP entitlement to CVWD. CVWD would deliver 35 KAFY of its SWP entitlement to MWD at the Devil Canyon Afterbay; in exchange, MWD would forgo the use of 35 KAFY of Colorado River water for use by CVWD.	MWD/ CVWD	1. This QSA PEIR provides program-level CEQA analysis for the MWD/CVWD SWP Transfer and Exchange, a component of the Proposed Project. 2. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion of up to 35 KAFY from Lake Havasu to Imperial Dam, and change of SWP entitlement 3. Project-level CEQA analysis for the use of this water by CVWD will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
K. MWD Priority 4 and 5 Colorado River water cap MWD consensually limits its consumptive use of Priority 4 and 5 water to a specified amount of 550 KAFY and 662 KAFY, respectively, pursuant to the conditions as specified in the QSA, and subject to adjustment as provided by the IOP.	MWD	1. This QSA PEIR provides program-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined in the QSA. 2. This QSA PEIR provides project-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined in the QSA.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
L. Over and Under Run of Priorities 1, 2 and 3b MWD shall be responsible, when necessary, in conjunction with the IOP for repayment of any overrun as a result of the aggregate use by Priorities 1, 2 and 3b in excess of 420 KAFY; to the extent that Priorities 1, 2 and 3b use less than 420 KAFY, MWD shall have the exclusive right to consumptively use such unused water.	MWD/ Priority 1, 2, and 3b users	1. This QSA PEIR provides program-level CEQA analysis for MWD's repayment of any overrun as a result of the aggregate use by Priorities 1, 2 and 3b in excess of 420 KAFY, and for MWD's use of unused Priorities 1, 2 and 3b in the event that these priorities use less than 420 KAFY.
M. Use by Miscellaneous PPRs and Federal Reserved Rights, including certain Indian Reservations Water forborne, when necessary, by CVWD and IID in the amount of 3 and 11.5 KAFY respectively, and water forborne by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserve Rights, including Indian Reservations.	CVWD/ IID/ MWD/ Misc. PPRs and Federal Reserve Right holders	1. This QSA PEIR provides program-level CEQA analysis for the forbearance of water necessary to satisfy Miscellaneous PPRs and Federal Reserve Rights, including certain Indian Reservations, a component of the Proposed Project. 2. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River, due to the future use by Miscellaneous PPRs and Federal Reserve Right holders, including certain Indian Reservations. 3. Project-level CEQA analysis for IID's forbearance is included in the IID Water Conservation and Transfer Project EIR/EIS. 4. Project-level CEQA analysis for CVWD's forbearance will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
N. QSA Shortage Sharing Agreement If there is less than 3.85 MAF of Colorado River water available under Priorities 1, 2, and 3 in any one year during the quantification period, shortages would be shared pursuant to the particular provisions of the Acquisition Agreements[2] and the Allocation Agreement[3].	CVWD/ IID/ MWD/ SDCWA	1. This QSA PEIR provides program-level CEQA analysis for the QSA Shortage Sharing Agreement. 2. This QSA PEIR provides project-level CEQA analysis for the effects of the shortage sharing provisions among IID, MWD, CVWD and SDCWA.

Key: PPR = Present Perfected Right SWP = State Water Project

(1) All QSA components would terminate prior to, or at the end of the quantification period pursuant to the terms and conditions of the QSA, with the exception of the water transferred to the San Luis Rey Indian Water Rights Settlement Parties.

(2) The Acquisition Agreements are collectively the IID/SDWCA Water Conservation and Transfer Agreement, the CVWD/MWD Acquisition Agreement, the IID/MWD Acquisition Agreement, the IID/CVWD Acquisition Agreement, and the MWD/CVWD SWP Transfer and Exchange Agreement.

(3) The Allocation Agreement is a proposed agreement among the City of Escondido, Palo Verde Irrigation District, SDCWA, San Luis Rey River Indian Water Authority, Vista Irrigation District, the La Jolla, Pala, Pauma, Rincon and San Pasqual bands of Mission Indians, MWD, CVWD, and IID, and the Secretary concerning the allocation of conserved water created by the All American and Coachella Canal lining projects.

increase by approximately 20 KAF yearly until full implementation between 2008 and 2011 (full implementation under the QSA is considered to be between 130 and 200 KAFY of water conserved in the IID service area and transferred to SDCWA). Full implementation of all QSA water conservation and transfer components is expected in 2026. Table 2.4-2 summarizes the estimated start dates of the core cooperative voluntary water conservation/transfer projects and associated exchanges.

Table 2.4-2. Cooperative Water Conservation/Transfer and Exchange Projects

Cooperative Water Conservation/ Transfer Project	*Annual Yield (AF)*	*Estimated Start Date*
IID/MWD 1988 Agreement and subsequent agreements	100,000 - 110,000	Ongoing
Modification to the IID/MWD 1988 Agreement and subsequent agreements	20,000[1]	2003
IID/SDCWA Water Conservation and Transfer Agreement as implemented under the QSA	130,000 – 200,000[2]	2002
CVWD/MWD SWP Water Transfer/Colorado River Water Exchange	35,000	2003
Coachella Canal Lining	26,000[4]	2006[5]
All American Canal Lining	67,700[4]	2006[5]
CVWD/IID/MWD Water Conservation and Transfer (First and Second 50 KAFY)	100,000[3, 6]	2007

Notes:

(1) Yield to CVWD.

(2) Yield to SDCWA; would ramp up at approximately 20 KAFY during Project implementation. IID would conserve and transfer Colorado River water to SDCWA in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and 2.5 KAF in 2007

(3) IID would conserve and transfer Colorado River water to MWD in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and, 2.5 KAF in 2007. In the event that CVWD elects to not take the First 50 KAFY in any year from 2007 to 2014, MWD would also receive a "secondary option" to acquire from IID conserved and transferred water in the following years and amounts: 5 KAF in 2007, and 10 KAF each year from 2008 to 2014.

(4) Yield to MWD, or IID under certain conditions, of 21.5 and 56.2 KAFY from the Coachella Canal and All American Canal lining respectively, and to the San Luis Rey Indian Water Rights Settlement Parties of 4.5 and 11.5 KAFY from the Coachella Canal lining and All American Canal lining respectively.

(5) Date by which full conservation benefits would be achieved.

(6) Yield to CVWD; would ramp up at 5 KAFY during Project implementation. MWD has option to utilize part or all water not utilized by CVWD.

Cooperative and voluntary water conservation measures that are the basis of the QSA consist of both agricultural conservation measures and conservation through reduction of canal seepage losses by lining sections of the All American and Coachella canals. Conservation measures that would be implemented in the individual service areas are discussed in detail in section 2.5 and summarized below.

Conservation measures within the IID service area are expected to conserve up to 300 KAFY for transfer purposes. These measures could include both on-farm conservation and water delivery system improvements and may include fallowing, subject to certain contractual limitations set forth in the IID/SDCWA Water Conservation and Transfer Agreement. On-farm measures

would improve the effectiveness and efficiency of irrigation by farmers. Water delivery system improvements would improve the effectiveness and efficiency of IID's water delivery system. IID envisions a flexible program that would permit the implementation of various methods of both on-farm conservation and water delivery system improvements to conserve water for up to a 75-year time period. The conservation of water in the IID service area is evaluated on a program level in this PEIR. IID has prepared a draft Habitat Conservation Plan (HCP) in support of IID's application for incidental take permits in conformance with the federal and California ESAs for impacts within the IID service area, the All American Canal right-of-way, and the Salton Sea. CEQA and NEPA evaluation for the IID/SDCWA Water Conservation and Transfer Agreement and related HCP is included in the IID Water Conservation and Transfer Project EIR/EIS, released for public review in January 2002.

Water conservation would also be achieved through lining a section of the All American Canal, and lining the unlined portions of the Coachella Canal, as discussed below.

The QSA water transfers are, for the most part, conserved Colorado River water from one area being made available to meet the needs of existing Colorado River water users in another area, resulting in a net reduction in consumptive use of Colorado River water by users within California. The following is a description of the various water conservation and transfer agreements that comprise the QSA.

A. IID'S PRIORITY 3A COLORADO RIVER WATER CAPPED AT 3.1 MAFY

Under the QSA, IID would agree to limit its consumptive use of Colorado River water under Priority 3a to 3.1 MAFY for the quantification period, less an amount of water equal to that conserved by IID for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. This consensual limitation of Priority 3a consumptive use constitutes a forbearance of IID's right to divert, for beneficial use, up to the entire balance (after Priorities 1 and 2, and in conjunction with Priority 3b) of the 3.85 MAFY amount allocated in the aggregate to Priorities 1, 2, and 3. This forbearance makes water available to agencies with lower priorities (or higher priority numbers). This PEIR provides program-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, including the conservation of water by IID necessary to comply with the Priority 3a cap, as defined in the QSA and assuming payback for exceedances in compliance with the IOP. Project-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, is included in the IID Water Conservation and Transfer Project EIR/EIS.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

The IID/MWD 1988 Agreement (entitled "Agreement for Implementation of a Water Conservation Program and Use of Conserved Water" and dated December 22, 1988) calls for MWD to bear the costs of various conservation projects implemented by IID within the IID service area. For bearing the costs, MWD is entitled to request and divert from the Colorado River an amount equal to the amount of water conserved by the conservation projects, estimated to range from 100 to 110 KAFY. Water conservation under this agreement began in 1990, and reached full implementation in 1998.

In 1989, two agreements, the IID/MWD/PVID/CVWD 1989 Approval Agreement and the MWD/CVWD 1989 Agreement to Supplement Approval Agreement, amended the IID/MWD 1988 Agreement. Under the above agreements, MWD is entitled to request and divert from the Colorado River an amount of water equal to the amount of water conserved by the conservation projects within the IID service area. This amount is estimated to range from 100 to 110 KAFY. Under certain conditions as specified in the above agreements, CVWD is entitled to divert up to 50 KAFY of this water. Since the above agreements were implemented, the conditions necessary for CVWD's diversion of 50 KAF have not occurred, and all water conserved under these agreements has been diverted by MWD. Therefore, for the purposes of this PEIR, the description of existing conditions assumes that the amount of water conserved and transferred under the above agreements is 110 KAFY, and that all conserved water is used by MWD.

Under the terms of the QSA, the IID/MWD 1988 Agreement, IID/MWD/PVID/CVWD 1989 Approval Agreement and MWD/CVWD 1989 Agreement to Supplement Approval Agreement would be modified so that MWD would be entitled to a maximum of 90 KAFY (a reduction from 110 KAFY), and CVWD would be entitled to 20 KAFY of water conserved by IID (therefore, CVWD would be entitled to annually divert 20 KAF in lieu of diverting 50 KAF only in years where the necessary conditions exist, as specified in the above agreements). Under the QSA, CVWD would begin receiving this 20 KAFY starting in 2003. Under the terms of the QSA, the IID/MWD 1998 Agreement would be modified to delete the parties' rights to terminate the agreement 35 years following the completion of the last project implemented under the agreement, in order to maintain the IID/MWD 1988 Agreement and subsequent agreements, as modified, throughout the quantification period.

The QSA PEIR provides project-level CEQA analysis for MWD's reduction in use of conserved water and for the change in flow and water surface elevation of the Colorado River as a result of the change in point of diversion of 20 KAFY from Lake Havasu to Imperial Dam. Potential environmental impacts associated with CVWD's use of conserved water are assessed at a program level in this PEIR, and will be subject to further analysis in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.

C. IID/SDCWA TRANSFER OF CONSERVED WATER

The IID/SDCWA Water Conservation and Transfer Agreement provides for the transfer of 130 to 200 KAFY of water conserved by IID to SDCWA, plus an optional, additional 100 KAFY. SDCWA would arrange to take delivery of the water at Lake Havasu. Under the QSA, SDCWA no longer has the right to the additional 100 KAFY. Transfers of water under the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA, would be expected to begin in 2002, and increase by approximately 20 KAF yearly until full implementation under the QSA between 2008 and 2011 (full implementation as amended by the QSA, is considered to be between 130 and 200 KAFY). Under a proposed amendment to the IID/SDCWA Water Conservation and Transfer Agreement, which is conditioned upon implementation of the QSA, IID would conserve and transfer Colorado River water to SDCWA in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and 2.5 KAF in 2007. This water is in addition to the water to be transferred to SDCWA under the IID/SDCWA Water Conservation and Transfer Agreement, although, the total amount of water transferred to SDCWA would not cumulatively exceed 200 KAFY, including years with early water transfers.

This PEIR provides program-level CEQA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA. This PEIR provides program-level CEQA analysis for the change in point of diversion of up to 200 KAFY of Colorado River water from Imperial Dam to Lake Havasu. Project-level CEQA and NEPA analysis for the IID/SDCWA Water Conservation and Transfer Agreement including, water conservation and transfers by IID, and related HCP, is included in the IID Water Conservation and Transfer Project EIR/EIS.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

The MWD/SDCWA Exchange of Conserved Water Agreement provides the mechanism for exchanging the IID conserved and transferred water to SDCWA. SDCWA would take delivery of the IID conserved water at Lake Havasu. MWD would divert this water at the Whitsett Pumping Plant in Lake Havasu and convey it through the CRA to its service area. MWD would deliver an equivalent amount of water to SDCWA at the existing delivery point in northern San Diego County. Since a similar amount of water has been conveyed in the CRA and existing MWD and SDCWA facilities and distributed throughout the SDCWA service area, no additional consequences of conveyance and use were anticipated from the MWD/SDCWA Agreement for Exchange of Conserved Water Agreement. This PEIR provides project-level CEQA analysis for the diversion and exchange of water under the MWD/SDCWA Agreement for Exchange of Conserved Water. A notice of exemption for the exchange was filed by SDCWA on November 19, 1998.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under the terms of the QSA, the parties would consent to the transfer of 130 to 200 KAFY to SDCWA pursuant to the IID/SDCWA Water Conservation and Transfer Agreement. The additional 100 KAFY optional water to SDCWA identified in the IID/SDCWA Water Conservation and Transfer Agreement would be replaced by what is referred to as the First and Second 50 KAFY transfers of conserved water to CVWD and/or MWD. CVWD would have the first option to acquire this conserved and transferred water and would divert this water at Imperial Dam. If CVWD chose not to exercise part of, or its full option to this water, MWD could exercise an option to divert this water at Lake Havasu. The First and Second 50 KAFY would be supplied by conservation measures implemented by IID from Year 1 to Year 45. After Year 45, the obligation to provide the Second 50 KAFY to CVWD would no longer be the obligation of IID, but would become the obligation of MWD. Transfers of water under the First 50 KAFY would be expected to begin in 2007, and increase by 5 KAF yearly until full implementation in 2016. Transfers of water under the Second 50 KAFY would begin in the year following the transfer of the full First 50 KAFY, which is expected to be 2017, and would increase by 5 KAF yearly until full implementation in 2026.

Associated Early Water Agreements – MWD would also receive an option to acquire water conserved by IID in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and, 2.5 KAF in 2007. In the event that CVWD postpones the acquisition of the First 50 KAFY to a year later than 2007, MWD could also receive an additional 5 KAF in 2006, 7.5 KAF in 2007, and 10 KAFY from 2007 to 2014.

Environmental impacts associated with the above agreements are assessed at a program level in this PEIR. This PEIR provides project-level CEQA analysis for MWD's use of any conserved

water not acquired by CVWD. This PEIR also provides project-level CEQA analysis for the change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu in the event that MWD diverts all or a portion of the First and Second 50 KAFY. There is no change in point of delivery on the Colorado River associated with CVWD diversion of water conserved by IID. Project-level CEQA analysis for CVWD's use of conserved water will be provided by the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. Project-level CEQA and NEPA analysis for IID conservation of water is included in the IID Water Conservation and Transfer Project EIR/EIS. MWD's fulfillment of their obligation to provide the Second 50 KAFY to CVWD after Year 45 may be subject to further CEQA evaluation in the future.

F. TRANSFER OF CONSERVED WATER (67.7 KAFY)

Water conservation under the QSA also would be achieved through lining a section of the All American Canal, which would reduce seepage from the canal. IID obtains water from the 82-mile long All American Canal, through which water is diverted from the Colorado River at Imperial Dam. An estimated 67.7 KAFY would be conserved by lining a section of this canal (USBR and IID 1994). Transfers of water conserved by lining a section of the All American Canal would be expected to begin in 2003 and be fully implemented (67.7 KAFY conserved and transferred) in 2006. Project-level CEQA and NEPA analysis for the All American Canal lining project, including the use of conserved water by MWD, was provided in the All American Canal Lining Project EIS/EIR (USBR and IID 1994). This PEIR provides program-level CEQA analysis for the change in flow and water surface elevation of the Colorado River resulting from the change in point of diversion of up to 67.7 KAFY from Imperial Dam to Lake Havasu, and for the diversion of conserved water from the All American Canal Lining Project for implementation of the San Luis Rey Indian Water Rights Settlement Act (discussed below).

San Luis Rey Indian Water Rights Settlement - The San Luis Rey Indian Water Rights Settlement Act, enacted by Congress in 1988 (Title I of PL 100-675, as amended), authorized a settlement of water rights claims to San Luis Rey River water among the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, and the City of Escondido, the Escondido Mutual Water Company (which is no longer in existence) and Vista Irrigation District. This settlement is to be facilitated through the use of 11.5 KAFY of water conserved by the All American Canal Lining Project and 4.5 KAFY of water conserved by the Coachella Canal Lining Project. Transfers of water conserved by lining a section of the All American Canal would be expected to begin in 2003 and be fully implemented in 2006. Transfers of water conserved by lining the unlined portion of the Coachella Canal would be expected to begin in 2003, with full implementation in 2006. It is anticipated that the Department of the Interior would arrange with MWD and SDCWA for conveyance of water for the San Luis Rey Indian Water Rights Settlement Parties as defined in PL 100-675, as amended, using existing MWD and SDCWA facilities.

This PEIR provides program-level CEQA analysis for the change in flow and water surface elevation of the Colorado River resulting from the change in point of diversion from Imperial Dam to Lake Havasu for the implementation of the San Luis Rey Indian Water Rights Settlement Act, and for the diversion of water associated with this settlement. This PEIR provides program-level CEQA analysis for use of the water by the City of Escondido and Vista

Irrigation District. Use of the water by the Indian bands is not included in this analysis. Project-level CEQA and NEPA analysis for the All American Canal and Coachella Canal lining projects was provided in the All American Canal Lining Project EIS/EIR and the Coachella Canal Lining Project EIS/EIR, respectively.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

If a surplus year is declared by the Secretary, or if unused Colorado River water apportionments are available to California users holding Priority 5a, 5b, 6a, 6b, and 7 water rights, the water would be made available in accordance with the existing priority system, with the exception of Priority 6a water. Priority 6a water would be divided as follows: the first 38 KAFY to MWD, the next 63 KAFY would go to IID, and the remaining 119 KAFY would go to CVWD. Under the QSA, Priority 6a and 6b would continue to have equal priorities to request and divert Colorado River water.

Priority 6a water is apportioned to IID and CVWD for use in the Imperial and Coachella valleys, and Priority 6b water is apportioned to PVID; MWD is not apportioned Priority 6a water under the water delivery contracts. Under the water delivery contracts, Priority 6a and 6b are capped at 300 KAFY, with both 6a and 6b having equal priorities to request and divert Colorado River water. This PEIR provides project-level CEQA analysis for Priority 6a Colorado River priority and volume allocations, including quantification of Priority 6a allocations to CVWD, IID, and MWD and use of the water by CVWD, IID and MWD within their respective service areas.

H. CVWD'S PRIORITY 3A COLORADO RIVER WATER CAPPED AT 330 KAFY

Under the terms of the QSA, CVWD would agree to limit its consumptive use of Colorado River water under Priority 3a to 330 KAFY for the quantification period, less an amount of water equal to that conserved by CVWD for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. This consensual limitation of Priority 3a consumptive use constitutes a forbearance of IID's right to divert, for beneficial use, up to the entire balance (after Priorities 1 and 2, and in conjunction with Priority 3b) of the 3.85 MAFY amount allocated in the aggregate to Priorities 1, 2, and 3. This QSA component also establishes an accounting method for water transfers under the Proposed Project. This PEIR provides program-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA. Project-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA, will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.

I. TRANSFER OF CONSERVED WATER (26 KAFY)

Water conservation under the QSA also would be achieved through lining the unlined portions of the Coachella Canal, which would reduce seepage from the canal. CVWD obtains water from the 122-mile long Coachella Canal, through which water is diverted from the All American Canal. Lining the remaining unlined portions of the Coachella Canal would result in approximately 26 KAFY of conserved water that would be available for transfer under the QSA. Transfers of water conserved by lining the unlined portion of the Coachella Canal would be expected to begin in 2003, with full implementation (26 KAFY conserved and transferred) in

2006. This PEIR provides program-level CEQA analysis for this component of the QSA. Project-level CEQA and NEPA analysis for the Coachella Canal Lining Project, including change in point of diversion from Imperial Dam to Lake Havasu, and use of conserved water by MWD was provided in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001).

The Coachella Canal Lining Project would facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act, discussed under component F, above.

J. TRANSFER OF WATER (35 KAFY) - MWD/CVWD SWP ENTITLEMENT TRANSFER AND EXCHANGE AGREEMENT

The QSA includes an entitlement exchange between CVWD and MWD involving water from the Colorado River and the SWP. The SWP is a large water supply, storage, and distribution system authorized by an act of the California State legislature in 1959 and operated by the California Department of Water Resources (DWR). Currently, the SWP includes 32 storage facilities, reservoirs, and lakes; 17 pumping plants; three pumping-generating plants; five hydroelectric power plants; and approximately 660 miles of aqueducts and pipelines. The primary purpose of the SWP is to distribute water to 29 urban and agricultural water contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, Central Coast, and Southern California.

The MWD/CVWD SWP Entitlement Transfer and Exchange Agreement is composed of three individual actions are as follows:

- MWD would transfer 35 KAFY of its SWP entitlement to CVWD. This would reduce MWD's total SWP annual entitlement to 1,976.5 KAFY and would increase CVWD's total annual entitlement to 58.1 KAFY.
- CVWD would request and pay for SWP water deliveries via the existing system administered by DWR. The delivery would be made to MWD at the existing Devil Canyon Afterbay, located in San Bernardino, California.
- In exchange for the deliveries of SWP water requested by CVWD, MWD would arrange with Reclamation for the delivery of 35 KAFY of Colorado River water to CVWD. It is expected that the delivery would be made via the diversion structure at Imperial Dam to the All American Canal for diversion into the Coachella Canal. However, at MWD's option, the delivery may also be made from the CRA to CVWD.[1]

If diverted at Imperial Dam, this exchange would result in the delivery and diversion of 35 KAFY of Colorado River water at Imperial Dam that would have otherwise been diverted at the MWD facility at Lake Havasu. If diverted at the MWD facility at Lake Havasu and delivered to CVWD this exchange would not result in a change in point of delivery or diversion on the Colorado River since this water is currently being diverted by MWD. The MWD/CVWD SWP Entitlement Transfer and Exchange is expected to begin in 2003 and be fully implemented in 2007. This PEIR provides project-level CEQA analysis for the SWP entitlement transfer and

1 Under certain conditions, MWD will provide CVWD with a firm delivery of the 35 KAFY by making up the shortfall in deliveries through the existing Whitewater account. This provision would not affect the overall water budgets provided for in the QSA.

exchange. The Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents, will include project-level CEQA analysis for the use of the water in the CVWD service area. Project-level CEQA analysis is provided in this PEIR for the change in point of diversion from Lake Havasu to Imperial Dam.

The Proposed Project would result in a change in entitlement held by CVWD and MWD. This change (35 KAF) is approximately 0.85 percent of the total entitlement held by SWP contractors. Water supplies are shared among SWP contractors depending on their entitlement category (agricultural and municipal and industrial [M&I]) and the requests by other SWP contractors. Interim and long-term implementation of contract amendments allow for entitlements to be shared equally and for a sharing of supplies based on short-term supplies and demands.

MWD and CVWD requests for and DWR deliveries of SWP water vary from year to year depending on a variety of conditions, including anticipated demands on the SWP, and the anticipated supplies available from various sources. The 35 KAFY entitlement transfer and exchange would not affect current or anticipated water diversions by the SWP. Implementation of the QSA would not affect the entitlement rights of other SWP contractors. Diversion of waters for the SWP system are consistent with State Water Resources Control Board (SWRCB) orders, the federal ESA, the CESA, and other regulations and agreements, as applicable.

Should the CVWD's requests associated with 35 KAF of entitlement exceed the amount that would have been requested by MWD the difference in water delivered to SWP contractors would be shared by all of these agencies. The amount of this difference would be small (averaging approximately 1.5 KAFY) since MWD anticipated requesting all of its entitlement by 2005.

K. MWD Priority 4 and 5 Colorado River Water Cap

Under the terms of the QSA, MWD would agree to limit its consumptive use of Colorado River water to 550 KAFY of Priority 4 water, and 662 KAFY of Priority 5 water, for the quantification period, pursuant to the conditions as specified in the QSA, and subject to adjustments as provided by the IOP. Under the existing Law of the River, MWD is currently limited to the same Priority 4 and 5 Colorado River water caps; this QSA component establishes an accounting method for water transfers under the Proposed Project, and does not change MWD's existing Priority 4 and 5 caps. This PEIR provides project-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined by the QSA.

L. Over and Under Run of Priorities 1, 2 and 3b

With implementation of the QSA, MWD would be responsible, pursuant to the IOP, for repayment of any overrun as a result of aggregate use by Priorities 1, 2, and 3b in excess of 420 KAFY. (These priorities are established by the 1931 Secretarial regulations incorporating the recommendations of the Seven Party Agreement to PVID [Priorities 1 and 3b] and the Yuma Project Reservation Division [Priority 2]). If Priorities 1, 2, and 3b use less than 420 KAFY, MWD would have the exclusive right to consumptively use any remaining water under these priorities until the net diversion of water reached 420 KAFY. This PEIR provides project-level CEQA analysis for MWD's repayment of any overrun as a result of the aggregate use by

Priorities 1, 2 and 3b in excess of 420 KAFY, and for MWD's use of unused Priorities 1, 2 and 3b water in the event that these priority holders use less than 420 KAFY.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River water to permit the Secretary to satisfy the future use, up to the amount of each PPR, by holders of Miscellaneous PPRs and Federal Reserved Rights specified in the 1964 Decree and supplemental Decrees, and not within the priorities contained in the Seven Party Agreement. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. This QSA component would begin in 2003. Project-level CEQA analysis is included in this PEIR for the change in points of diversion between Lake Havasu and Imperial Dam to various points along the Colorado River as a result of this QSA component. CEQA analysis for IID's forbearance of water is included in the IID Water Conservation and Transfer Project EIR/EIS. CEQA analysis for CVWD's forbearance of water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. PPRs holders currently use water at numerous locations along the Colorado River, and the specific locations of these diversions would not change with the implementation of the QSA. The future use of water by holders of Miscellaneous PPRs and Federal Reserved Rights is not within the scope of this PEIR.

N. QSA SHORTAGE SHARING AGREEMENT

Shortage conditions as defined by the QSA would occur in years when there is less than 3.85 MAFY available to Priorities 1, 2, 3a, and 3b. (In this PEIR, shortage conditions under the QSA are referred to as "QSA shortage conditions." Note that the QSA shortage conditions are different than shortage years as defined by the Law of the River and specifically, the 1964 Decree, in which a shortage year is defined as a year when less than 7.5 MAFY is available for consumptive use in the Lower Division states. It should be noted that historically there have never been a condition on the River where less than 3.85 MAF is available to Priorities 1, 2, and 3.). In the unlikely event that a QSA shortage condition occurs, and less than 3.85 MAF of Colorado River water is available under Priorities 1, 2, 3a, and 3b in any one year during the quantification period, shortages would be shared pursuant to the particular provisions of the QSA, the associated Acquisition Agreements[2], and the Allocation Agreement[3].

In the event of a QSA shortage, the deficiency is borne by IID and CVWD. As specified in the IID/CVWD Acquisition Agreement, IID and CVWD shall negotiate a consensual sharing of the

2 The Acquisition Agreements collectively are the IID/SDWCA Water Conservation and Transfer Agreement, the IID/SDCWA Early Water Transfer Agreement, the CVWD/MWD Acquisition Agreement, the IID/MWD Acquisition Agreement, the IID/CVWD Acquisition Agreement, and the MWD/CVWD SWP Transfer and Exchange Agreement.

3 The Allocation Agreement is a proposed agreement among the City of Escondido, Palo Verde Irrigation District, SDCWA, San Luis Rey River Indian Water Authority, Vista Irrigation District, the La Jolla, Pala, Pauma, Rincon and San Pasqual bands of Mission Indians, CVWD, IID, and MWD, and the Secretary concerning the allocation of conserved water created by the All American and Coachella Canal lining projects.

shortfall. In the event that a consensual resolution is not obtained, either IID or CVWD may commence litigation to resolve the allocation of the shortfall. During the litigation process, shortfalls would be provisionally allocated seventy-five percent to IID and twenty-five percent to CVWD until IID is reduced to its PPR, at which time, all shortfalls would be borne entirely by CVWD. Under a QSA shortage, water conservation and transfer components of the QSA would continue, although some components would be reduced, as specified in the Acquisition Agreements and the Allocation Agreement. Although, in the event that IID is reduced to its PPR, transfers under the QSA would be suspended or reduced. This PEIR provides project-level CEQA analysis for the effects of the shortage sharing provisions among IID, MWD, CVWD and SDCWA.

This QSA component would change how water is allocated under Priority 3a. Currently, if less than 3.85 MAF were available, water would be allocated according to the priority system.

2.5 KEY ACTIONS BY GEOGRAPHIC AREA/SERVICE AREA

This section discusses the key actions, by geographic area/service area, that would occur either directly or indirectly as a result of the implementation of the Proposed Project, and that may result in a change to the physical environment. Figure 2.5-1 illustrates the changed water diversions by CVWD, IID and MWD, in a normal year, with the implementation of the Proposed Project.

Implementation of the Proposed Project would result in changes in Colorado River water diversions for CVWD, IID, and MWD. As a result of the canal lining projects, two factors need to be considered in understanding the implications of these changes for CVWD and IID: changes in water diversion, and changes in diversions for use in the agency service area. The current method of water accounting for consumptive use on the lower portion of the Colorado River by Reclamation includes incidental losses and water lost to canal seepage that is charged to a district's water budget even though the water may not be available for use within the district's service area. Discussions of the *changes in diversions* reflect the various water conservation and transfer components, including water previously diverted from the Colorado River and lost to canal seepage. Discussions of the *changes in diversions for use in the service area* reflect all conservation and transfer components, except the All American and Coachella Canal linings, as this water, although diverted from the Colorado River, was not previously received in the service area. Therefore, the *change in diversion* reflects the change in the agencies' diversion of Colorado River water with implementation of the Proposed Project. The *change in diversion for use in the service area* reflects the change in the amount of Colorado River water that may be available for use within the agencies' service area with implementation of the Proposed Project (although not reflecting any incidental and other losses).

2.5.1 Imperial Irrigation District

Under the QSA, IID would agree to limit its consumptive use of Colorado River water under Priority 3a to 3.1 MAFY for the quantification period, less an amount of water equal to that conserved by IID for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. With the implementation of the Proposed Project, IID's conservation measures within the service area would conserve from 230 to 300 KAFY (in addition to the 100 to 110 KAFY of water conserved under the existing IID/MWD 1988 Agreement). Conservation

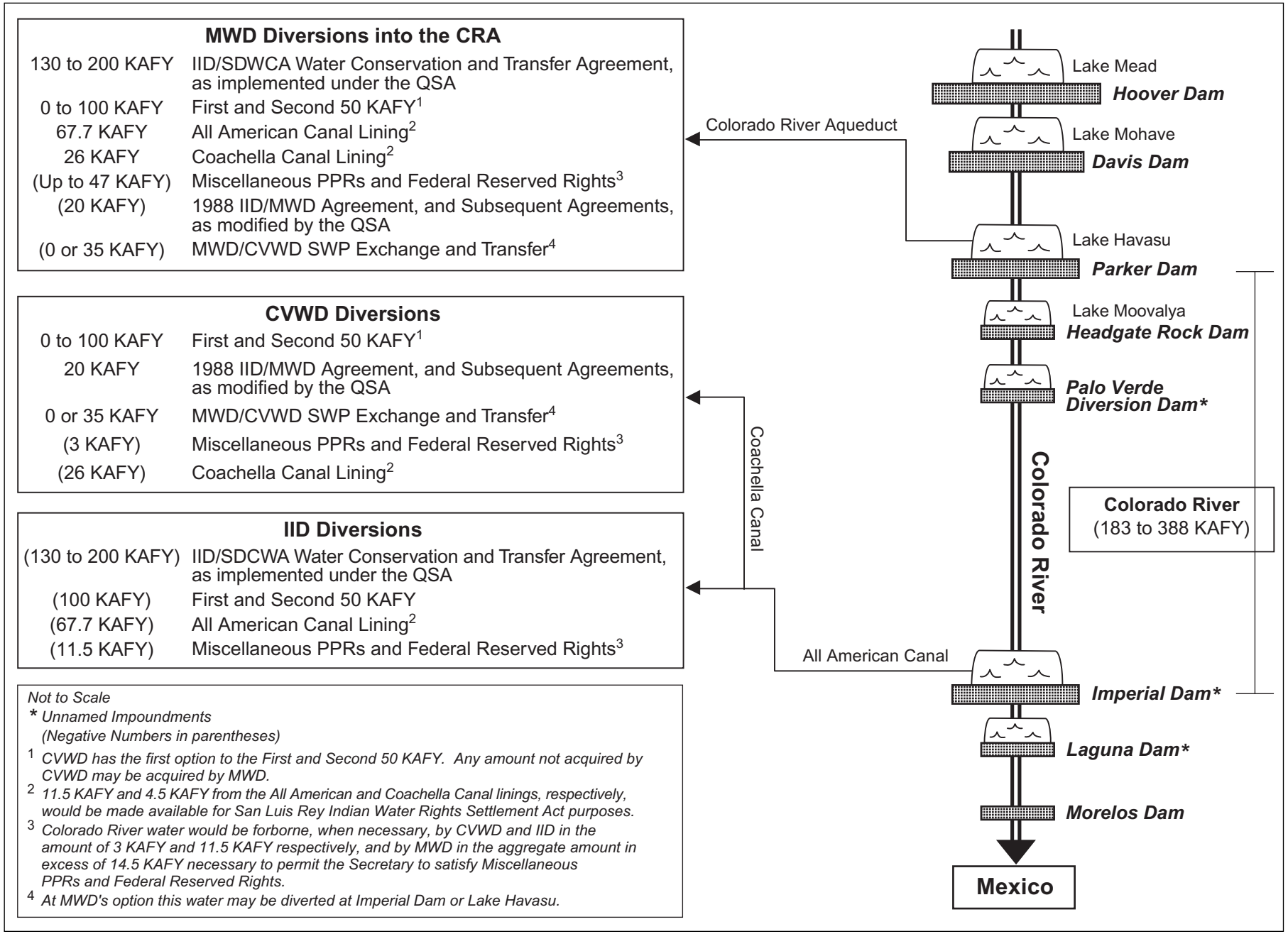

Figure 2.5-1. Changed Water Diversions by CVWD, IID, and MWD, with Implementation of the QSA and in a Normal Year with No Unused Water Available

would also be achieved through lining a section of the All American Canal. Additional conservation by IID may be needed to comply with IID's consensual Priority 3a Colorado River water consumptive use cap and the IOP. Amounts of water equivalent to the amount of water conserved by IID would be available for use by CVWD, MWD, SDCWA, and the San Luis Rey Indian Water Rights Settlement Parties. IID would also forbear 11.5 KAFY, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights.

Potential Water Conservation Measures within the IID Service Area

IID anticipates implementing a variety of methods in different combinations in order to achieve the desired amount of conservation within the service area. These may include the following:

- *On-farm Conservation Measures* – On-farm conservation measures would be implemented by individual landowners or farmers within the IID service area, and could include, although are not limited to, the following: use of tailwater return systems, use of cascading tailwater systems, use of level basins, shortening furrows/border strip improvements, use of narrow border strips, use of cutback irrigation techniques, laser-leveling of fields, multi-sloping of fields, and the use of drip irrigation. On-farm conservation measures may also include on-farm irrigation management techniques such as irrigation scheduling, water measurement, soil moisture measurements, and use of additional farm labor.

- *Water Delivery System Improvements* – These would entail construction and/or modification of the infrastructure of IID's water distribution system, including, but not limited to the following: lateral interceptors, reservoirs, seepage interceptors, and conveyance lining.

- *Fallowing* – Fallowing could be implemented within the IID service area by individual landowners or farmers, subject to certain contractual limitations set forth in the IID/SDCWA Water Conservation and Transfer Agreement, or by IID. Methods could include either removal of land from agricultural production or reduction of multiple crops to fewer crops (or a single crop) for one or more growing seasons or for multiple years.

Under terms of the IID/SDCWA Water Conservation and Transfer Agreement, the first 130 KAFY of conserved water within the IID service area would come from on-farm conservation measures unless this agreement is waived. For the purposes of this document, on-farm conservation measures do not include fallowing. The method of water conservation to conserve the remaining 170 KAFY (of the up to 300 KAFY to be conserved under this agreement) is not limited to on-farm conservation measures, and water can be conserved by water delivery system improvements or fallowing, or a combination of both water delivery system improvements and fallowing. IID's ability to implement a water conservation program would vary over time, depending on the availability and feasibility of water delivery system improvements, the extent of participation of IID water service area landowners and tenants, variations in climate and hydrological conditions, changes in agricultural economics, changes in technology, and other factors that are not within IID's control. Due to the need for variability and flexibility, the water conservation program to be implemented by IID includes a broad

range of conservation measures that could be implemented in various combinations, and the program could change from year to year, or even from agricultural season to season, over the term of the Project. A more detailed description of these measures is included in the IID Water Conservation and Transfer Project EIR/EIS.

All American Canal Lining

The approved project as identified in the Final EIS/EIR for the All American Canal Lining Project (USBR and IID 1994) is to construct a new, parallel canal from 1 mile west of Pilot Knob to Drop 3, a distance of 23 miles. The centerline of the new canal would be offset from the old centerline of the original canal by a distance of 300 to 600 feet, depending on terrain, ease of construction, and location of existing structures. At the Sand Hills, the new canal would be as close to the existing canal as possible to minimize the amount of excavation through the sand dunes. Excavation of 25 million cubic yards of earth would be required. Excess material would be placed in rows along the new canal. An estimated 530 acres of new right-of-way would be required, all of which is under federal control. Other land disturbances would include a 10-acre concrete batch plant and three, 5-acre staging areas, all of which would be on previously disturbed lands. Power lines would be relocated as required. Actual construction would last approximately 3 years. The canal would be in service year-round, as at the present, and would be operated at as high a water level as possible to maximize power generation at the drop structures. The old canal would be retained for emergency use. Details of the construction, safety, and operation components of the canal lining are included in the All American Canal Lining Project EIS/EIR (IID and USBR, 1994).

2.5.2 Coachella Valley Water District

Under the terms of the QSA, CVWD would agree to limit its consumptive use of Colorado River water under Priority 3a to 330 KAFY for the quantification period, less an amount of water equal to that conserved by CVWD for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. CVWD would also receive Colorado River water and SWP water via transfers from both IID and MWD, resulting in an additional 52 to 152 KAFY of Colorado River water for use in the service area, of which 35 KAFY would be exchanged for SWP water. This water is part of the overall water supply addressed in the CVWMP, which was prepared by CVWD to establish an overall program for managing its surface and groundwater resources in the future. The CVWMP involves a number of actions to reduce the current overdraft of groundwater in the Coachella Valley. The 52 to 152 KAFY of Colorado River water for use in the service area under the Proposed Project would be used to the benefit of Improvement District No. 1 (ID-1), which includes the lower portion of the Coachella Valley and a small portion of the Upper Valley. (The Upper Valley consists of primarily open desert lands and resort areas, whereas the Lower Valley area is primarily agricultural land.)

With the implementation of the Proposed Project, from 52 to 152 KAFY of additional Colorado River and exchanged SWP water would be used to replace current groundwater use, or would be used for direct groundwater recharge. This would involve the use of the existing canal and expansion of the distribution system. Expansion of the distribution system, and construction of pumping stations and other facilities, may also be required, along with recharge facilities for direct groundwater recharge. The exact location of these potential facilities is not known at this stage of plan development. Among the sites under preliminary consideration for the recharge

facilities are the vicinity of Dike 4 (a flood control dike) and the Martinez Canyon alluvial fan located west of the community of Valerie Jean. If a groundwater recharge facility were constructed at Dike 4, the facility would be expected to include recharge ponds along with a pumping station and pipeline to convey water from Lake Cahuilla to the facility. If a recharge facility were to be constructed at Martinez Canyon, it would also include recharge basins, a pumping station, and a pipeline to convey water from the Oasis area to the facility. The recharge projects will be subjected to separate project-level environmental review when preferred sites are identified.

Coachella Canal Lining

A QSA component is to line the existing unlined section of the canal using conventional construction methods while diverting water around each section. Lining would occur between siphons 7 and 14 and siphons 15 and 32, a distance of approximately 33 miles. Existing, unpaved roads would be used for construction activities. Actual construction would take 2 years. The lined canal would continue to be operated on a year-round basis. A more detailed description of the Coachella Canal Lining Project including construction, operation, and safety components of the canal lining is provided in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD, 2001).

2.5.3 The Metropolitan Water District of Southern California

Under the terms of the QSA, MWD would agree to limit its consumptive use of Colorado River water under Priorities 4 and 5 to 550 KAFY, and 662 KAFY, respectively, for the quantification period, pursuant to the conditions as specified in the QSA, and subject to adjustments as provided by the IOP. In a year where only 4.4 MAFY of Colorado River water is available in California, MWD is limited to 550 KAF of Priority 4 water, plus up to 110 KAF of water conserved by IID under the IID/MWD 1988 Agreement. With implementation of the Proposed Project and in a normal year, MWD would receive up to 52.6 KAFY from the All American Canal Lining Project, 21.5 KAFY from the Coachella Canal Lining Project, and up to 100 KAFY from the First and Second 50 KAFY (in the event that CVWD elects not to take this water); with implementation of the Proposed Project, MWD would exchange 35 KAFY of SWP water to CVWD under the MWD/CVWD SWP Exchange and Transfer Agreement, and would forebear use of and transfer 20 KAFY for CVWD under the amended IID/MWD 1988 Agreement and subsequent amended agreements. With implementation of the Proposed Project, MWD would be responsible, pursuant to the IOP, for repayment of any overrun as a result of aggregate use by Priorities 1, 2, and 3b in excess of 420 KAFY, and to the extent that Priorities 1, 2, and 3b use less than 420 KAFY, MWD shall have the exclusive right to such water, as described in section 2.4 above. With implementation of the Proposed Project, MWD would also divert into the CRA, between 130 to 200 KAFY of conserved IID water transferred to SDCWA and 16 KAFY to facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act.

Implementation of the Proposed Project would not require the construction of new MWD facilities or the modification of existing MWD facilities. MWD would continue to divert Colorado River water available under the terms of the Proposed Project at its existing Whittset Intake in Lake Havasu. The amount of water diverted under the QSA is within the historic volumes currently diverted, and would not constitute a change in operations or an increase in the amount diverted.

The CRA is MWD's conveyance structure to transport Colorado River water to the MWD service area. Implementation of the Proposed Project would affect the amount of Priority 3a, 4, and 6a water carried in the CRA. During the quantification period, and particularly after the 15-year Interim Surplus period, the total amount of water carried by the CRA in a normal year may be less than current operations as California would be limited to 4.4 MAFY, and previously used surplus and unused apportionment water may not be available. MWD has a number of projects in the planning or pilot project stage that would assist in maintaining delivery of Colorado River water to the MWD service area (refer to section 1.5, Related Plans, Programs and Actions).

2.5.4 San Diego County Water Authority

With implementation of the Proposed Project, SDCWA would receive 130 to 200 KAFY of Colorado River water conserved by IID, replacing water currently received by MWD. Implementation of the Proposed Project would not require the construction of new SDCWA facilities or the modification of existing SDCWA facilities.

2.5.5 Lower Colorado River

The Proposed Project would result in a change in the amount of water the Secretary would deliver to MWD's diversion point at Lake Havasu (above Parker Dam), and Imperial Dam, CVWD's and IID's diversion point. In a normal year, in aggregate, deliveries to Imperial Dam would be reduced by 183 to 388 KAF, and this water would instead be delivered to the MWD facility at Lake Havasu. Therefore, there would be a reduction in flow in the Colorado River between 183 and 388 KAFY from Parker to Imperial Dam. The components of the Proposed Project that would reduce deliveries at Imperial Dam include the following:

- water conserved and transferred by IID (130 KAFY to 300 KAFY — minimum of 130 KAFY in the event that only 130 KAFY is transferred to SDCWA, and the First and Second 50 KAFY is transferred to CVWD — maximum of 300 KAFY in the event that the 200 KAFY is transferred to SDCWA and the First and Second 50 KAFY is transferred to MWD);

- reduced deliveries as a result of the All American and Coachella Canal lining projects (together totaling 93.7 KAFY);

- reduced deliveries by CVWD and IID to account for Miscellaneous PPRs and Federal Reserved Rights (together totaling 14.5 KAFY).

Conversely, some components of the Proposed Project could increase deliveries at Imperial Dam, including the 20 KAFY transfer from MWD to CVWD per the amendments to the IID/MWD 1988 Agreement and subsequent amended agreements, and potentially the 35 KAFY transferred from MWD to CVWD per the MWD/CVWD SWP Transfer and Exchange Agreement, depending on where MWD elects to have the water delivered (Imperial Dam for diversion into the All American and Coachella Canals or at Lake Havasu for diversion at the Whitsett Pumping Plant and delivery to CVWD). Table 2.5-1 outlines the various Proposed Project components that result in changes in river flows between Parker and Imperial Dams in a normal year.

Table 2.5-1. Anticipated Changes in River Flow from Parker to Imperial Dams in a Normal Year as a Result of the Proposed Project
(negative numbers in parentheses)

	Minimum (KAFY)	*Maximum (KAFY)*
Amendment to the IID/MWD 1988 Agreement and Subsequent Agreements	20	20
IID/SDCWA Conservation and Transfer	(130)	(200)
First and Second 50 KAFY	0	(100)
All American Canal Lining Project[1]	(67.7)	(67.7)
Coachella Canal Lining Project[1]	(26)	(26)
CVWD/MWD SWP Transfer and Exchange	35	0
Miscellaneous PPRs and Federal Reserved Rights	(14.5)	(14.5)
Total	**(183.2)**	**(388.2)**

1) 11.5 KAFY and 4.5 KAFY from the All American and Coachella Canal lining projects, respectively, would be made available for San Luis Rey Indian Water Rights Settlement Act purposes.

2.6 AGENCIES EXPECTED TO USE THE PEIR IN DECISIONMAKING

The co-lead agencies for this PEIR are CVWD, IID, MWD, and SDCWA. Each agency will independently evaluate and, if appropriate, certify this PEIR and make CEQA findings.

Although the County of Imperial, County of San Diego, and City of San Diego each has stated that it may be a Responsible Agency with regard to the preparation of this PEIR, the co-lead agencies have not identified any discretionary approvals by these agencies that would trigger Responsible Agency Status as defined in the State CEQA Guidelines (§ 15381). The California Department of Fish and Game (CDFG) is a Trustee Agency for fish, plant, and wildlife resources and may act as a Responsible Agency regarding potential impacts to listed species and the possible issuance of Incidental Take Permits (section 2081 of the Fish and Game Code) and Streambed Alteration Agreements pursuant to section 1600 of the Fish and Game Code, if required. Incidental Take Permits and Streambed Alteration Agreements are not anticipated for the Proposed Project but may be necessary for implementation of certain project level components that are a part of the Proposed Project.

2.6.1 Permits and Other Approvals Required to Implement the Proposed Project

Permits and approvals that may be required for implementation of certain components of the Proposed Project include the following:

- Air quality permits from the relevant air quality management or air pollution control districts for construction activities due to the implementation of water conservation measures;
- Section 2081 permits for incidental take of endangered species per the CESA;

- Section 1600 authorization from the CDFG for potential alteration of streambeds and lakes;
- Incidental take permits from the Service per the ESA for construction and implementation activities;
- California State Water Resources Control Board approval of the proposed water transfer from IID to SDCWA;
- National Pollutant Discharge Elimination System (NPDES) permits from the relevant Regional Water Quality Control Boards (RWQCB) during the construction of components of the Proposed Project;
- Secretary, U.S. Department of the Interior (DOI) execution of the IA; and
- Department of Water Resources approval of the 35 KAFY SWP water entitlement transfer.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

The following sections describe the environmental resources that could be affected by the Proposed Project, potential impacts to these resources, and mitigation measures that would reduce the severity of these impacts. State CEQA Guidelines (§15125) state that an EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the NOP is published. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. This chapter provides appropriate descriptive information to meet this requirement. Because the impacts of the Proposed Project would be realized over a long period of time, it is appropriate to measure them against both current and projected conditions in order to provide a more accurate description of Proposed Project effects (see *Save Our Peninsula Committee v. Monterey County Board of Supervisors,* [2001] 87 Cal App. 4th 99). For this reason, this chapter makes reference to two separate baselines, referred to as "Existing Baseline" and "Future Baseline," which are described below. Where impacts are measured against more than one baseline, this is noted in the methodology section included under each resource.

EXISTING BASELINE

The term Existing Baseline specifically refers to physical environmental conditions in the project area that existed at the time the NOP was published, as required under the State CEQA Guidelines. For each of the geographic areas addressed, specific information is provided to describe the conditions of resources within that area. Existing Baseline information is used to provide a basis for assessing environmental impacts within each of the geographic areas.

FUTURE BASELINE

Many resources, such as the Colorado River and Salton Sea, exhibit variability from year to year. It is necessary to capture the reasonably foreseeable variability of a given environmental resource to adequately assess changes resulting from the Proposed Project. To capture future variability, a Future Baseline has been developed. The Future Baseline represents what is reasonably expected to occur in the future given well-defined trends and other parameters such as adopted or on-going programs (e.g., increased water use by other Lower Division states and flood control operations). The Future Baseline uses a sufficiently long period to allow consideration of long-term variability. By comparing the Proposed Project to the Future Baseline, effects caused by the Proposed Project can be isolated from effects that are reasonably expected to result from existing conditions and trends.

For the two major water bodies within the Project region, the lower Colorado River and the Salton Sea, Future Baselines were developed to provide a framework against which an assessment of environmental impacts from the Proposed Project could be measured. Throughout this chapter, the term Future Baseline, refers to future trends for the two water bodies based on analytical models of expected future conditions. These models are more fully described in detail under section 3.1, Water Resources.

Colorado River

The Future Baseline for river flow, reservoir elevation, and salinity is based on Reclamation's Colorado River Simulation System (CRSS) modeling performed for the *Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions Draft EIS* (USBR 2002). This Future Baseline has been used throughout this chapter to assess impacts to the Colorado River. A summary of major lower Colorado River parameters comparing the Future Baseline to existing and historical conditions is provided below.

Average Annual Lake Mead Elevations

Under the Future Baseline, reservoir levels are expected to vary over time from 1,213 feet msl (mean sea level) to 1,001 feet msl. There is a 12 to 26 percent probability that Lake Mead levels would be 1,200 feet msl or higher throughout the period 2002 to 2076. Rarely (less than 10 percent of the time), Lake Mead is expected to be higher than 1,210 msl, and only seldom (10 percent of the time) is Lake Mead projected to be less than 1,000 feet msl. Modeled median water levels decline to approximately 1,108 feet msl by the year 2040 under the Future Baseline and fluctuate between 1,106 feet msl and 1,116 feet msl through the year 2076. Under historic conditions, Lake Mead has dropped below elevation 1,083 only twice, and has climbed above elevation 1,225 only once.

Colorado River Flows Between Parker and Imperial Dam

Under the Future Baseline, flows between Parker and Imperial dams (below Headgate Rock Dam) are predicated to vary from 6.48 MAFY to 9.58 MAFY. Historically (1990-1999), flows in this reach have averaged 7.362 MAFY, but have varied from 3.776 MAFY to 17.555 MAFY.

Colorado River Salinity

The Future Baseline assumes that additional programs operated under the Colorado River Salinity Control Program will continue to be implemented and that water quality will never exceed 747 mg/L (milligrams per liter) below Parker Dam and 879 mg/L at Imperial Dam. Under existing conditions, salinity below Parker Dam has varied from 549 to 673 mg/L, and salinity at Imperial Dam has varied from 655 to 803 mg/L in the period 1990 to 1999.

Salton Sea

The Imperial Irrigation District Decision Support System (IIDSS) and the Coachella Groundwater Model are used to predict changes to parameters such as water quantity and water quality in the IID and CVWD service areas given certain future actions such as on-farm conservation, fallowing, and groundwater recharge. Data from these models were used as inputs to Reclamation's Salton Sea Accounting Model. The Salton Sea Accounting Model was used to predict future trends in the Salton Sea's elevation, surface area, and salinity. This model provides future trending data about the Salton Sea assuming a continuation of existing conditions.

The Future Baseline for the three Salton Sea parameters assessed in the models is summarized below and in Table 3.0-1. This Future Baseline has been used throughout this chapter to assess impacts to the Salton Sea.

Sea Elevation

The current Salton Sea elevation is approximately –227 feet msl. Modeling conducted by Reclamation indicates that under the Future Baseline the mean surface elevation of the Salton Sea would drop approximately 7 to 10 feet over the next 75 years. The Proposed Project could cause an additional drop of 10 to 13 feet, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD.

Salinity

The existing salinity of the Salton Sea is approximately 44,000 mg/L. Under the Future Baseline, the salinity is expected to increase to approximately 80,000 to 90,000 mg/L over the next 75 years. Over the same period, the Proposed Project would cause salinity concentrations to rise, resulting in salinity of 129,700 to 165,300 mg/L, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD. Reclamation's model predicts that salinity would reach 60,000 mg/L between the years 2023 and 2030. Once the salinity increases to 60,000 mg/L, it is likely that the fish that live in the Salton Sea will be unable to complete their life cycle, which will result in the eventual disappearance of the fishery. This impact also affects fish-eating birds as their food supply diminishes and disappears.

Surface Area

The existing surface area of the Salton Sea is 235,000 acres. Reclamation's model predicts that under Future Baseline conditions, over the life of the project, the Salton Sea would decrease by approximately 15,400 to 23,400 acres, resulting in a surface area of 211,600 to 219,600 acres. The Proposed Project would cause additional decreases in surface area, resulting in a Salton Sea with an area of 167,774 to 186,383 acres, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD.

Table 3.0-1. Comparison of Salton Sea Existing Baseline, Future Baseline, and Proposed Project Impacts at the Salton Sea

	Elevation (feet msl)			**Surface Area (acres)**			**Salinity (mg/L)**		
	Existing Baseline	*Future Baseline*	*Proposed Project*	*Existing Baseline*	*Future Baseline*	*Proposed Project*	*Existing Baseline*	*Future Baseline*	*Proposed Project*
2001	-227	NA	NA	235,000	NA	NA	44,000	NA	NA
2077	NA	-234 to -237	-245 to -250	NA	211,600 to 219,600	167,800 to 186,400	NA	80,000 to 90,000	129,700 to 165,300
Source: IID and USBR 2002.									

3.1 WATER RESOURCES

This chapter discusses the potential changes to hydrologic systems and facilities, water quality, and water supply associated with the implementation of the Proposed Project. Information in this section is primarily based on information provided by the potentially affected agencies, Reclamation, United States Geological Survey (USGS), Colorado River Board of California, and DWR.

3.1.1 Environmental Setting

The region of influence to hydrologic systems and facilities contains the Colorado River from Lake Mead to the Northerly International Boundary (NIB), the associated reservoirs, and the service areas of water districts that are affected by Proposed Project implementation (i.e. CVWD, IID, MWD, and SDCWA; refer to Figure 1.1-1 for service area boundaries). Potentially affected conveyance facilities for these diversions include the All American Canal, which diverts water from the Colorado River at Imperial Dam; the Coachella Canal, which receives deliveries from the All American Canal; and the CRA, which diverts water from Lake Havasu upstream of Parker Dam. These diversions and water transportation features are shown schematically in Figure 3.1-1. Related drainage features include the Whitewater River/Coachella Valley Stormwater Channel (CVSC) and drains in the Coachella Valley, the New and Alamo rivers, drains in the Imperial Valley, and the Salton Sea.

3.1.1.1 Regulatory Framework

The regulatory framework for water resources includes the following federal and state statutes and regulations.

Water Quality

PORTER-COLOGNE ACT OF 1969

The Porter-Cologne Act gave the SWRCB ultimate authority over state water quality and established nine regional water quality control boards. The regional boards prepare water quality plans (called basin plans) for their region. Basin plans identify the beneficial uses of water that should be protected, establish water quality objectives (limits or levels of water constituents based on both state and federal laws), and define an implementation program to meet water quality objectives. The area that would be affected by the implementation of the Proposed Project lies within the boundaries of four RWQCBs: Los Angeles (Region 4), Colorado River Basin (Region 7), Santa Ana (Region 8), and San Diego (Region 9).

WATER POLLUTION CONTROL ACT AND AMENDMENTS (CLEAN WATER ACT)

Similar to the Porter-Cologne Act, the federal Clean Water Act requires states to designate appropriate water uses to be protected and mandates that states set water quality standards based on these uses (EPA 2000a). States must review and revise these water quality standards every three years. The EPA has the responsibility for promulgating regulations under the Clean Water Act including the review and approval of state water quality standards. A 1997 EPA

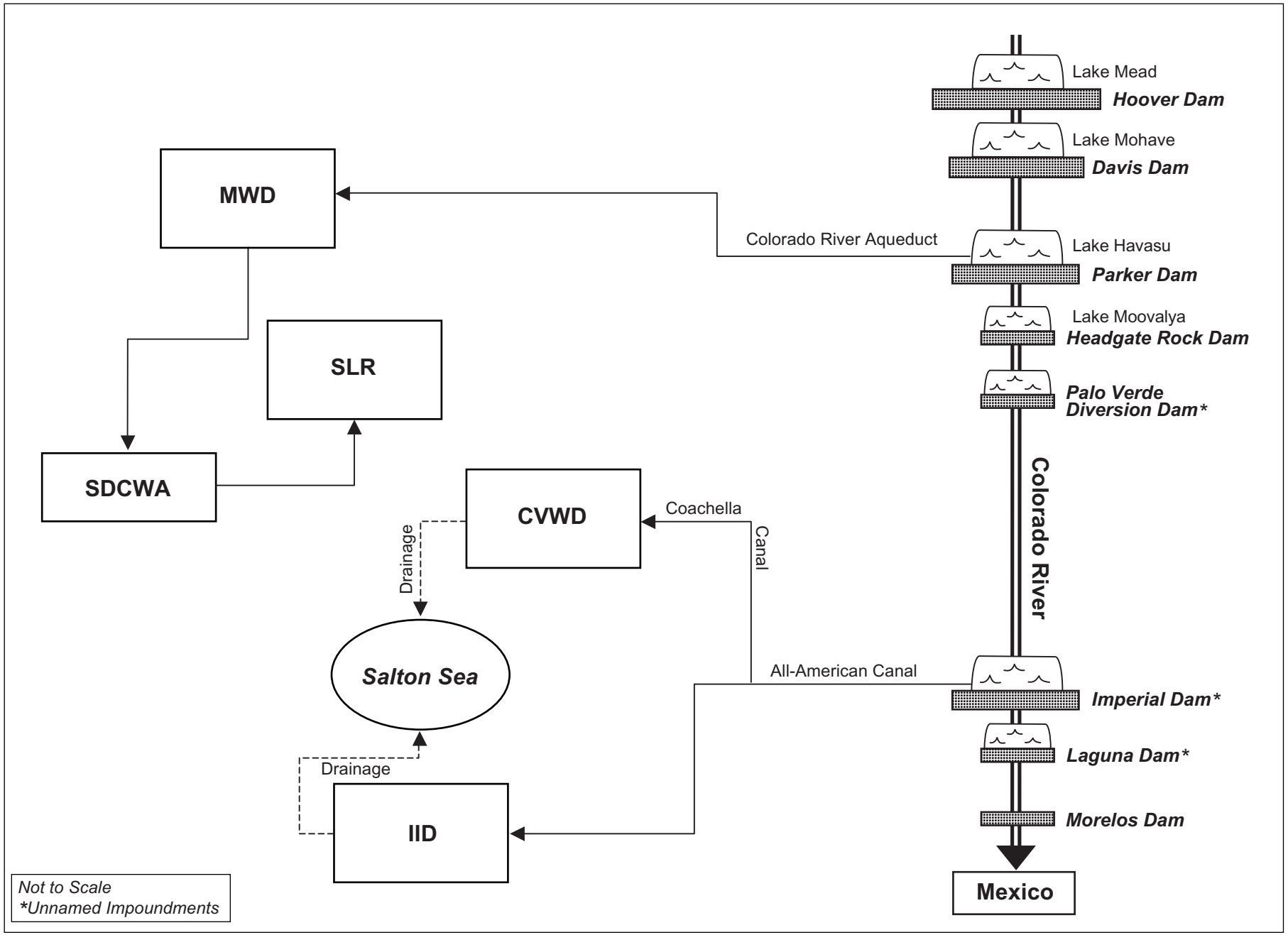

Figure 3.1-1. Schematic Diagram of Water Facilities, Water Bodies, and Agency Service Areas Potentially Influenced by the QSA

review of California water quality standards found a lack of criteria for several toxic pollutants. EPA, ruling that California was not meeting the provisions of the Clean Water Act, established criteria and a compliance schedule for eighty pollutants (EPA 2000b). In an attempt to resolve these issues, the SWRCB adopted a "Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California" on April 26, 2000 (SWRCB 2000).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

One method for meeting water quality objectives under the Clean Water Act is the NPDES. This permit system regulates point-source surface discharges (33 U.S.C. §1342). In California the Regional Water Quality Control Boards administer NPDES permits in a manner intended to meet water quality criteria of both the Clean Water Act and Porter-Cologne Act (Littleworth and Garner 1995).

TOTAL MAXIMUM DAILY LOAD

Under section 303(d) of the Clean Water Act, states, territories, and authorized Indian tribes are to submit lists to the EPA detailing water bodies for which existing pollution controls are insufficient to attain or maintain water quality standards. After submitting the list of "impaired waters," states must develop a plan, called the Total Maximum Daily Load (TMDL) plan, to limit excess pollution. Within the TMDL process, states assess water quality problems, contributors to these problems, and establish actions needed to achieve water quality objectives. The focus is on setting total maximum daily loads for specific pollutants throughout the watercourse. TMDL plan implementation can be accomplished through revised NPDES permit requirements (for point source contaminants) and through implementation of Best Management Practices (BMPs) that include changes in agricultural practices (EPA 1999). The establishment of a TMDL conceptually consists of four phases, which are, water body assessment, development of allocations, development of an implementation plan, and amendment of the basin plan (SWRCB 2001b). A TMDL start date is the date (usually stated as a year) when the responsible agency begins development of a TMDL, while the completion date is the projected date that the TMDL Implementation Plan is complete and ready for adoption into the Basin Plan. Within the study area a TMDL of 200 milligrams per liter has been adopted by the Regional Board and approved by the State Board for silt in the Alamo River and a 200-membrane filter count per 100 milliliters (MPN/100 ml) for fecal coliform, 126 MPN/100 ml for E.Coli, and 33 MPN/100 ml for Enterocci have been have been adopted by the Regional Board and approved by the State Board for pathogens in the New River. Impaired waters and TMDL program details for water bodies in the project area are provided in Table 3.1-1.

COLORADO RIVER BASIN SALINITY CONTROL ACT AND AMENDMENTS; MINUTE 242 OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION

In 1974, the Colorado River Basin Salinity Control Act was enacted with the purposes of (1) resolving salinity issues associated with Mexican Treaty deliveries; and (2) creating a salinity control program within the U.S. portion of the Colorado River Basin to meet objectives and standards set by the Clean Water Act. The federal/state salinity control program is designed to maintain flow-weighted average annual salinity at or below the adopted numeric criteria. The program is not intended to counteract short-term salinity variations due to the highly variable flows caused by natural factors (DOI 2001).

Table 3.1-1. Impaired Water Bodies Potentially Affected by the QSA

Water Body	*Pollutant of Concern*	*TMDL Completion Date*
Whitewater River/Coachella Valley Stormwater Channel	Bacteria/Pathogens	2005
Alamo River	Pesticides Selenium Silt	2011 2010 Proposed Basin Plan Amendment[1]
Imperial Valley Drains	Pesticides Selenium Silt	2011 2010 2004
New River	Nutrients Pesticides Silt Dissolved Oxygen Trash Chloroform Toluene p-Cymene 1,2,4-trimethylbenzene m,p,-Xylene o-Xylenes p-DCB Bacteria/Pathogens	2010 2011 2002 2006 2007 2011 2011 2009 2009 2008 2008 2010 Proposed Basin Plan Amendment[1]
Salton Sea	Nutrients Salt Selenium	2004 undefined 2010
Lake Havasu	*Escherichia Coli* Turbidity	undefined 2002
Lower Colorado River	Turbidity	2002
Palo Verde Outfall Drain	Bacteria/Pathogens	2003

Sources: SWRCB 1999 and 2001, Arizona Department of Environmental Quality 2002, Colorado RWQCB 2001, NDEP 2000.

[1] Approval of the Basin Plan Amendments is at the discretion of the Colorado River Regional Water Quality Control Board and thus no adoption date can be given.

Per the directives of the Federal Water Pollution Control Act Amendments of 1972, the Colorado River Basin Salinity Control Forum (which is made up of the Seven Basin States) adopted numeric criteria for flow-weighted average annual salinity for three points along the Colorado River:

- Below Hoover Dam, 723 mg/L;
- Below Parker Dam, 747 mg/L; and
- At Imperial Dam, 879 mg/L.

The Colorado River Basin Salinity Control Forum reviews the numeric criteria and plan of implementation every 3 years and makes revisions to accommodate changes occurring in the Basin States, most recently in 1999. At each triennial review, the current and future water uses are analyzed for their impact on the salinity of the Colorado River, including projects proposed

as part of Reclamation, U.S. Department of Agriculture, and the Bureau of Land Management salinity control programs. If needed, additional salinity control projects are added to the implementation plan to assure compliance with standards. The need for one or more additional salinity control projects is determined by monitoring the salinity of the River and making near-term projections of changes in diversions from and return flows to the River system. When an additional project is needed it is selected from a list of potential projects that have undergone feasibility investigation. In selecting a project, considerable weight is given to the relative cost-effectiveness of the project. Environmental feasibility is another factor considered. For example, the January 2001 Progress Report on Quality of Water Colorado River Basin identified 22 cost-effective projects that could be implemented between 1998 and 2002 that could control up to 416,834 tons per year of salinity (DOI 2001).

Below Imperial Dam, salinity is a federal issue. Under Minute No. 242 of the United States-Mexico Treaty, the United States government took responsibility for ensuring that:

- The 1.36 MAF annual water delivery to Mexico upstream of Morelos Dam does not exceed the salinity of water received at Imperial Dam by more than 15 +/- 30 milligrams per liter: and,
- The 140 KAFY water delivery to Mexico downstream of Morelos Dam and/or south of San Luis Arizona, has salinity substantially the same as water customarily delivered to these areas.

SALTON SEA RECLAMATION ACT

The Salton Sea Reclamation Act of 1998 (Public Law 105-372) directs the Secretary of the Interior to conduct a feasibility study and construct a project to reclaim the Salton Sea while permitting the continued use of the Salton Sea as a repository for irrigation drainage, and:

- reducing and stabilizing the overall salinity of the Salton Sea;
- stabilizing the surface elevation;
- reclaiming, in the long term, healthy wildlife resources and their habitats; and
- enhancing the potential for recreational uses and economic development.

Public Law 105-372 specifically directed the Secretary not to include any option that would rely on the importation of any new or additional water source from the Colorado River, or any option that is not consistent with existing water rights and obligations of persons under treaties, decrees, contracts, and agreements that make up the Law of the River. Public Law 105-372 also directs the Secretary to apply assumptions regarding water inflows into the Salton Sea that encourage water conservation, account for transfers of water out of the Salton Sea Basin, and are based on a maximum likely reduction in inflows to the Salton Sea of 800 KAFY or less per year.

Rivers and Streambed Alteration

SECTION 404 OF THE CLEAN WATER ACT

Section 404 of the Clean Water Act requires that an entity obtain permits before discharging dredge or fill material into navigable waters, their tributaries, and associated wetlands.

Activities regulated by 404 permits include, but are not limited to, dredging, bridge construction, flood control actions, and some fishing operations. In order to issue a 404 permit, the Army Corps of Engineers must demonstrate compliance with the federal Endangered Species Act (see Chapter 3.2), the National Environmental Policy Act, the Wild and Scenic Rivers Act, and the Fish and Wildlife Coordination Act (Getches 1997).

CALIFORNIA FISH AND GAME STREAMBED ALTERATION AGREEMENT

Fish and Game Code §1601 mandates that any public entity must formally provide notice to the CDFG before engaging in any project that will:

- divert, obstruct, or change the natural flow of the bed, channel, or bank of any river, stream, or lake;
- use materials from a streambed; or
- result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

If the CDFG determines that a project will adversely affect fish or wildlife resources, the project applicant must enter into a Streambed Alteration Agreement with CDFG (CDFG 2000).

Water Allocation

The use of Colorado River water is governed by a group of federal and state laws, interstate compacts, an international treaty, court decisions, federal contracts, federal and state regulations, and multi-party agreements, commonly referred to as "The Law of the River." Refer to Chapter 1 for further discussion.

Water Transfers

Water transfers offer a way for an entity with a water entitlement to make available a portion of that supply to another water user. A water transfer does not confer a new "water right," rather a water transfer represents a change in place of use of an existing water right. Refer to section 2.4, QSA Components, for further discussion.

3.1.1.2 Imperial Irrigation District

The IID service area covers over 1 million acres in the Imperial Valley of which an average of approximately 461,000 acres are irrigated for agricultural production (IID 1999). Approximately 98 percent of the water managed by IID goes to agriculture, and 2 percent is treated for municipal use by 9 cities in the Imperial Valley.

All of IID's water supply is diverted from the Colorado River. IID obtains Colorado River water from the 82-mile long, All American Canal. The All American Canal diverts water from the Colorado River near Imperial Dam, located approximately 20 miles northeast of Yuma, Arizona. In addition to East Highline, Central Main, and Westside Main canals that serve the IID service area, several canals branch off of the All American including the Yuma Main Canal that diverts water for the Yuma Project Reservation Division and the Coachella Canal that

diverts water for CVWD. The capacity of the All American Canal varies with canal reach, with a maximum capacity of 15,155 cubic feet per second (cfs). The All American Canal is unlined.

Table 3.1-2 summarizes recent historic conditions for net diversions (gross diversions minus return flow) of Colorado River water by IID. In 1999, IID diverted 3,089 KAFY of Priority 3a Colorado River water; the 1990 to 1999 average was 2,992.5 KAFY. In 1999, IID conserved 108.5 KAFY of Priority 3a water and an equivalent amount of water was made available to MWD (accounted for under Priority 4, 5a or 5b, as available) per the IID/MWD 1988 Agreement and subsequent agreements; the 1990-1999 average was 67.3 KAFY. A 1990 to 1999 adjusted average was developed to simulate conditions that would have occurred if the water conservation under the IID/MWD 1988 Agreement and subsequent agreements had been fully implemented by the beginning of 1990. In this case, IID would have conserved and reduced its diversion of Colorado River water by a total of 110 KAFY for the entire 10-year period, and an equivalent amount of water would have been made available to MWD throughout the time period (for purposes of analysis, this is assumed to be 110 KAFY). The 1990 to 1999 adjusted average for IID is 2,949.9 KAFY.

Table 3.1-2. Recent Historic Conditions for IID Colorado River Water Diversions

All numbers in KAFY

	1999	*1990-1999 Average*
IID Colorado River Diversions	3,089	2,992.5

Source: Data based on USBR Annual Decree Accounting Reports

The majority of drainage from lands within the IID service area is collected and transported through a network of surface drains exceeding 1,400 miles that discharge system-wide into either the New or Alamo rivers or directly into the Salton Sea. Between 1990 and 1999, IID's drainage discharge into the Salton Sea has varied from 878 KAFY to 1,072 KAFY.

Water Quality

Surface water quality in the Imperial Valley is heavily dependent on the quality of imported supplies, and thus, on Colorado River quality at Imperial Dam. Water quality parameters of concern include salinity, selenium, sediments, pesticides, and temperature.

- *Salinity.* The main water quality concern for the lower portion of the Colorado River is salinity/total dissolved solids (TDS). Factors influencing salinity levels include regional geology, salinity levels in tributaries and other inflow sources, drainage from irrigation system return flows, municipal discharge, and concentration of salts due to evaporation and other losses. Approximately 47 percent of the salinity in the Colorado River System is from natural sources (DOI 1999). The remaining 53 percent is due to human activities including agricultural runoff, as well as industrial and municipal sources. The River increases in salinity from its headwaters to its mouth.

  The EPA primary drinking water standard for TDS is 500 mg/L, with a secondary standard of 1,000 mg/L. The Colorado River Basin RWQCB has set an average annual water quality objective of 4,000 mg/L for TDS in the New and Alamo rivers for any discharges, excepting discharges from agricultural sources (Colorado River RWQCB

1994). Higher salinity source water requires higher amounts of leaching (salt flushing) water during irrigation and may reduce agricultural productivity of some fruits and vegetables.

The average 1990-1999 TDS concentration at Imperial Dam has varied from 655 to 803 mg/L (USBR 2002).

- *Selenium.* Selenium in trace concentrations is an essential element for both plants and animals but can be toxic at higher levels. Selenium in the Colorado River naturally originates from shale sediment deposits along river tributaries. Within the river system, Lake Powell has the highest annual loading of dissolved selenium and the majority of selenium is thought to come from above Lake Powell. Selenium loads drop within Lake Powell and drop again as the Colorado River passes through downstream reservoirs. Due to this decline, it does not appear that selenium is added to the system in the Lower Basin (DOI 1999). Recent studies have indicated that selenium levels in the Lower Basin of the River and associated biota are below the DOI level of concern of 5 mg/L (USBR 2000b). Selenium is not considered a water quality problem in the lower portion of the Colorado River.

  However, selenium is a potential issue in irrigation drainage water. When water is applied to fields, evapotranspiration removes water and concentrates selenium, like salt, in or below the root zone. Additional irrigation water used to flush salts from the soil also flushes selenium out of the root zone.

- *Sediments.* Historically the Colorado River transported large amounts of sediment, but with the construction of dams and the regulation of flows, sediment loads have significantly decreased. Sediments can carry pesticides, may deposit in slow-moving drains, or deposit in vegetated areas and backwaters. The USGS sampled sediment/total suspended solids (TSS) from 1996 to 2000 in the lower Colorado River. In any given year, one to five samples were collected at various times. Average TSS concentration at Imperial for this period was 9 mg/L to 206.4 mg/L and the maximum ranged from 5 mg/L to 559 mg/L (IID and USBR 2002).

- *Pesticides.* DDT (dichlorodiphenyltrichlorethane), DDE (dichlorodiphenyldichloroethene), and DDD (dichlorodiphenyldichlorethane) are organopesticides found in the lower Colorado River. Pesticides can be picked up from soils and carried into the Colorado River via runoff or into the drainage systems by irrigation water. The main concern with pesticides is their toxicity to aquatic organisms. DDT has been detected at levels of 0.8 micrograms per kilogram (µg/kg) wet weight at Palo Verde Drain and 0.6 µg/kg wet weight below Cibola Lake (IID and USBR 2002). DDE has been detected in the river from 0.1 to 7.5 µg/kg wet weight in the river reach between Parker and Imperial. DDD has also been found in this reach at levels of 0.2 to 2.4 µg/kg wet weight (IID and USBR 2002).

  In addition to these, other pesticides, such as diazinon, chlorpyrifos, toxaphene (insecticides) and Dacthal (herbicide) are found in drainage waters.

- *Temperature.* Water temperature in the Colorado River varies by season but typically increases from the upper to the lower reaches. Average temperature ranges from 11 to

12 degrees Celsius between Parker and Imperial in January, increasing to 26 to 28 degrees Celsius in August (IID and USBR 2002).

Imperial Valley drain water quality is dependent on source water quality, soil type and agricultural practices. Water quality of the Alamo and New rivers is heavily dependent on agricultural practices in the Imperial Valley and wastewater treatment practices in the Mexicali Valley. Tables 3.1-3 and 3.1-4 summarize the major water quality parameters for drains in the Imperial Valley, along with water quality parameters of the Alamo and New rivers. This water quality data was collected by IID and compiled by the RWQCB from 1996 to 1999. In addition to the water quality parameters described above, IID drainage water may also contain boron, nitrogen, and phosphorus.

- *Boron.* In small amounts boron is can be beneficial, though in elevated concentrations born can adversely effect organisms. Boron may enter drainage system through leaching from irrigated soils (IID and USBR 2002).

- *Nitrogen and phosphorus.* These elements are primary components of fertilizers and are commonly found in drainage waters.

Imperial Valley groundwater has high salinity – in the 1,000 to 6,000 mg/L range – which severely limits its use for water supply. There are few groundwater users in the Imperial Valley due to the poor water quality.

Groundwater

The IID service area is underlain by a great thickness of water-saturated deposits. Due to the low permeability in much of the IID service area and the application of irrigation water, a perched water table exists through much of the Valley (IID and USBR 2002). While the amount of groundwater stored in the Imperial Valley Basin is large, few wells have been drilled for production because the yield is low and the water quality poor (IID and USBR 2002). As discussed earlier, there is limited use of groundwater in the Imperial Valley.

Seepage from the All American Canal is a source of shallow groundwater recharge in the vicinity. Seepage forms a groundwater mound under the canal that is hydraulically connected to the canal in some reaches. Annual seepage between Pilot Knob and Drop 4 is estimated to be approximately 91.6 KAF, or about 2 percent of the canal's annual flow (USBR and IID 1994). Due to the relatively higher permeability of the aquifers to the south of the All American Canal, 90 percent of the seepage moves south toward Mexico, while 10 percent of the seepage moves northward toward the East Mesa area in the Imperial Valley (USBR and IID 1994).

3.1.1.3 Coachella Valley Water District

CVWD uses Colorado River water, groundwater, and recycled water to serve the approximately 640,000 acres within its boundaries. Approximately 60,000 acres are irrigated, and CVWD serves an urban population of approximately 192,000 Coachella Valley residents (CVWD 2000). The total water demand in 1999 in the Coachella Valley was approximately 669 KAF, of which 310 KAF (46 percent) was for urban uses and 359 KAF (54 percent) was for agricultural uses. Current water use data for the Coachella Valley does not differentiate

Table 3.1-3. Water Quality in Drains Associated with the New River

Parameter	*Units*	*Water Quality Standard*	*New River Drainages 1996-1999*			
			At International Boundary	Greeson Drain	Trifolium 12 Drain	Outlet to Salton Sea
TDS	mg/L	4000[a]	2,676	2,033	2,143	2,743
Selenium	µg/L	5.0[b]	ND	5.24	6.03	4.09
Turbidity	mg/L	NS	52.16	188.15	188.5	240.7
Pesticides						
DDD	µg/L	0.00083[c]	NA	NA	NA	NA
DDE	µg/L	0.00059[c]	NA	NA	NA	NA
DDT	µg/L	0.00059[c]	NA	NA	NA	NA
Toxaphene	µg/L	0.73[c], 0.0002[b]	NA	NA	NA	NA
Diazinon	µg/L	NS	NA	0.094	0.090	NA
Chlorpyrifos	µg/L	0.083[d], 0.041[b]	NA	0.025	0.030	NA
Boron	µg/L	NS	NA	456.47	583.89	905
Nitrogen (as Nitrate)	mg/L		0.5	4.2	12.98	4.34
Phosphorus	mg/L	NS	2.0	0.77	0.37	1.26

Source: IID and USBR 2002

NA= Not Available

NS = No Standard

[a] Colorado River RWQCB Water Quality Objective for average annual TDS discharges (does not apply to agricultural discharges)

[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration

[c] EPA Aquatic Life Criteria, Criterion Maximum Concentration

[d] EPA Aquatic Life Criteria, Criterion Maximum Concentration

Table 3.1-4. Water Quality in Drains Associated with the Alamo River

Parameter	*Units*	*Water Quality Standard*	*Alamo River 1996-1999*		
			SOUTH CENTRAL DRAIN	HOLTVILLE MAIN DRAIN	OUTLET TO SALTON SEA
TDS	mg/L	4000[a]	2,269	2,347	2,318
Selenium	µg/L	5.0[b]	8.77	5.63	7.53
Turbidity	mg/L	200 [c]	328.52	175.37	300.37
Pesticides					
DDD	µg/L	0.00083[d]	NA	NA	NA
DDE	µg/L	0.00059[d]	NA	NA	NA
DDT	µg/L	0.00059[d]	NA	NA	NA
Toxaphene	µg/L	0.73[e], 0.0002[b]	NA	NA	NA
Diazinon	µg/L	NS	0.032	0.055	NA
Chlorpyrifos	µg/L	0.083[e], 0.041[b]	0.025	0.025	NA
Boron	µg/L	NS	438.33	609.44	558.33
Nitrogen (as Nitrate)	mg/L	NS	9.89	8.3	6.4
Phosphorus	mg/L	NS	0.74	0.61	0.75

Source: IID and USBR 2002, Colorado River RWQCB 1994.

NA= Not Available

NS = No Standard

[a] Colorado River RWQCB Water Quality Objective for average annual TDS discharges (does not apply to agricultural discharges)

[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration

[c] Draft TMDL Standard for Alamo River

[d] EPA Human Health Criteria

[e] EPA Aquatic Life Criteria, Criterion Maximum Concentration

between ID-1 (where Colorado River water can be used) and the remainder of the Coachella Valley, but rather breaks the Coachella Valley into the Upper and Lower Valley. ID-1 encompasses the entire Lower Coachella Valley and a small portion of the Upper Valley. Water use data for the Lower Coachella Valley is generally representative of ID-1, although actual water use data for ID-1 would be slightly higher than those of the Lower Valley.

Table 3.1-5 summarizes the recent historic conditions for diversion of Colorado River water by CVWD. In 1999, CVWD diverted 333.8 KAFY of Priority 3a and 6a Colorado River water. From 1990 to 1999, annual average diversions of Priority 3a and 6a Colorado River water by CVWD were 330.9 KAF. Between 1964 and 1999, CVWD diversions of Colorado River water ranged from a minimum of approximately 310 KAFY to a maximum of approximately 571 KAFY.

Table 3.1-5. Recent Historic Conditions for CVWD Colorado River Water Diversions

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
CVWD Colorado River Diversions	333.8	330.9
Source: Data based on USBR Annual Decree Accounting Reports		

CVWD receives Colorado River water from the Coachella Canal. The Coachella Canal begins at a turnout on the All American Canal just upstream of Drop 1, and terminates at Lake Cahuilla near La Quinta in the Coachella Valley. The 122-mile-long Coachella Canal has been lined with the exception of 33.2 miles from siphon 7 to siphon 14 and from siphon 15 to siphon 32. The canal has a capacity of approximately 1,300 cfs. Annual seepage from the unlined reach to the shallow groundwater aquifers from the Coachella Canal is estimated to be approximately 32 KAF (USBR and CVWD 2001). Surface manifestations of the seepage include scattered natural and exotic vegetation in otherwise dry landscape, moist soil, surface trickles, and pools down slope from the canal, and the existence of phreatophytes in perennially wet areas (USBR and CVWD 2001). Seepage flows from the canal in the unlined reach move short distances toward the Salton Sea and either daylight above a perched lens of clay, or under confined conditions seep into regional groundwater, depending on the local geology.

CVWD operates and maintains a collector system of 166 miles of pipes and 21 miles of open ditches, to serve as a drainage network for irrigated lands within the valley. All agricultural drains empty into the CVSC except those at the southern end of the valley, which flow directly to the Salton Sea (CVWD 2000). This system serves nearly 38,000 acres and receives water from more than 2,293 miles of on-farm drain lines (CVWD 2000).

The Coachella Valley groundwater basin extends from the northwestern edge of the Upper Valley (roughly defined as the area northwest of Washington Street) near the unincorporated community of Whitewater to the Salton Sea in the Lower Valley (roughly defined as the area southeast of Washington Street). The hydraulic gradient in the Coachella Valley is towards the Salton Sea. The Upper Valley aquifer is generally unconfined, although there is a lens of clay in the southern portion that results in both confined and unconfined conditions. The Lower Valley aquifer occurs in four main hydrogeologic units: the semi-perched aquifer, the upper aquifer, the aquitard, and the lower aquifer. The semi-perched aquifer is unconfined, while the upper and lower aquifers are confined. In 1999, groundwater supplies accounted for approximately 56 percent of the Coachella Valley's water supply (CVWD 2000).

Since the early part of the previous century, the Coachella Valley has been dependent on groundwater as a source of supply. CVWD and Desert Water Agency (DWA) recognized the need to supplement the Valley's water supply and in 1963 became 2 of 29 agencies holding

long-term water supply contracts with the State of California for SWP water. CVWD's entitlement to SWP water is 23,100 AFY while DWA's is 38,100 AFY for a combined total of 61,200 AFY.

To avoid the estimated $150 million cost of constructing an aqueduct to bring SWP water directly to the Coachella Valley, CVWD and DWA entered into an agreement with MWD to exchange CRA water for SWP water. The exchange agreement allows the CVWD and DWA to trade its SWP entitlements to MWD on an "acre-foot for acre-foot" basis for Colorado River water. In 1972, CVWD began construction of the Whitewater River Spreading Facility to allow the exchange water as well as natural flows in the Whitewater River to seep into the valley's underground water supply. In 1973, CVWD and DWA began recharging the groundwater basin with exchanged SWP water.

Even with this artificial recharge, the demand for groundwater annually exceeded the inflows into the groundwater basin. The condition of a groundwater basin in which the outflows (demands) exceed the inflows (supplies) to the groundwater basin is called "overdraft." CVWD and DWA recognized the need for additional imported water to eliminate the groundwater overdraft. Since 1996, the two districts have purchased additional SWP water, as available, resulting in average purchases of 142,000 AFY. The Coachella Valley Water Management Plan addresses the future uncertainties of these additional SWP water supplies.

The annual overdraft in the Coachella Valley was still estimated to be 136 KAF (32 KAF in the Upper Valley and 104 in the Lower Valley) in 1999 even with the supplemental purchases. The cumulative Coachella Valley overdraft through 1999 was estimated to be 5,100 KAF (3,700 KAF in the Lower Valley and 1,400 KAF in the Upper Valley). Since 1973 nearly 1.7 MAF of Colorado River water has been delivered. CVWD issued the Coachella Valley Draft Water Management Plan in November 2000 to address groundwater overdraft and other water management issues. Environmental documentation for the Coachella Valley Water Management Plan is currently being prepared and a draft Program EIR is expected to be released in early 2002.

Water Quality

Water quality of the CVWD's water supply is heavily dependent on the quality of imported supplies, and thus, on Colorado River quality at Imperial Dam, CRA water quality and Coachella Valley groundwater quality. The water quality description for CVWD's Colorado River supplies is the same as IID's Colorado River water quality description discussed in section 3.1.1.2. CRA water quality is described in section 3.1.1.4.

Table 3.1-6 summarizes select water quality for the Coachella Canal for the period 1987 to 1999. For a description of general surface water quality parameters refer to the Water Quality discussion in section 3.1.1.2.

The water quality in the Upper Coachella Valley unconfined aquifer is characterized by TDS concentrations that are generally lower than those measured in the unconfined aquifers in the Lower Valley (CVWD 2000). TDS concentrations in both the Upper Valley confined and unconfined aquifers range from 180 to 750 mg/L. The Upper Valley TDS levels are affected by

Table 3.1-6. Coachella Canal Water Quality

Parameter	*Units*	*Water Quality Standard*	*Canal Water 1987-1999* AVERAGE
TDS	mg/L	500[a], 1000[b]	748
Selenium	µg /L	5.0[c]	3.5
Turbidity	mg/L	5[a]	NA
Pesticides	µg/L	varies	NA
Boron	µg/L	NS	NA
Nitrogen (as Nitrate)	mg/L	10[a]	0.03
Phosphorus	mg/L	NS	NA

Source: CVWD unpublished file data. Samples taken at Avenue 52.

NA= Not Available

NS = No Standard

[a] EPA primary drinking water standard

[b] EPA secondary drinking water standard

[c] EPA Aquatic Life Criteria, Criterion Continuous Concentration

surface water return flows percolating back into the basin and recharge of Colorado River water in spreading basins causing a gradual increase in TDS over time.

The Lower Valley aquifer is composed of three major water bearing "layers," a semi-perched aquifer (upper-most layer), the upper aquifer, and the lower aquifer (the deepest or furthest underground layer). The groundwater quality of the Lower Coachella Valley varies among these water bearing layers or aquifers. The upper portions and margins of the Lower Valley aquifer system are affected by percolation of relatively high TDS agricultural return flows. The semi-perched aquifer is of generally poor quality, with TDS concentrations averaging about 2,200 mg/L (CVWD 2000). In the upper aquifer, TDS concentrations average approximately 540 mg/L. In the lower aquifer, the average TDS concentration is approximately 160 mg/L. Unlike TDS levels in the upper portion of the aquifer system, TDS concentrations in the lower portions of the aquifer system have remained relatively unchanged since the 1930s.

Water quality in surface drains in the Coachella Valley and in the CVSC is dependent on the source water quality, soil type and agricultural practices. Table 3.1-7 summarizes water quality of surface drains in the Coachella Valley and the CVSC. With the exception of data for pesticides, and phosphorus, for which only one year of data is available, all data is summarized from samples taken from 1987 to 1999. Table 3.1-7 demonstrates that surface drains in the Coachella Valley currently exceed the 5 µg/L standard.

3.1.1.4 The Metropolitan Water District of Southern California

MWD is a public agency organized in 1928 under the authority of the Metropolitan Water District Act, with the primary purpose of developing, storing and distributing water to member public agencies within the southern California coastal plain for domestic and municipal uses. MWD sells water to 26 member agencies that serve a 5,200 square-mile area of Southern

California and over 17 million people, including SDCWA. MWD obtains most of its water supply from the Colorado River and the SWP.

Table 3.1-7. Water Quality of Surface Drains and the CVSC from 1987 to 1999 (unless otherwise noted)

Parameter	*Units*	*Water Quality Standard*	*Surface Drains Average*	*CVSC Average*
TDS	mg/L	2500[a]	1970	1,474
Selenium	µg/L	5.0[b]	5.3	3.3
Turbidity	mg/L	NS	NA	43 – 110[g]
Pesticides				
DDD	µg/L	0.00083[c]	NA	ND[e]
DDE	µg/L	0.00059[c]	NA	ND[e]
DDT	µg/L	0.00059[c]	NA	ND[e]
Toxaphene	µg/L	0.73[d], 0.0002[b]	NA	ND[e]
Diazinon	µg/L	NS	NA	ND[f]
Chlorpyrifos	µg/L	0.083[d], 0.041[b]	NA	ND[f]
Boron	µg/L	NS	0.55	0.57
Nitrogen (as Nitrate)	mg/L	NS	21	15.6
Phosphorus	mg/L	NS	NA	0.95 – 1.1[c]

Source: CVWD unpublished file data. Samples taken at Avenue 52 and Avenue 72
NA= Not Available
NS = No Standard
ND = Not Detected
[a] Colorado River RWQCB Water Quality Objective for maximum TDS (does not apply to agricultural discharges)
[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration
[c] EPA Human Health Criteria
[d] EPA Aquatic Life Criteria, Criterion Maximum Concentration
[e] These constituents were not detected in three samples taken between May 2000 and May 2001
[f] These constituents were not detected in two samples taken between May 2000 and November 2000
[g] This is the range observed in three samples taken from June 2000 to June 2001

Table 3.1-8 summarizes recent historic conditions for diversion of Colorado River water by MWD. MWD diverts water from Priority 4, 5a and 5b of the priority system. Water available under the IID/MWD 1988 Agreement and subsequent agreements is accounted for, at MWD's option, under Priority 4, 5a, 5b, or MWD/Reclamation's Surplus Flows Contract. Priority 5a and 5b water is available only in surplus years as designated by the Secretary, as water designated to but unused by other Priority holders, or as water designated to but unused by the States of Arizona or Nevada.

In 1999, MWD diverted 1,212.1 KAFY from the Colorado River. This includes 550 KAF of Priority 4 water, and 662 KAF of Priority 5a and 5b water (which includes 108.5 KAFY of water conserved by IID and an equivalent amount made available to MWD), and 67 AF of surplus water under the MWD/Reclamation Surplus Flows Contract.

Table 3.1-8. Recent Historic Conditions for MWD Colorado River Water Diversions

All numbers rounded and in KAFY

	1999	*1990-1999 Average*	*1990-1999 Adjusted Average*
MWD Colorado River Diversions	1,212.1	1,191.2	1,233.8

Source: Data from USBR Decree Accounting

From 1990 to 1999, MWD diverted, on average 1,191.2 KAFY of Colorado River water. This includes 550 KAFY of Priority 4 water in all 10 years, an average of 529.2 KAFY of Priority 5a and 5b water (including an average of 67.3 KAFY of Priority 3a water conserved by IID and made available to MWD), an average of 98.7 KAFY of unused Priority 3 water, and an average of 13.3 KAFY of surplus water under the MWD/Reclamation Surplus Flows Contract. The water available under the IID/MWD 1988 Agreement and subsequent agreements varied from a minimum of 6.1 KAFY to a maximum of 108.5 KAFY.

A 1990 to 1999 adjusted average was developed to simulate conditions that would have occurred if the water conservation under the IID/MWD 1988 Agreement and subsequent agreements had been fully implemented by the beginning of 1990. In this case, IID would have conserved, and reduced its diversion of Colorado River water by a total of 110 KAFY for the entire 10-year period, and an equivalent amount of water would have been made available to MWD throughout the time period (for purposes of analysis, this is assumed to be 110 KAFY). The 1990 to 1999 adjusted average for MWD is 1,233.8 KAFY.

The 242-mile long CRA, built and operated by MWD, carries Colorado River water from the Whitsett Intake Pumping Plant at Lake Havasu to the MWD service area. The capacity of the CRA is approximately 1.3 MAFY. MWD endeavors to operate the CRA at full capacity, and to maintain supplies to the CRA.

Water Quality

Table 3.1-9 summarizes water quality parameters for the Colorado River in Lake Havasu at the Whitsett Intake from 1984 to 1999 (unless otherwise noted).

3.1.1.5 San Diego County Water Authority

SDCWA is the largest water purchaser of the 26 member agencies of MWD. SDCWA serves approximately 2.8 million people in a service area of 1,420 square miles. Typically, 70 to 95 percent of the SDCWA water supply is imported from MWD. Local supplies make up the remainder of the water available to the SDCWA service area. Water use in the SDCWA service area during fiscal year 1999 (from July 1, 1998 to June 30, 1999) totaled 619.4 KAF, of which 453.7 KAF was imported water received from MWD (personal communication, Tim Bombardier).

Table 3.1-10 summarizes recent historic conditions for SDCWA deliveries from MWD. From fiscal year 1990 to 1999, SDCWA received an average of 469.3 KAFY from MWD. The amount of imported water delivered to SDCWA is heavily dependent on local weather patterns and economic conditions, ranging from 392.9 KAF to 642.8 KAF during the decade from 1990 to

1999. Water deliveries generally decline during years of abundant rainfall. In contrast, the SDCWA received 601.5 KAF from MWD during fiscal year 2000, a year when local supplies dwindled due to lack of rainfall.

Table 3.1-9. Water Quality in Lake Havasu

Parameter	*Units*	*Water Quality Standard*	*Lake Havasu Average*
TDS	mg/L	500[a], 1000[b], 747[c]	607.9
Selenium	µg/L	5.0[d]	NA
Turbidity	mg/L	5[a]	1.2
Pesticides	µg/L	Varies	NA
Boron	µg/L	NS	0.13[e]
Nitrogen (as Nitrate)	mg/L	10[a]	0.03
Phosphorus	mg/L	NS	NA

Source: IID and USBR 2002, unpublished data on the CRA water quality
NA= Not Available
NS = No Standard
[a] EPA primary drinking water standard
[b] EPA secondary drinking water standard
[c] Salinity Control Forum salinity objective below Parker Dam
[d] EPA Aquatic Life Criteria, Criterion Continuous Concentration
[e] Data from monthly samples 1990-1999

Within the SDCWA distribution system are connections to deliver water to two of the San Luis Rey Indian water rights settlement parties: the City of Escondido and Vista Irrigation District. The collective group consisting of the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, the City of Escondido, and the Vista Irrigation District are named in Public Law 100-675 (1988) that provides for settlement of water right claims and authorizes lining of the All American and Coachella Canals.

Table 3.1-10. Recent Historic Conditions for SDCWA

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
SDCWA Deliveries from MWD	453.7	469.3

Source: personal communication, Tim Bombardier

Water Quality

SDWCA water quality is heavily dependent on the water quality of supplies delivered from MWD. SDCWA receives MWD Colorado River water from both Lake Skinner and from a bypass pipeline north of the lake. Generally, SDCWA receives a blend of SWP and Colorado River water. The mix varies depending on water management policies and practices at MWD, but the large majority of water delivered to SDCWA comes from the Colorado River. Historically, SDCWA has received up to 100 percent Colorado River water from MWD.

3.1.1.6 Other Areas

Colorado River

The lower Colorado River has a wide variation in annual inflows of source waters, which is typical of river systems within semi-arid and arid climate zones. This natural variation had historically resulted in wide variations in annual river flows. The development of dams and other facilities have significantly modified this natural variation by storing water for controlled releases. Agricultural, urban and power generation demands and the associated dam releases to meet these demands have led to daily and monthly variations in flows. The volume of flow in the River affects water levels (stage), surface area, and salinity levels (USBR 2000b).

The Lower Basin dams and reservoirs include Hoover, Davis, Parker, Headgate Rock, Palo Verde Diversion, Imperial, and Laguna. Morelos Dam, located just below the NIB is the last dam on the Colorado River. It is the operation of these reservoirs, particularly Lake Mead, that determine the existing hydrology in the Lower Basin.

Lake Mead provides the majority of the storage capacity for the Lower Basin. Historically, in the period 1980 to 2000, annual Lake Mead elevation ranged from 1,170 to 1,220 feet msl, a variation of 50 feet. In 1999, Lake Mead's average annual elevation was 1,210 ft msl; the 1990-1999 average annual elevation in the reservoir was 1,191 ft msl. Unless flood control is necessary, Lake Mead and Hoover Dam are operated to meet downstream demands, at least 9.0 MAF annually, for consumptive use by the Lower Division States plus the United States' obligation under the U.S.-Mexico Water Treaty. Within these operations, Hoover Dam releases are managed on an hourly basis to maximize the value of generated power.

The close proximity of Lake Mohave to Hoover Dam effectively dampens the short-term fluctuations below Hoover Dam. Since 1980, annual release from Lake Mead has varied from a low of 7.4 MAF to a high of 21.4 MAF. Within a given month, daily releases can vary by more than 22,000 cfs. Since 1980, within any given non-flood year, flows through Hoover Dam have ranged from 750 cfs to 27,000 cfs. Hourly flows are managed to optimize hydroelectric power production. The fluctuation within daily, monthly, and seasonal flows is generally less than that of hourly flows.

Parker Dam's primary purpose is to provide reservoir storage from which water can be pumped into MWD's CRA and the Central Arizona Project Aqueduct. The CRA delivers water to the MWD service area. Parker Dam also has a power plant function and may provide a minimal amount of flood control, capturing and delaying flash floods into the River from tributaries below Davis Dam. Parker also re-regulates water released from the Hoover and Davis power plants, thus regulating river flow for downstream irrigators. Releases at Parker Dam are scheduled on a daily basis to meet the short-term demands of Colorado River water users located downstream. The hourly release profile is determined by the electric service customer requirements.

Annual surface water flow in the River, measured just downstream from Parker Dam, averaged approximately 9,000 KAF for the period of record, from 1935 to 1999, but varied from a maximum of approximately 21,100 KAF to a minimum of approximately 5,500 KAF (USGS 2000). From 1990 to 1999, annual flow averaged 7,348 KAF downstream from Parker Dam

(USGS 2000). The overall effect of diversions, local surface inflows, evapotranspiration, and groundwater recharge, is a decrease in flow between Parker and Imperial dams. Long-term average annual flow just upstream of Imperial Dam from 1935 to 1999 was approximately 8,100 KAFY (USGS 2000). From 1990 to 1999, the average annual flow just upstream of Imperial Dam was 6,280 KAFY (USGS 2000).

Table 3.1-11 summarizes recent historic conditions for Lake Mead and the Colorado River below Parker Dam and above Imperial Dam. Colorado River flows below Parker Dam at the USGS gage 09427520 were 8,351 KAFY in 1999, and averaged 7,348 KAFY from 1990 to 1999 (USGS 2000). Colorado River flows above Imperial Dam at USGS gage 09429490 were 7,713 KAFY in 1999, and averaged 6,280 KAFY from 1990 to 1999 (USGS 2000).

Table 3.1-11. Recent Historic Conditions for the Colorado River

	1999	*1990-1999 Average*
Lake Mead Average Annual Elevation [a]	1,210	1,191
Colorado River Flows Below Parker Dam [b]	8,351 KAFY	7,348 KAFY
Colorado River Flows Above Imperial Dam [b]	7,173 KAFY	6,280 KAFY
[a] Data provided by R. Carson, USBR. [b] USGS 2000		

Water levels depend on the total volume of water moving through the River at any particular point in time. Dam releases are made by Reclamation according to operational policies. During periods when flood control releases are not required, releases from Parker Dam fluctuate daily to meet the water demands of downstream users. Releases can be adjusted hourly to meet power generation demands. The duration, timing and volume of high and low flows are controlled by the release schedules of the dams, which buffer water levels throughout the lower Colorado River from extreme volume changes.

The surface water levels in the Parker to Imperial dam reach of the Colorado River have daily variations, with a higher volume usually released from the reservoirs during the day. Just downstream of Parker Dam, the typical daily variation is about 5 feet in the summer when irrigation demand is high. In winter the daily variation in surface water levels is reduced to about 2.5 feet due to lower irrigation demand and a more consistent demand in general. By the time water reaches Imperial Dam, fluctuation is dampened to approximately 0.5 feet by the channel storage and daily variations in River stage (USBR and IID 1994).

In addition to the daily variations in water levels, there are seasonal and annual variations due to rainfall and reservoir releases. For example, the difference between maximum and minimum monthly stage for an individual month from October 1988 to September 1999 ranged from 0.11 to 7.09 feet. Monthly flows throughout the same time period varied from 100 to 1,000 KAF. The comparison of water levels to daily or annual water volumes indicates that volumes may vary widely.

There are a few lakes off the mainstem of the Colorado River that are affected by flow and surface elevations of the River. Cibola Lake, which is part of the Cibola National Wildlife Refuge has inlet and outlet control structures to maintain desired lake levels. Three Fingers Lake also has inlet and outlet control structures. Ferguson Lake, within the Imperial National Wildlife Refuge, does not have control structures, although the lake is separated from the River by a sandbar that blocks direct connection to the Colorado River. Water levels at Ferguson Lake

are maintained by percolation from the river. Other lakes such as Adobe and Martinez Lakes, have no flow control structures, and water levels are dependent on levels of the River or reservoirs on the River.

WATER QUALITY

In addition to salinity, sediments, and pesticides, described in section 3.1.1.2, perchlorate is also a water quality concern in the Colorado River system.

Ammonium perchlorate, the most common form of perchlorate contamination, is manufactured for use as an oxygen-adding component in solid propellant for rockets, missiles, and fireworks (EPA 1999, 2001). Perchlorate contamination in surface waters has been given increasing scrutiny due to potential health effects on human thyroid function (EPA 1999, 2001). With the development of analytical methods since 1997, perchlorate can now be detected at levels as low as 4 parts per billion (ppb). The use of new methods has allowed the identification of perchlorate in the water supply of over 15 million people in California, Nevada, and Arizona and in the surface water or groundwater in another eleven states throughout the country (EPA 1999).

There is currently no federal National Primary Drinking Water Regulation for perchlorate. Perchlorate is on the EPA's Safe Drinking Water Act's Contaminant Candidate List as of 1998 (EPA 1999, 2001) and the EPA has established 1 ppb as the provisional reference dose for adults (EPA 1999, 2001a; CA DHS 2002). California's Department of Health Services (CA DHS) has set 4 ppb as the action level for drinking water and has proposed 6 ppb as a public health goal (CA DHS 2002). .

In California, perchlorate is considered to be an "unregulated chemical for which monitoring is required" (Title 22, California Code of Regulations §64450) (CA DHS 2001). CA DHS advises water utilities to remove drinking water supplies from service if they exceed the 4 ppb action level. If the contaminated source is not removed from service due to system demands and if drinking water that is provided by the utility exceeds the action level, CA DHS will advise the utility to arrange for public notification to its customers (EPA 2001). The proposed 6 ppb public health goal is the level at which CA DHS feels the contaminant concentration in drinking water does not pose a significant risk to health (CA DHS 2002)

Perchlorate has been detected in the water of the Colorado River and Lake Mead. Perchlorate concentrations have ranged from less than 4 ppb to 176 ppb at the Southern Nevada Water Authority's water intake at Lake Mead (EPA 1999, SNWA unpublished data). The EPA identified two facilities that manufactured ammonium perchlorate in Henderson, Nevada, that were found to have released perchlorate to groundwater. Kerr-McGee Chemical Company, with the Nevada Division of Environmental Protection (NDEP) and Reclamation, worked together to begin intercepting a major surface flow of perchlorate-laden water along Las Vegas Wash. This program is now ongoing and has significantly reduced the amount of perchlorate entering the Las Vegas Wash, Lake Mead, and the Colorado River. This remediation program will continue into the future and will continue to reduce perchlorate contamination in groundwater and in Colorado River water in Lake Mead and downstream (USBR 2000b).

Salton Sea

The Salton Sea is a large saline lake, inundating the lowest elevations of the Imperial and Coachella valleys. The current Salton Sea was created when a temporary canal on the Colorado River failed in 1905, resulting in an uncontrolled diversion of the Colorado River into the Imperial and Coachella valleys for 18 months. The Salton Sea is a terminal lake without a surface water outlet. The water level in the Salton Sea has varied since it was created in the 1905 flood, and has been at approximately elevation –227 feet msl since the 1980s (IID and USBR 2002). The relatively consistent elevation indicates that annual inflow to the Salton Sea has approximately equaled the annual rate of evaporation. Recent trends indicate that inflows, and thus the Salton Sea elevation, are in decline (personal communication, P. Weghorst, 2001).

Inflow to the Salton Sea varies from year to year depending on rainfall and drainage from local runoff and irrigation districts. Table 3.1-12 summarizes the relative contributions of source inflows to the Salton Sea for the years 1950 to 1999. Agricultural flows reach the Salton Sea via the Alamo River, New River, agricultural drains, and Coachella Valley Stormwater Channel. Groundwater and direct precipitation account for only a small percentage of the Salton Sea's inflow. Further information regarding the surface hydrology associated with the Salton Sea is available in the IID Water Conservation and Transfer Project EIR/EIS. In the future, inflow to the Salton Sea is expected to decrease.

Table 3.1-12. Sources of Salton Sea Inflow

Source of Inflow	*Average Total Annual Inflow 1950 – 1999 (AF)*	*Percent Contribution of Total Inflow*
Alamo River	623,678	46.4
New River	441,475	32.9
IID Agricultural Drains (that directly drain to the Salton Sea)	93,250	6.9
Surface Flows from CVWD (including Coachella Valley Stormwater Channel)	115,053	8.6
Subsurface flows from CVWD	1,539	0.1
Unmeasured inflows[a]	68,400	5.1
Total	1,343,395	100 percent

[a] Unaccounted for direct runoff, unmeasured inflows from IID and CVWD as well as errors and/or omissions resulting from development of historic water balance.
Source: Salton Sea Accounting Model (Weghorst, USBR 2001)

The water quality of the Salton Sea is a function of its source waters, agricultural and municipal wastewater. Because the Salton Sea has no natural outlet, salt loads entering the water tend to accumulate. Given the Salton Sea's evaporation rate of nearly 6 feet per year and minimal precipitation, the entire Salton Sea would evaporate within about 10 years if all inflows were stopped. In the 1950s and 1960s salinity fluctuated between about 31,000 and 39,000 mg/L. From 1990-1999, the average salinity was 42,600 mg/L and in year 1999, the average salinity of the Salton Sea (measured as TDS concentration) was approximately 43,918 mg/L (IID and USBR 2002).

The Colorado River RWQCB has identified the Salton Sea and a number of its tributaries as impaired and subject to planned TMDL requirements for pathogens, nutrients, pesticides, selenium, and silt. Nutrient loading (ammonia, nitrate, phosphate) is a result of agricultural practices and wastewater management practices within the Salton Sea basin as well as industrial and municipal effluent from Mexico (USBR and SSA 2000).

Table 3.1-13 summarizes approximate elevation and recent historic conditions for the Salton Sea.

Table 3.1-13. Recent Historic Elevation and Salinity Conditions for the Salton Sea

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
Water Elevation (feet below msl)	227.5[a]	227.7[a]
Area (acres and sq. miles)	235,000 acres[b]	232,600 acres[b]
Salinity as TDS (mg/L)	42,929[c]	42,681[d]

(a) USGS 2000, Salton Sea Gage 10254005. Data through 09/1999.
(b) Area based on elevation/surface area data developed by Reclamation (USBR and SSA 2000)
(c) IID records.
(d) Personal Communication John Scott, Metropolitan Water District of Southern California, 2002.

The New and Alamo rivers are the main sources for nutrients (ammonia, nitrate, phosphate), pesticides, and herbicides to the Salton Sea. These are a result of farming and wastewater disposal practices within the Salton Sea basin, including the Mexicali Valley in Mexico.

The Republic of Mexico

The United States Treaty with Mexico provides Mexico with a right to receive 1,500 KAFY plus 200 KAF of surplus water, when available. Mexico received 1,700 KAF in compliance with the treaty in both 1999 and 2000 (USBR 1999). Flow in excess of treaty deliveries to Mexico can occur under three conditions, these are: (1) operational activities upstream (for example, cancelled water orders, maintenance activities, etc.); (2) Gila River flood events; and (3) flood control releases along the mainstream of the Colorado River (USBR 2000b).

The Colorado River Delta aquifer near the U.S. – Mexico border extends north and south from the All American Canal, from approximately 10 miles west of the Coachella Canal, and eastward to the Yuma Valley in Arizona. Seepage from the All American Canal contributes 10 to 15 percent of the volume of this aquifer. The remainder is recharge from the Colorado River, seepage from canals in Mexico, and percolation of irrigation return flow in the Bard and Yuma valleys in the U.S. and the Mexicali Valley, Mexico.

WATER QUALITY

The salinity of Colorado River water delivered to Mexico is the subject of Minute 242 of the International Boundary and Water Commission signed in 1974 (refer to section 3.1.1.1).

The average salinity of the Colorado River upstream of Morelos Dam at the NIB was 758 parts per million (ppm) in 1999 (International Boundary Water Commission [IBWC] 2001).

3.1.2 Impacts

3.1.2.1 Significance Criteria

The criteria listed below are based on Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant impact on water resources if it would:

- violate (or cause the violation of) any water quality standards or waste discharge requirement;
- substantially deplete groundwater supplies or interfere substantially with naturally occurring groundwater recharge;
- substantially alter the existing drainage pattern of the site or 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;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or,
- cause inundation by seiche, tsunami, or mudflow.

Alterations in elevation, depth, and surface area of water bodies, while not necessarily an impact to hydrology, can affect other resources such as aesthetics, biological resources and cultural resources. These potential effects are considered within the impact discussions for the specific resources affected.

3.1.2.2 Methodology

Baseline

Two baseline conditions were considered in the analyses of the impacts of implementation of the Proposed Project components. The first, the Existing Baseline condition is the status of the hydrologic resources during the recent historic period 1990-1999. This baseline is used to evaluate changes in flows in major facilities such as the All American Canal, Coachella Canal, and CRA. For example, for purposes of Existing Baseline, the CRA was assumed to be operated as it historically has at near or full capacity.

Agreement and subsequent agreements[1]. The QSA includes the quantification of Priority 6a water. Priority 6a water could be available in non-normal, surplus years as declared by the Secretary, and/or in years in which water apportioned to but unused by Arizona and/or Nevada is available to California entities.

The second baseline, the Future Baseline, is the projected trend of hydrologic resources during the next 75 years based on well-defined trends. Proposed project impacts on drainage in the IID and CVWD service areas, the Colorado River, and Salton Sea are measured against a Future Baseline. The Future Baseline for these resources was developed from previously prepared models. No additional simulations were necessary to evaluate the impacts of the Proposed Project on these resources. The following models were used to evaluate the potential impacts of the Proposed Project:

- Colorado River Simulation System to predict effects of reduced flows on Lake Mead reservoir levels, river flow, and salinity (details of this modeling process are provided in Appendix D and the Draft EIS Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, 2002). River operation parameters modeled and analyzed include the water entering the river system, storage in the system, reservoir releases from storage, and the water demands of, and deliveries to, the Basin States and Mexico. The model uses the 85-year natural flow record from 1906 through 1990 to estimate future inflows. Future Colorado water demands are based on demands and depletion projections supplied by the Basin States. The model simulates operation of Glen Canyon Dam, Hoover Dam and other Colorado River system elements consistent with the LROC.
- USBR Salton Sea Accounting Model, simulations developed as part of the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). The Salton Sea accounting model predicted hydrologic response to possible changes in the Salton Sea, specifically changes in inflow, elevation, surface area, and salinity. The model assumes that the hydrologic and salt load variability of the Sea would repeat in the future in a similar pattern.
- Corps of Engineers HEC-RAS computer simulations developed to assess river stage and groundwater elevations under various flow regimes for the Biological Assessment for the Proposed Interim Surplus Guidelines (USBR 2000a). Very detailed river stage and groundwater elevation modeling was performed for specific reaches under various flow regimes; specifically, river stage at seven points between Parker Dam and Imperial Dam were examined:
    - River Mile 192.2, Parker Dam;
    - River Mile 177.7, Headgate Rock Diversion Dam;
    - River Mile 152.0, Waterwheel Gage;

1 As described in Chapter 2, CVWD is entitled to up to 50 KAFY of water through the 1988 and 1989 agreement, however since the above agreements were implemented, the conditions necessary for CVWD's diversion of 50 KAF have not existed, and all water conserved under these agreements has been diverted by MWD. For the purposes of this PEIR, the description of existing conditions assumes that the amount of water conserved and transferred under the above agreements is 110 KAFY, and that all conserved water was used by MWD.

- River Mile 133.8, Palo Verde Diversion Dam ;
- River Mile 106.6, Taylor Ferry Gage ;
- River Mile 87.3, Cibola Gage; and
- River Mile 49.2, Imperial Dam.

Assuming reductions in flow in the Parker to Imperial river reach from of 200 KAFY, 300 KAF, 400 KAF, 500 KAF, 675 KAF, 948 KAF, to 1,553 KAF and 1,574 KAFY (in increments of 100 KAF) river flow was calculated at these seven points. From these river flows, river elevations were computed using cross-sectional survey data for 20 representative type-areas distributed throughout the affect reach. In addition, water surface elevations were used to calculate the effect on groundwater levels in areas adjacent to, but not directly connected to the River. Reduction in surface area of backwater and open river also was based on cross sectional data and backwater areas delineated in GIS. Because the range of flows analyzed under the Biological Assessment (400 KAFY) captures the changes potentially occurring under the Proposed Project, where applicable the Biological Assessment analysis is included as part of this section.

- CVWD Groundwater Model is a three-dimensional, numerical groundwater flow model of the Coachella Valley developed to provide a scientific tool to assist in managing groundwater in the Coachella Valley. The model depends on groundwater pumpage, natural recharge, return flows from irrigation, drain flows, aquifer data from well records and pump tests have been 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 represents a wide range of hydrologic conditions in the Valley. The model provides predictive simulations to estimate future hydrogeologic conditions throughout the Coachella Valley. In particular, model results were used to estimate annual drain flows, inflows from and outflows to the Salton Sea and flows between the Upper and Lower Valleys. For a more detailed discussion of the groundwater model, the reader is referred to the Water Management Plan (CVWD 2000).

- The Imperial Irrigation District Decision Support System (IIDSS) simulated the physical input and output processes that occur in delivering water to a farm, irrigating a crop, and predicting the resultant drainage outflow. Details of this modeling are provided in the Draft EIR/EIS IID Water Conservation and Transfer Project/Draft Habitat Conservation Plan (IID and USBR 2002). The model uses a projection of the historic record (1987 to 1998) to estimate future trends. The historic record contained information on river diversions, canal flows, farm turnout flows, climatic information, crops irrigated, drain flows, and water quality, Salton Sea elevation, and Salton Sea salinity. These data were adjusted based on reasonably foreseeable future changes, such as an increase in Colorado River salinity and then projected forward assuming similar weather as the past 75 years of record. The IIDSS provided the needed results to identify "wet water" conservation savings and changes in quality and quantity of drainage waters in the IID service area.

For both the Existing and Future baselines, two water diversion scenarios were analyzed to determine effects of the Proposed Project. The first, and most likely, scenario is where CVWD utilizes its options for the entire 100 KAFY of Priority 3a water conserved by IID. The second scenario is where CVWD does not exercise its option for the diversion of 100 KAFY of Priority 3a water conserved by IID at the Imperial Dam, and the water is diverted by MWD from Lake Havasu. For either scenario, a range of impacts would be expected given the variability of hydrology and changes in land and water use conditions from year to year. Ranges of impacts presented herein were based on the ranges expected from each Proposed Project component and on historical variations in return flow to the Salton Sea. Baseline conditions are outlined for each area of concern in sections 3.1.1.2 through 3.1.1.6.

The 1988 IID/MWD Conservation Program has undergone separate environmental analysis, and has been implemented. It is therefore considered as part of both the Existing and Future baselines. Within the analysis the full 110 KAFY from this agreement (which can range from 100 to 110 KAFY) is assumed to be conserved by IID and diverted by MWD, and is treated as a current and ongoing project.

3.1.2.3 Summary of Impacts

Under the Proposed Project, California water would be apportioned Colorado River Water per the Law of the River and allocated to the various users as modified by the implementation of the Proposed Project. Water made available through conservation actions within the IID service area would be transferred to other California agencies to assist the State in remaining within its normal year 4.4 MAF apportionment. Under the Proposed Project, these conservation actions would continue in surplus years, reducing California's demand for and use of Colorado River surplus water relative to the Baseline.

Imperial Irrigation District

The Proposed Project would reduce the amount of Colorado River water that IID would need to divert through the implementation of conservation measures. Table 3.1-14 outlines the changes in flows in the All American Canal and Colorado River water diversions by IID, including diversions for use in the service area, relative to Existing Baseline.

IID COLORADO RIVER WATER DIVERSIONS FOR USE IN THE SERVICE AREA

As shown in Table 3.1-14 ("IID Colorado River water diversions for use in the service area" column), assuming that all of the Proposed Project components are implemented, there would be a maximum of 311.5 KAF annual reduction in IID's Colorado River water diversion, relative to Existing Baseline, for use in the IID service area, subject with compliance to the IOP. IID plans to accomplish this level of conservation by both voluntary on-farm conservation (which could include fallowing) and system improvements as discussed in section 2.5. This decrease in delivery to the service area is not an impact to hydrologic resources although there are indirect effects to other resources.

IID COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-14 ("IID Colorado River water diversion" column), implementation of QSA program components would result in an annual reduction in IID's Colorado River diversions of up to approximately 379 KAF (consisting of 300 KAFY from the conservation and transfer agreements, up to 11.5 KAFY to Miscellaneous PPRs and Federal Reserved Rights, and reduced another 67.7 KAFY through lining of the All American Canal), relative to Existing Baseline. However, canal lining would not result in a change in volume available for consumptive use in the IID service area. With implementation of the Proposed Project, IID

Table 3.1-14. QSA Changes in Flows in the All American Canal and Colorado River Water for Use in the IID Service Area in a Normal Year Relative to Existing Baseline

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	ALL AMERICAN CANAL FROM IMPERIAL DAM TO PILOT KNOB		ALL AMERICAN CANAL FROM PILOT KNOB TO DROP 1		*All American Canal from Drop 1 to Drop 3*	*IID Colorado River Water Diversions for Use in the Service Area*	*IID Colorado River Water Diversions*
	CVWD use of First and Second 50 KAFY	*MWD use of First and Second 50 KAFY*	*CVWD use of First and Second 50 KAFY*	*MWD use of First and Second 50 KAFY*			
IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	20	20	20	20	0	0	0
IID/SDCWA Water Conservation and Transfer Agreement[b]	(200)	(200)	(200)	(200)	(200)	(200)	(200)
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	0	(100)	0	(100)	(100)	(100)	(100)
All American Canal Lining	(67.7)	(67.7)	(47.4)	(47.4)	(20.3)	0	(67.7)
Coachella Canal Lining	(26)	(26)	(26)	(26)	0	0	0
CVWD/MWD SWP Transfer and Exchange	35	35	35	35	0	0	0
Use of water by Miscellaneous PPRs and Federal Reserved Rights[d]	(14.5)	(14.5)	(14.5)	(14.5)	(11.5)	(11.5)	(11.5)
Change in Flow with the QSA	**(253.2)**	**(353.2)**	**(232.9)**	**(332.9)**	**(331.8)**	**(311.5)**	**(379.2)**

Note: This is a water balance table. Values are not actual river or canal flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the proposed QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise their option.

(d) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. .Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

would voluntarily limit Priority 3a diversions to 3,100 KAFY as adjusted in the QSA and IOP. Implementation of the Proposed Project would result in the quantification of Priority 3a diversions by both IID and CVWD to approximately their current (1999) and historic diversion amounts (1990 to 1999), thereby allowing both agencies to better determine their annual water supply for their respective service areas.

This reduction in diversion of Colorado River water and limit on Priority 3a diversions by IID would not affect drainage patterns and runoff, or flood hazard and would not cause inundation. Therefore, this reduction in diversion of Colorado River water by IID, and IID's Priority 3a cap subject to compliance with the IOP are not considered a significant impact to hydrologic resources.

ALL AMERICAN CANAL

Flows in the All American Canal would be reduced between 229.2 and 350.2 KAFY, relative to Existing Baseline depending on the reach as outlined in Table 3.1-14. Seepage would be reduced by approximately 75 percent if the unlined portions of the All American Canal from Pilot Knob to Drop 3 were lined. This reduction of seepage (67.7 KAFY), would reduce groundwater inflow to the East Mesa area by approximately 7 KAFY. Shallow groundwater levels would drop near the newly lined sections and recharge of the local aquifer would be reduced, affecting groundwater levels and flow towards Mexico. This impact is not considered significant to local groundwater resources, as this water is not naturally occurring and subject to recovery. Loss of this use of groundwater recharged by the All American Canal is not considered significant as current users do not have rights to a continued supply of this seepage water (USBR and IID 1994). The All American Canal Lining Project would not conflict with the provisions of the 1944 water treaty with Mexico.

The All American Canal lining was addressed in a project specific EIS/EIR certified in 1994.

WATER QUALITY

The reduction in drainage water from IID's service area resulting from conservation measures implemented under the Proposed Project would cause an increase in concentration, although not total load, of various soluble constituents in drains in the Imperial Valley and the New and Alamo rivers, which discharge into the Salton Sea. This change in concentration has significant water quality impacts relative to Future Baseline conditions as illustrated in Table 3.1-15. As Table 3.1-15 illustrates, the decrease in the amount of water discharged from Alamo River and IID drains could result in selenium concentrations exceeding the EPA Aquatic Life Criteria for Continuous Concentration, and thus impact biological resources in these areas. This impact is considered a significant and unavoidable impact to water quality. Drainage water quality in the service area directly affects water quality in the New, Alamo, and Whitewater Rivers, as well as the Salton Sea. Table 3.1-16 describes overall trends in water quality in the service areas of IID and CVWD with implementation of the Proposed Project.

GROUNDWATER

The Proposed Project would result in a decrease in groundwater recharge in the IID service area, relative to Existing Baseline. This decrease would be a minor impact given the poor

quality and non-use of the groundwater in IID, and minor relative to the size of the IID groundwater aquifer. Overall the impact would be less than significant.

Coachella Valley Water District

Implementation of the Proposed Project would increase the amount of Colorado River water that could potentially be diverted by CVWD in a normal year, relative to Existing Baseline. This increase is within the historic range of Colorado River water diverted by CVWD. Table 3.1-17 outlines the changes in flows in the Coachella Canal, and Colorado River water diversions by CVWD including diversions for use in the Coachella's ID-1 service area (that portion of the Coachella Valley where Colorado River water can be used) in a normal year.

CVWD COLORADO RIVER WATER DIVERSIONS FOR USE IN THE SERVICE AREA

As shown in Table 3.1-17 ("CVWD Colorado River water diversions for use in the service area" column), implementation of the Proposed Project would result in a net increase in surface supplies available in a "normal year" to the CVWD service area from 52 to 152 KAFY, relative to Existing Baseline. This water would be used in place of local groundwater and would, therefore, reduce the need to use groundwater to meet demand. In conjunction with the Coachella Valley Water Management Plan, this is anticipated to correct the groundwater overdraft and result in an increase in drainage flows to the Salton Sea. This increase of Colorado River water supplies for use in the service area is a beneficial impact as it would correct the current groundwater overdraft problem in the Coachella Valley.

CVWD COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-17 ("CVWD Colorado River water diversions" column), implementation of the Proposed Project components would result in an increase of between 26 and 126 KAFY available for diversion in a "normal year" by CVWD, relative to Existing Baseline. With implementation of the Proposed Project, CVWD would voluntarily limit their Priority 3a diversions to 330 KAFY. The voluntary limitation of Priority 3a diversions by CVWD at 330 KAFY would not adversely impact groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation. The diversion limit would not be a significant impact.

COACHELLA CANAL

In 1999, the Coachella Canal flow was approximately 35 percent of capacity, and from 1990 to 1999, the annual average canal flow was also approximately 35 percent of capacity. The increase in diversions by CVWD would be approximately 6 to 16 percent of the canal's capacity, relative to Existing Baseline.

Seepage from the Coachella Canal would be reduced through the proposed canal lining project. Groundwater levels would be expected to decline near the newly lined section. This impact in and of itself, is not considered significant to local groundwater resources. Loss of this use of groundwater recharged by the Coachella Canal is not considered significant as current users do not have rights to a continued supply of this seepage water.

Table 3.1-15. QSA Changes to Hydrologic Features in the IID Service Area Relative to Future Baseline

Effect	*Impact*	*Impact Significance*
IID Surface Drainage Discharge to New River		
Decrease in the amount of water collected and discharged to the New River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while concentration of TSS would decrease. TDS would increase to 3,294 mg/L, but remain less than its significance criterion. Selenium would increase to 8.3 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.
New River at Outlet to Salton Sea		
Decrease in the amount of water collected and discharged from the New River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while the concentration of TSS would decrease. TDS would increase to 3,075 mg/L, but would be less than the significance criteria of 4,000 mg/L. Selenium would increase to 3.77 µg/L, less than the significance criterion.	Less than significant.
IID Surface Drainage Discharge to Alamo River		
Decrease in the amount of water collected and discharged to the Alamo River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while concentration of TSS would decrease. TDS would increase to 3,645 mg/L but remain less than its significance criterion. Selenium would increase to 9.25 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.
Alamo River at Outlet to Salton Sea		
Decrease in the amount of water collected and discharged from the Alamo River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while TSS would decrease. TDS would increase to 3,101 mg/L but still be below its significance criterion. Selenium would increase to 7.9 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the Alamo River.
IID Drains to Salton Sea		
Decrease in the amount of water collected and discharged by drains, concentrating certain constituents.	Under the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while TSS concentration would decrease. Selenium would increase to 6.69 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration. TDS would increase to 2,637mg/L, below the significance criterion.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Perchlorate	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in New River drains. IID reported perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in Alamo River drains. IID reported perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in the Whitewater River. CVWD water samples found no perchlorate in water from the Coachella Canal. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in drainage to the Salton Sea. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to the Salton Sea drainage area, and thus decreases potential exposure to perchlorate.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Boron	With the implementation of the Proposed Project, boron is expected to increase from the Baseline of 671 µg/L to 798 µg/L.	With implementation of the Proposed Project, boron is expected to increase from the Baseline of 522 µg/L to 657 µg/L.	From 1987 to 1999, the average boron concentration was 0.57 mg/L in the CVSC. Assuming boron concentrations would increase in proportion to future salinity increases in Colorado River water, the average boron concentration in the drains and the CVSC is projected to increase to 0.67 mg/L. In studies conducted as part of the water management plan, CVWD did not identify boron as a concern with implementation of the Proposed Project.	No specific projections were made to measure boron trends in the Salton Sea. However, boron is expected to increase in the New River, Alamo River, and CVSC which could lead to an increase in boron in the Salton Sea.
Nutrients	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the New River.	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Alamo River.	The average concentrations of nitrate and nitrite in the CVWD drains and the CVSC are 21 mg/L and 15.6 mg/L, respectively. No data is available for ammonia and phosphorus. Since agricultural cropping patterns are expected to remain the same in the future, no change in nutrient concentrations are expected as a result of the Proposed Project.	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Salton Sea and support Best Management Practices introduced under a future Salton Sea nutrient TMDL.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
TDS	With the Proposed Project,, salinity in the New River would increase from 2,485 mg/L to 3,294 mg/L.	With the Proposed Project,, salinity in the Alamo River would increase from 2,492 mg/L to 3,645 mg/L.	Salinity in agricultural drainage water to the CVSC would increase, as Colorado River water is used for irrigation rather than lower TDS groundwater. Salinity in the CVSC is anticipated to increase from 1,400 mg/L to 2,900 mg/L with implementation of the Proposed Project. Salinity in the CVWD drains would increase from 2,000 mg/L to 2,800 mg/L with implementation of the Proposed Project.	Over the period of the project (2002 to 2076), salinity of the Salton Sea is expected to increase from 44,000 mg/L, surpassing 60,000 mg/L between the years 2023 and 2030 and by year 2077 be as high as 80,000 mg/L to 90,000 mg/L.
Sediment	With the Proposed Project sediment in IID drainage to the New River is expected to decrease from 294 mg/L to 232 mg/L.	With the Proposed Project sediment in IID drainage to the Alamo River is expected to decrease from 252 mg/L to 194 mg/L.	With the increase in Proposed Project flow, and thus sediment in CVWD drainage to the Whitewater River may increase. The specific increase is unknown as no background sediment data is available, but is expected to be small due to the low velocities in the drains and the CVSC. Sediment concentrations in the CVSC would be less than during high flows (e.g., floods).	Though CVWD drainage and sediment contribution to the Sea will increase, with the decrease in IID flows and sediment, overall the Sea would experience a decrease in pesticide/herbicide load.
Pesticides	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Thus, under the Proposed Project, the amount of pesticides/herbicides entering the New River is expected to decrease.	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Thus, under the Proposed Project, the amount of pesticides/herbicides entering the Alamo River is expected to decrease.	CVWD monitoring has not detected any pesticides in the CVSC. Although flows are expected to increase, there is no indication that pesticides would increase to detectable levels as a result of the Proposed Project.	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Although CVWD drainage and sediment contribution to the Sea could increase, with the decrease in IID flows and sediment, overall the Sea would experience a decrease in pesticide/herbicide load. Thus, under the Proposed Project the amount of pesticides/herbicides entering the Sea is expected to decrease.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Metals	The decreased quantity of water in the New River due to a decrease in IID drainage would mean that more of the water in the river is attributable to Mexico. Flows in the New River from Mexico are traditionally high in heavy metals. The concentration (not load) of metals in the New River could increase with the Proposed Project.	The primary sources of metals in the Alamo River, other than boron and selenium, are feed lots and point source discharges that would not be affected by project implementation. However, decreased quantity of water in the Alamo River due to decreases in IID drainange would mean the concentration of metals in the Alamo River could increase with the Proposed Project.	The concentrations of metals in CVSC water is not identified as a significant issue as average concentrations are below published criteria. Zinc is elevated compared to source water due to grape farming practices, but does not exceed criteria. The Proposed Project would have no effect on farming practices and would not increase metals concentrations.	No specific projections were done to measure metal trends in the Salton Sea. However, the concentration of metals is expected to increase in the New and Alamo rivers, which could lead to an increase in metals in the Salton Sea.

There would be no significant impacts to the Coachella Canal as a result of increased diversions by CVWD as the increase in diversions would not exceed the capacity of the canal, would not affect groundwater users, water quality, drainage patterns and runoff, or flood hazard and would not cause inundation.

The project-specific aspects of the canal lining have been addressed the EIS/EIR by Reclamation and CVWD for the Coachella Canal Lining Project.

WATER QUALITY

Implementation of the Proposed Project would result in an increase in use of Colorado River water in the Coachella Valley, relative to Existing Baseline. The resulting changes are summarized in Table 3.1-18.

Table 3.1-17. QSA Changes in Flows in the Colorado River, Coachella Canal and Colorado River Water for Use in the CVWD Service Area During a Normal Year Relative to Existing Baseline

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	*CVWD Colorado River Water Diversions (Coachella Canal From Drop 1 to Siphon 32*		*CVWD Colorado River Water Diversions for Use in the Service Area*	
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY
QSA Changes to IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	20	20	20	20
IID/SDCWA Water Conservation and Transfer Agreement[b]	0	0	0	0
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	100	0	100	0
All American Canal Lining	0	0	0	0
Coachella Canal Lining	(26)	(26)	0	0
CVWD/MWD SWP Transfer and Exchange	35	35	35	35
Use of water by Miscellaneous PPRs and Federal Reserved Rights [d]	(3)	(3)	(3)	(3)
Change in Flow with the QSA	**126**	**26**	**152**	**52**

Note: This is a water balance table. Values are not actual canal flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise their option.

(d) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

This increased use of Colorado River water could increase the concentration of selenium in drain flows, potentially exceeding the EPA Aquatic Life Criteria, Criterion Continuous

Concentration of 5 µg/L. This is considered a potentially significant and unavoidable impact. The use of Colorado River water, which is high in TDS, for groundwater recharge could cause lower aquifer groundwater to exceed 500 mg/L and thus exceed EPA water quality standards. This is considered a significant and unavoidable impact.

GROUNDWATER

The reduction in groundwater use is a beneficial impact that is being addressed in a separate PEIR for the Coachella Valley Water Management Plan.

The Metropolitan Water District of Southern California

With implementation of the various conservation measures that are part of the Proposed Project, MWD would receive a supply of Priority 3a Colorado River water. This conserved and transferred Priority 3a Colorado River water could be diverted for use in the MWD service area and would replace a portion of the surplus and unused apportionment water that was previously diverted by MWD. Table 3.1-19 outlines the changes in Colorado River diversions and the amount of water available for use in the MWD service area resulting from the Proposed Project, relative to Existing Baseline.

Table 3.1-18. QSA Changes to Hydrologic Features in the CVWD Service Area

Effect	*Impact*	*Impact Significance*
Impacts to CVSC and Salton Sea Drains		
Use of Colorado River water rather than groundwater for irrigation	Increase in TDS of agricultural return flows. Water quality objectives would not be exceeded.	Less than significant
Use of Colorado River, which is higher in selenium, rather than groundwater for irrigation	Increase in selenium in drain flows. Selenium concentrations could exceed 5 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable
Additional flow in the CVSC and drains	Potential increase in turbidity.	Less than significant
	Dilution of bacterial concentrations.	Beneficial
Impacts to Groundwater Quality		
Recharge with Colorado River water in Lower Valley	Increase in TDS of lower aquifer groundwater. Salinity could exceed 500 mg/L, above EPA's drinking water standards.	Significant and unavoidable
Increase drain flows and salt flushing	Decrease in TDS of semi-purged aquifer groundwater.	Beneficial

As the 1988 IID/MWD Conservation Program has undergone separate environmental analysis and has been implemented, it is considered part of the Existing Baseline. The diversion numbers in Table 3.1-18 do not account for the 110 KAFY that is available under the 1988 IID/MWD Agreement, as this agreement is treated as a current and ongoing project (without

implementation of the Proposed Project this 110 KAFY could be accounted for at MWD's option to Priority 4, 5a or 5b). A proposed amendment to the 1989 IID/MWD/PVID/CVWD agreement, which is part of the QSA, would reduce the amount of water made available to MWD to a maximum of 90 KAFY, and provide CVWD with 20 KAFY (with implementation of the Proposed Project this 90 KAFY to MWD and 20 KAFY to CVWD would be accounted for under IID's Priority 3a water budget). This reduction of 20 KAFY of Colorado River water made available to MWD under these agreements is accounted for in the following analysis.

MWD COLORADO RIVER WATER FOR USE IN THE SERVICE AREA

As shown in Table 3.1-19 ("MWD Colorado River water diversions for use in the service area" column) relative to Existing Baseline, implementation of the Proposed Project and CVWD use of

Table 3.1-19. QSA Changes in Diversions of the Colorado River Aqueduct, and Colorado River Water for Use in the MWD Service Area

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	CRA Diversion at the Whitsett Intake		CRA Diversions for Use in the MWD Service Area	
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY
QSA Changes to IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	(20)	(20)	(20)	(20)
IID/SDCWA Water Conservation and Transfer Agreement[b]	200	200	200	200
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	0	100	0	100
All American Canal Lining[d]	67.7	67.7	56.2	56.2
Coachella Canal Lining[e]	26	26	21.5	21.5
CVWD/MWD SWP Transfer and Exchange	(35)	(35)	(35)	(35)
Change in diversions with the QSA[f]	**239**	**339**	**223**	**323**
Previously diverted unused apportionment and surplus waters	(239)	(339)	(223)	(323)
Change in Flow with the QSA	**0**	**0**	**0**	**0**

Note: This is a water balance table. Values are not actual aqueduct flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise its option.

(d) Yield to MWD is 56.2 KAFY. Yield to San Luis Rey (SLR) Settlement Parties is 11.5 KAFY. All or a portion of this water may be used by the City of Escondido and Vista Irrigation District, within the MWD service area, depending on the provisions of the settlement agreement (to be negotiated) among the SLR Indian Water Rights Settlement parties.

(e) Yield to MWD is 21.5 KAFY. Yield to SLR Settlement Parties is 4.5 KAFY. All or a portion of this water may be used by the City of Escondido and Vista Irrigation District, within the MWD service area, depending on the provisions of the settlement agreement (to be negotiated) among the SLR Indian Water Rights Settlement parties.

(f) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River water to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

the First and Second 50 KAFY, MWD would have up to 223 KAFY of Priority 3a Colorado River water for use in the service area (less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights, plus an additional 90 KAFY of Priority 3a water under the 1988 IID/MWD Agreement, 1989 agreements and proposed amendments). With the implementation of the Proposed Project and in the event that CVWD would forgo its use of the First and Second 50 KAFY, MWD would have up to 323 KAFY of Priority 3a Colorado River water for use in the service area (less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights, plus an additional 90 KAFY of Priority 3a water under the 1988 IID/MWD Agreement, 1989 agreements and proposed amendments).

Without implementation of the Proposed Project in a normal year, MWD has the ability to divert a total of 660 KAF of Colorado River water, 550 KAF of which is Priority 4 water and 100 to 110 KAF of which is IID conserved water, subject to the provisions of the IID/MWD 1988 Agreement and subsequent agreements (without implementation of the Proposed Project this 110 KAFY could be accounted for at MWD's option to Priority 4, 5a or 5b). With the implementation of the Proposed Project in a normal year, MWD would have the ability to divert a total of 883 to 983 KAFY of Priority 3a and 4 water (Priority 3a diversions resulting from conservation measures by IID and CVWD), less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Under the terms of the QSA, if overruns occur for priorities 1,2, and 3b, MWD would reduce diversion of Colorado River water in an amount equivalent to the overrun. The ability to divert other Priority and surplus water would not change under the Proposed Project, with the exception of the quantification of Priority 6a water for CVWD and IID, and the ability of MWD to divert a quantity of Priority 6a water.

MWD COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-19 ("CRA Diversion at the Whitsett Intake"' column) relative to Existing Baseline, implementation of the QSA program components would not increase Colorado River water diversions through MWD facilities. The implementation of the QSA program components and CVWD use of the First and Second 50 KAFY would result in an increase in Priority 3a Colorado River diversions at the CRA intake by up to 239 KAFY, less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. The implementation of the QSA program components and in the event that CVWD would forgo their use of the First and Second 50 KAFY, would result in an increase in Priority 3a Colorado River diversions at the CRA intake by 339 KAFY, less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Although with implementation of the Proposed Project, CRA diversions of priority 3a water would increase, the overall amount of water diverted into the CRA would not increase.

As compared to the 1999 and 1990 to 1999 Existing Baseline, Colorado River water diversions by MWD would replace a portion of the previously diverted surplus and unused apportionment water with Priority 3a water. This change in diversions is not considered a significant impact to water resources, as this water would replace previously diverted surplus and unused apportionments water, and would not impact water quality, groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation.

Changes to hydrologic features in the MWD Service Area relative to Existing Baseline are summarized in Table 3.1-20.

Table 3.1-20. QSA Changes to CRA and Hydrologic Features in the MWD Service Area Relative to Existing Baseline

Effect	*Impact*	*Impact Significance*
Maintain reliability of existing water supplies (see Table 3.1-18)	No change from historic diversion volume or system capacity.	No impact

San Diego County Water Authority

With the implementation of the Proposed Project, SDCWA would receive, by exchange with MWD, up to 200 KAFY of Priority 3a Colorado River water. This would replace water previously purchased by SDCWA from MWD. The water conservation and transfer component is assessed in the IID Water Conservation and Transfer EIR/EIS (USBR and IID 2002). Implementation of the Proposed Project would not result in a substantial change to the total quantity or quality of water delivered by MWD to SDCWA; would not impact groundwater, drainage patterns and runoff, or flood hazard; and would not cause inundation. Changes to water quality are less than significant.

Table 3.1-21. Potential Hydrologic Effects of the QSA in the SDCWA Service Area

Effect	*Impact*	*Impact Significance*
Diversification of SDCWA's water supplies	No change in local water supply volume, or system capacity.	Less than significant.

Other Areas

COLORADO RIVER

Lake Mead. Changes in system storage due to the Proposed Project relative to Future Baseline are expected to be minor. The Proposed Project allows transfers of water between California entities within the State's total apportionment of 4.4 MAF. Therefore under normal conditions, these transfers would have no impact on Lake Mead's storage. However, under surplus conditions, the total delivery to California would be somewhat less under the Proposed Project compared to Future Baseline conditions, the result of reduced agricultural use due to transfers and the Interim Surplus Guidelines (ISG), which do not provide surplus water to the agricultural entities at the "Full" and "Partial Domestic" surplus levels. The impact of the reduced California deliveries under these surplus levels would be a slight increase in the amount of water stored in Lake Mead.

In 1999 Lake Mead's average annual elevation was 1,210 ft msl; the 1990-1999 average annual elevation in the reservoir was 1,191 ft msl. Reclamation's modeling estimated that *average* annual Lake Mead elevations, with implementation of the Proposed Project, would vary between 1,145 and 1,176 feet msl during the ISG period (2002-2016) and then steadily decline until leveling-off at between 1,106 and 1,115 feet msl after year 2040. Historically, in the period 1980 to 1999 annual Lake Mead elevation ranged from 1,170 to 1,220 feet msl, a variation of 50 feet. Modeling indicates that with the Proposed Project, Lake Mead would fluctuate between a

high of 1,215 feet msl and a low of 1,085 during the ISG period, and between 1,215 and 1,001 feet msl after year 2016.

Hoover Dam to Parker Dam. The Proposed Project would cause only minor changes to flows between Hoover Dam and Parker Dam, relative to the Future Baseline. These minor changes would be due to reduced water orders for California under some surplus conditions for the Proposed Project. Hourly flows fluctuate with power releases, and the Proposed Project is not expected to have any impact on these short-term operations at either Hoover, Davis, or Parker Dams; therefore it would have no impact on short-term fluctuations in river reaches downstream of Hoover Dam.

Reclamation modeling found that over the study period 2002 to 2076, the Proposed Project could increase salinity by approximately 1 mg/L below Hoover Dam. This increase in salinity would be within the current fluctuation observed from month to month and would not constitute a significant impact. However, it is assumed that additional salinity control measures would be implemented consistent with the Colorado River Salinity Control Program.

Parker Dam to Imperial Dam. The focus of this analysis is the reach between Parker Dam and Imperial Dam where transfers proposed under the Proposed Project could have impacts. Transfers under the Proposed Project would shift diversion of between 183 KAF and 388 KAF from Imperial Dam to Parker Dam, decreasing flow in this reach. With full implementation of QSA transfer diversions, the change in median water surface elevation below Parker Dam would be no more than 0.4 feet. (USBR 2000a)[2].

Annual surface water flow in the River, measured 14 miles downstream from Parker Dam, at Headgate Rock Dam, averaged approximately 6,114 KAF for the period of record from 1980 to 1999, but varied from a maximum of approximately 7,010 KAF to a minimum of approximately 5,395 KAF. From 1990 to 1999, annual flow averaged 6,272 KAF at Headgate Rock Dam. Under Future Baseline average annual flows are anticipated to vary between 6,786 to 6,762 KAF. Reclamation's modeling estimates that with implementation of the Proposed Project average annual flow at Headgate Rock Dam would vary between 6,717 KAFY and 6,435 KAFY during the ISG period (2002-2016) and then slightly decline, varying between 6,431 KAFY and 6,374 KAFY after year 2016.

The reduction in flows due to the Proposed Project could result in a decrease in open water in the main river, loss of backwaters, and loss of vegetation in backwaters in the Parker to Imperial reach. The Biological Opinion (U.S. Fish and Wildlife Service [USFWS] 2001) found that the greatest effect, due to a change in point of diversion of 400 KAFY (which captures the change in flow from the Proposed Project), would occur in April. As much as 35 surface acres of the open water in the main channel, 17 surface acres of open water in backwaters, and 28 acres of emergent vegetation in backwaters could be affected by implementation of the Proposed Project, relative to Future Baseline.

2 This data comes from the Biological Assessment for the Proposed Interim Surplus Guidelines and the EIS for the Implementation Agreement, Inadvertent Overrun and Payback Policy and Related Federal Actions (USBR 2000a, USBR 2002). The Biological Assessment data assumed a decrease in annual river flows of 400 KAF, whereas the QSA would actually only result in a reduction of flows up to 388 KAF.

Changes in water surface elevation in Lake Mead and the Colorado River between Hoover Dam and Imperial Dam are not an impact to hydrologic resources, but could impact other resources. Reductions in flow to the River in the Parker to Imperial reach, resulting from implementation of the Proposed Project, while not a significant impact to hydrologic resources, could affect other resource areas.

Reclamation modeling found that over the study period, 2002 to 2076, the Proposed Project could increase salinity by as much as 8 mg/L at Imperial Dam. This increase in salinity would be within the current fluctuation observed from month to month and would not constitute a significant impact. However, it is assumed that additional salinity control measures would be implemented under the provisions of the Colorado River Salinity Control Act and water quality objectives would be met; the greater, albeit minor, salinity levels anticipated under the Proposed Project could require that salinity control measures be implemented on a different schedule than would be necessary under existing conditions.

SALTON SEA

Under Future Baseline conditions flows to the Salton Sea would decrease and this, combined with evaporation, would act to lower the mean surface elevation, decrease surface area, and increase salinity concentrations. Modeling conducted by Reclamation indicates that under the Future Baseline the mean surface elevation of the Salton Sea would drop approximately 7 to 10 feet over the next 75 years to –234 to –237 feet msl. In addition, Reclamation's model predicts that over the life of the project the surface area of the Salton Sea would decrease by approximately 25,400 to 23,400 acres resulting in a surface area of 219,600 to 211,600 acres, while salinity would reach 60,000 mg/L between the years 2023 and 2030 and by year 2077 be as high as 80,000 mg/L to 90,000 mg/L.

Impacts to the Salton Sea resulting from implementation of the Proposed Project relative to Future Baseline would primarily result from a change in drainage quantity and quality within the IID service area. A decrease in discharge could reduce Salton Sea elevation, reduce Salton Sea surface area, and result in an increase in the salinity concentration. Table 3.1-22 summarizes the major impact findings of the IID Water Conservation and Transfer Project EIR/EIS related to the Salton Sea.

THE REPUBLIC OF MEXICO

Mexico would experience a decrease in the amount of groundwater recharge to the local shallow aquifer due to the lining of a portion of the All American Canal. Impacts of the All American Canal lining on Mexico are summarized in the USBR and IID 1994 All American Canal Lining EIS/EIR. This impact is not considered significant, as current users do not have rights to a continued supply of this seepage water.

Reclamation modeling found that over the study period, 2002 to 2076, the Proposed Project could increase salinity by approximately 8 mg/L at Imperial Dam. This increase in salinity would be within the current fluctuation observed from month to month. However, it is assumed that additional salinity control measures would be implemented consistent with the Colorado River Salinity Control Program and water quality objectives to Mexico would be met.

Table 3.1-22. Potential Hydrologic Effects of the QSA to the Salton Sea Relative to Future Baseline

Effect	*Impact*		*Impact Significance*
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	
Decrease in IID's discharge to the Salton Sea.	Relative to Future Baseline, Salton Sea elevation would decrease by approximately an additional 10 feet resulting in elevations of to –245 to –247 feet msl in year 2077.	Relative to Future Baseline, Salton Sea elevation would decrease by approximately an additional 12 to 13 feet resulting in elevations of to –247 to –250 feet msl in year 2077.	Less than significant impacts to hydrology, potentially significant impacts to other resource areas.
	Relative to Future Baseline, Salton Sea surface area would decrease by approximately an additional 33,200 to 35,800 acres, resulting in a surface area of 175,785 to 186,383 acres.	Relative to Future Baseline, Salton Sea surface area would decrease by approximately an additional 42,400 to 43,800 acres, resulting in a surface area of 167,774 to 177,226 acres.	Less than significant impacts to hydrology, potentially significant impacts to other resource areas.
	Salinity of the Salton Sea, relative to Future Baseline would be as much as 49,700 to 59,700 mg/L higher in year 2077, resulting in salinity of 129,700 to 149,700 mg/L.	Salinity of the Salton Sea, relative to Future Baseline would be as much as 60,700 to 75,300 mg/L higher in year 2077, resulting in salinity of 140,700 to 165,300 mg/L.	No water quality criteria for salinity in the Salton Sea and therefore no significant impact. Potentially significant impact to other resource areas.
	Potential decrease in pesticides entering Salton Sea due to decrease in sediments entering Salton Sea.	Potential decrease in pesticides entering Salton Sea due to decrease in sediments entering Salton Sea.	Potentially beneficial.

Analysis of the Environmental Impact of Project Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in significant changes to the

hydrologic regime of the Colorado River or cause any violation of water quality standards. A reduction in the amount of conserved water dedicated to MWD would not effect hydrologic resources, groundwater, or drainage patterns. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact drainage pattern, generate substantial amounts of runoff, or violate waste discharge requirements.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to water resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact drainage patterns, generate substantial amounts of runoff or violate waste discharge requirements.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact drainage patterns, generate substantial amounts of runoff, or violate waste discharge requirements. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to water resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to water resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial

dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to water resources of the Colorado River. No impacts to drainage pattern, groundwater resources, or water quality would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to water resources.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to water resources because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect to hydrologic resources of the Colorado River would be a minor decrease in river flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These potential changes are within historic normal fluctuations and therefore, no significant hydrologic impacts would occur. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no impact to hydrologic or recreational resources would result.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

The change in the point of diversion on the Colorado River from Imperial Dam to Lake Havasu to support PPR water use was analyzed in the above analysis for the Colorado River. Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. Because these changes of flow are within the range of normal River fluctuations, no significant impacts to water resources would occur.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The

minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would either agree to an allocated sharing between them or file litigation to allocate shortage sharing. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and/or IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management is minor with respect to overall deliveries to IID and CVWD. Additional shortage management could temporarily exacerbate water quality impacts in the IID service area discussed earlier (section 3.1.2.3). In the IID service area selenium concentrations in the Alamo and New rivers and IID drains could temporarily increase. In CVWD, decreased use of Colorado River water during a shortage would temporarily decrease selenium levels in CVWD drains, but would exacerbate groundwater overdraft.

3.1.3 Mitigation Measures

No feasible mitigation measures have been identified for significant water quality impacts to the Alamo River, IID and CVWD drains, and lower aquifer groundwater in the CVWD service area. However, should the impact to lower aquifer groundwater in the CVWD service area as a result of groundwater recharge cause any Torres Martinez Indian Reservation domestic drinking water well to exceed any recognized health-based water quality standard, CVWD will work with the Tribe to bring the drinking water supply of the Tribe into compliance by either providing domestic water service to the Tribe from the district's domestic water system or by providing appropriate well-head treatment. This could require the construction of pipelines to connect the reservation with CVWD's nearby domestic lines, which could result in short-term impacts to water resources, hazards and hazardous materials, public services and utilities, noise, air quality, transportation, geology and soils, agricultural resources, recreational resources, and aesthetics. Potential impacts to cultural resources and biological resources also could occur. Mitigation measures identified in this PEIR for construction of other pipelines in the CVWD service area would reduce these impacts to less than significant. If well-head treatment is required, any residue would be disposed of in accordance with appropriate regulatory standards, depending on the nature of the material.

3.1.4 Significant Unavoidable Adverse Impacts

Increase in selenium levels in the Alamo River, as well as the IID and CVWD drains would be significant and unavoidable adverse impacts. Increase in TDS of lower aquifer groundwater in the CVWD service area would also be significant and unavoidable.

3.1.5 Significant Irreversible Environmental Changes

Significant irreversible environmental changes would occur related to selenium levels of the Alamo River, and the IID and CVWD drains.

3.2 BIOLOGICAL RESOURCES

3.2.1 Environmental Setting

3.2.1.1 Regulatory Framework

The regulatory framework for biological resources includes the following federal, state, and local statutes and regulations.

River and Harbor Act of 1899 (33 U.S.C. 401 et seq.)

This Act protects the public's right to free navigation in navigable waters of the United States as described by the U.S. Army Corps of Engineers (USACE) Section 10/404 implementing regulations at 33 CFR Part 329. The Act also prohibits unauthorized construction or work in navigable waters of the United States.

Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.)

This Act provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Sections 401 and 404 of the Act prohibit discharges of dredged or fill materials into waters of the United States, including wetlands, except as permitted under separate regulations by the USACE and the EPA. An important aspect of these regulations is that discharges into waters of the United States, and the placement of fill in wetlands in particular, should be avoided if there are practicable alternatives.

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

The ESA protects threatened and endangered species (and their designated critical habitat), as listed by the Service, from unauthorized take, and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines federal agency responsibilities for consultation with the Service, including the preparation of Biological Assessments and Biological Opinions. The Service may authorize take of a listed species under Section 10, which also provides for the preparation of habitat conservation plans.

In 1994, areas of the lower Colorado River were designated as critical habitat for two endangered fish—bonytail chub (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*)—under the ESA. In 1995, the southwestern willow flycatcher (*Empidonax traillii extimus*), a native of the lower Colorado River region, was listed as endangered under the ESA.

In 1995, DOI agencies; water, power, and wildlife resources agencies from Arizona, California, and Nevada; Native American tribes; water and power providers; environmental interests; and recreational interests agreed to form a partnership to develop and implement a long-term endangered species compliance and management program for the historic floodplain of the lower Colorado River, the MCSP. The purpose of the program is to develop a multi-species conservation program aimed at contributing to the recovery of endangered, threatened, and sensitive species of wildlife and their habitats, and attempting to reduce the likelihood of additional species listings, while accommodating current and future water and power uses. Further information may be obtained from the MSCP website at http://www.lcrmscp.org. The

MSCP is expected to have long-term beneficial effects on biological resources of the lower Colorado River.

Pursuant to the ESA, Reclamation issued a final Biological Assessment for Operations, Maintenance, and Sensitive Species of the Lower Colorado River in August 1996 (USBR 1996). This Biological Assessment was intended to serve as (1) initial documentation for the ongoing ESA Section 7 consultation between Reclamation and the Service for discretionary operations of the River, and (2) initial reference for development and implementation of the MSCP by lower Colorado River stakeholders pursuant to federal ESA Section 7 (federal actions) and Section 10 (non-federal actions). In May 1997, the Service released a Biological Opinion on Lower Colorado River Operations and Maintenance (USFWS 1997).

The 1996 Biological Assessment and 1997 Biological Opinion form the basis for the MSCP, as River stakeholders seek to establish a long-term framework for compliance with the federal ESA, the CESA, and other environmental regulations for ongoing, proposed, and potential future projects.

Reclamation prepared a Biological Assessment in 2000 to address the effects of the Interim Surplus Guidelines and the Implementation Agreement on federally listed threatened and endangered species in and along the lower Colorado River. The Service issued a Biological Opinion in January 2001 that outlined conservation measures to offset potential impacts to listed species from the two actions.

Migratory Bird Treaty Act of 1918, as amended (16 USC 703-712) and Executive Order 13186 (2001)

The Act provides for the protection of migratory birds by making it illegal to possess, take, or kill any migratory bird species, unless specifically authorized by a regulation implemented by the Secretary of the Interior, such as designated seasonal hunting.

The Executive Order requires federal agencies to obtain permits from the Service for the "taking" of any migratory bird species.

Executive Orders 11988 and 11990, Floodplain Management and Protection of Wetlands, Respectively

These Executive Orders require federal agencies to provide leadership to protect the natural and beneficial values served by floodplains and wetlands. Federal agencies are directed to avoid development in floodplains where possible, and to minimize the destruction or degradation of wetlands.

California Lake and Streambed Alteration Program (Fish and Game Code Section 1600 et seq.)

These sections of the Fish and Game Code require that any person, state, or local government agency, or public utility proposing a project that may divert, obstruct, or change the natural flow of any bed, channel or bank of a river, stream, or lake to notify the CDFG before beginning the project. If CDFG determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.

California Endangered Species Act of 1984 (Fish and Game Code Section 2050 et seq.)

These sections provide for the protection of rare, threatened, and endangered plants and animals, as recognized by CDFG, and prohibits the taking of such species without authorization by the CDFG.

California Fully Protected Birds, Mammals, Reptiles/Amphibians and Fish (Fish and Game Code Sections 3511, 4700, 5050 and 5515)

These sections of the Fish and Game Code prohibit the take or possession of any fully protected bird, mammal, reptile/amphibian, or fish. A number of these fully protected species occur within the Project area and are identified in the sections below under each region.

California Natural Community Conservation Planning (Fish and Game Code Sections 2810 & 2835)

These sections of the Fish and Game Code provide that the CDFG may enter into agreements with any person for the purpose of preparing and implementing a natural community conservation plan to provide comprehensive management and conservation of multiple wildlife species.

Counties, federal agencies, and local municipalities also may maintain lists of species of special concern.

3.2.1.2 Imperial Irrigation District

The IID service area extends from the southern shore of the Salton Sea to the Mexican border and is located in the Colorado (a.k.a. Sonoran) Desert (see Figure 1.1-1). The All American Canal enters the service area from the east and extends across the southern edge of the service area. The Coachella Canal takes water from the All American Canal. It extends northward along the eastern side of the Salton Sea and passes through the edge of the East Mesa Unit of the IID service area.

Vegetation

The EIS/EIR for the IID Water Conservation and Transfer Project (IID and USBR 2002) identifies four habitat types in the IID service area and along the All American Canal. These are drain, tamarisk (salt cedar) scrub, desert scrub, and agricultural field habitat.

Wet area habitats in the IID service area are collectively referred to as drain habitat. Drain habitat occurs in association with the drainage and conveyance systems and in managed marshes on state and federal refuges and private duck clubs. Vegetation in drainage and conveyance systems occurs in the embankment slopes and typically consists of non-native invasive species. Cattail, bulrushes, rushes, and sedges occur in patches in the drain channels. Water seepage has induced phreatophytic vegetation to develop along the All American Canal within areas formerly dominated by desert scrub. Approximately 100 acres of scattered phreatophytic vegetation are supported by seepage from the All American Canal between Drops 2 and 3. About 1 acre is emergent wetland vegetation with the remainder of the

vegetation consisting of mesquite, tamarisk, and arrowweed. Managed marsh occurs primarily on state and federal refuges and on private duck clubs within the IID service area.

Tamarisk scrub is found along the New and Alamo rivers. The dominant species are the non-native, invasive tamarisk (*Tamarix* spp.), with some native screwbean mesquite (*Prosopis glandulosa* var. *torreyana*). Typically, the dense stand of tamarisk extends about 50 feet from the River, but there are locations where the stands may stretch out as far as 500 feet.

Desert habitat occurs along areas of the All American Canal and in some isolated areas within the IID service area. Sand dunes in the Sand Hills, along the unlined portion of the All American Canal, support a distinct plant community. Plants found on the sand dunes of the Sand Hills include giant Spanish needle (*Palafoxia arida* var. *gigantea*), desert buckwheat (*Eriogonum desertorum*), sand food (*Pholisma sonorae*), and Wiggin's croton (*Croton wigginsii*). The Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*) and Peirson's milkvetch (*Astragalus magdalenae* var. *peirsonii*), both federally listed species discussed below, also occur in this area (USBR and IID 1994).

Other desert scrub habitat along the All American Canal and in portions of the IID service area is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) (Barbour and Major 1977). Wild burro weed (*Haplopappus tenuisectus)*, brittle bush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), saltbush (*Atriplex* spp.), and chollas (*Opuntia* spp.) occur in varying concentrations within creosote bush scrub habitats (IID 1986). Plant density is low; 65 to 75 percent of the ground surface is often bare. When ground cover is present in desert scrub habitat, it is dominated by the introduced Mediterranean grass (*Schismus* spp).

Much of the vegetation in the IID service area has been cleared for agriculture. Ruderal (weedy) vegetation is found in areas cleared for agriculture but not currently in production. Saltbush-alkali scrub is a transitional community type that appears when soil salinity and moisture reach concentrations high enough to exclude most other vegetation. Common species of shrubs include allscale (*Atriplex polycarpa*), shadscale (*A. confertiflora*), and four-wing saltbush (*A. canescens*).

Fish and Wildlife

Fish and wildlife resources are described in relation to the habitat types identified above. Wildlife in the canal and drain systems are heavily influenced by adjacent community types, and the high diversity of species is attributed to the high degree of community interface. Approximately 90 species of birds and 20 species each of mammals and reptiles/amphibians are associated with the canal and drain systems. Black-tailed (hare) jackrabbit (*Lepus californicus*), cottontail, and Gambel's quail (*Callipepla gambelii*) are more abundant in the canal and drain system community than in the creosote bush scrub community. The most commonly observed birds in the reeds along the larger canals are black phoebe (*Sayornis nigricans*) and western kingbird (*Tyrannus verticalus*). Mourning dove and red-winged blackbird are found on levee berms. Along the All American Canal, great blue heron (*Ardea herodias*) roost in dense reeds, apparently associated with seepage wetlands; killdeer (*Charadrius vociferus*), roadrunner, American coot, common yellowthroat (*Geothlypis trichas*), and brown-headed cowbird (*Molothrus ater*) are also found. Other birds use the canal and drain system community seasonally, including American coot, ruddy duck (*Oxyura jamaicensis*), cinnamon teal, and blue-

winged teal (*A. discors*). Northern rough-winged swallow (*Stelgidopteryx serripennis*) and burrowing owl (*Athene cunicularia hypugia*) are found along lateral and secondary canals. A limited number of mammals are considered true associates of the canal riparian/levee community. Muskrat is the dominant species. Also present are round-tailed ground squirrel (*Spermophilus tereticaudus*), kangaroo rat (*Dipodomys* spp.), pocket gopher (*Thomomys* spp.), and common house mouse. Bullfrog and Woodhouse's toad are the dominant herpetofauna.

The larger areas containing emergent vegetation near the mouth of the rivers in the IID service area provide important nesting sites for yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) and fulvous whistling ducks (*Dendrocygna bicolor*). Red-winged blackbirds (*Agelaius phoeniceus*) and black-crowned night herons (*Nycticorax nycticorax*) roost in smaller wetlands. The most common waterfowl species found in the IID service area are the cinnamon teal (*Anas cyanoptera*), American coot (*Fulica americana*), and black-necked stilt (*Haematopus bachmani*). Large mammalian visitors that frequent the IID service area are coyote, fox, cottontail rabbit, and raccoon (*Procyon lotor*). The most abundant small mammals are hispid cotton rat (*Sigmodon hispidus*) and brush mouse (*Peromyscus boylii*). Western harvest mouse (*Reithrodontomys megalotis*), house mouse (*Mus musculus*), and white-throated woodrat (*Neotoma albigula*) are also present. The native red-spotted toad (*Bufo punctatus*) is known to occur in wetlands within the IID service area and the non-native bullfrog (*Rana catesbeiana*) is common.

Managed marsh areas including the wildlife refuges and gun clubs, are primarily managed for waterfowl. A wide variety of ducks and geese use these areas, as well as a wide variety of shorebirds. The New and Alamo rivers contain tamarisk habitat in the IID service area. River riparian communities, consisting primarily of tamarisk scrub, are important to birds as breeding areas, food sources, roosting/loafing areas, and migration corridors. Mourning doves (*Zenaida macroura*) are abundant in tamarisk vegetation. Ducks, including large flocks of teal (*Anas* spp.), favor mud bars, banks, and other shoreline features as resting sites. Stands of arrowweed provide roost sites for many bird species, notably the black-crowned night heron. Large mammals are distinctively absent in river riparian communities due to the limited extent of the habitat type and the high level of human activity. Deer mouse (*Peromyscus maniculatus*) and cotton rat are rarely present, as are insectivorous bats, muskrat (*Ondatra zibethicus*), raccoon, gray fox (*Urocyon cinereoargenteus*), and coyote. Beaver (*Castor canadensis*) used to be a major component of the mammalian fauna, but it is presently scarce, as its preferred food, cottonwood and willow, is no longer abundantly present. Bullfrog, lowland Woodhouse's toad (*Bufo woodhouseii*), and spiny softshell turtle (*Trionyx spiniferus*) have also historically been found in the tamarisk scrub habitat (IID 1986).

Approximately 50 species of birds, 50 species of mammals, and 40 species of reptiles and amphibians are associated with the desert scrub habitat. Larger mammals present include Audubon's (desert) cottontail (*Sylvilagus audubonii*) and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). Striped skunk (*Mephitis mephitis*) and coyote (*Canis latrans*) are also present in the small mesquite thickets scattered throughout the creosote bush scrub. Mesquite thickets are also centers for bird activity. White-crowned sparrow (*Zonotrichia leucophrys*) is the most abundant bird species in the winter. Other species of birds present include roadrunner (*Geococcyx californianus*) and loggerhead shrike (*Lanius ludovicianus*). Reptiles are generally diverse in species and abundant in numbers in creosote bush scrub habitat. Zebra-tailed lizard

(*Callisaurus draconoides*) and western whiptail (*Cnemidophorus tigris*) dominate the reptilian fauna, and side-blotched lizard (*Uta stansburiana*) is common in mesquite thickets (IID 1986).

The agricultural habitat is dominated by wildlife species relatively tolerant of or adapted to human disturbance and presence. Flocks of ring-billed gulls (*Larus delawarensis*), red-winged blackbirds, cattle egrets (*Bubulcus ibis*), and other egrets feed on insects from freshly harvested or recently plowed fields. Red-winged blackbirds, English sparrows, pigeons (*Columba* spp.), brown-headed cowbirds, and starlings *(Sturnus vulgaris*) are often observed in the vicinity of cattle feedlot operations. Waterfowl and game birds that range into agricultural areas to feed on grains and leafy crops are hunted during the fall and winter. These include ducks and geese, white-winged dove (*Zenaida asiatica*), and mourning dove. Some mammals and reptiles have increased in abundance as a result of lands being converted to agricultural use such as the western harvest mouse and pocket gopher. These are considered "generalist" species; i.e., they survive under a wide variety of environmental conditions. However, an overall low density and abundance of reptiles and amphibians occur throughout the agricultural/ruderal community type (IID 1986).

Fish present in the All American Canal include channel catfish (*Ictalurus punctatus*), carp (*Cyprinus carpio*), threadfin shad (*Dorosoma petenense*), and largemouth bass (*Micropterus salmoides*) (USBR and IID 1994). These are all introduced species, and the catfish and bass are game fish.

Sensitive Species

PLANTS

One federally listed plant species, Peirson's milkvetch, occurs in the IID service area (Table 3.2-1). This species and the Algodones Dunes sunflower are state-listed as endangered, and the Wiggin's croton is state-listed as rare (Table 3.2-1). In addition, 16 other special status plant species are present in the IID service area (See Appendix E, Table E-2). Most of these species are concentrated in areas of native habitat within sand dunes or blow-sand areas.

A total of five sensitive plant species were found during surveys for the All American Canal Lining Project. These include the three state and federally listed species in Table 3.2-1 plus two other special status species, giant Spanish needle and sand food. Complete information on these species is contained in the All American Canal Lining Project EIS/EIR (USBR and IID 1994).

FISH AND WILDLIFE

Species that are state or federally listed, California fully protected species, or species of special concern with the potential to occur in the IID service area or along the AAC are listed in Table 3.2-1. Habitat for one sensitive invertebrate occurs in the Sand Hills along the unlined portion of the All American Canal.

Table 3.2-1. Special Status Species Potentially Occurring in the IID Service Area or Along the AAC

Common Name	*Scientific Name*	*Status*[1]		
		FEDERAL	STATE	CNPS
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Peirson's milkvetch	*Astragalus magdalenae* var. *peirsonii*	T	E	1B
Wiggin's croton	*Croton wigginsii*		R	2
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
American peregrine falcon	*Falco peregrinus anatum*		E-FP	
Arizona Bell's vireo	*Vireo bellii arizonae*		E	
California black rail	*Laterallus jamaicensis coturniculus*		T-CFP	
California least tern	*Sterna antillarum browni*	E	EC-FP	
Elf owl	*Micrathene whitneyi*		E	
Gila woodpecker	*Melanerpes uropygialis*		E	
Gilded flicker	*Colaptes auratus*		E	
Greater sandhill crane	*Grus canadensis tabida*		T-CFP	
Least Bell's vireo	*Vireo bellii pusillus*	E	E	
Mountain plover	*Charadrius montanus*	PT	CSC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Swainson's hawk	*Buteo swainsoni*		T-CFP	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	
Allen's big-eared bat	*Idionycteris phyllotis*		CSC	
Big free-tailed bat	*Nyctinomops macrotis*		CSC	
California leaf-nosed bat	*Macrotus californicus*		CSC	
Cave myotis	*Myotis velifer brevis*		CSC	
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*		CSC	
Greater western mastiff bat	*Eumops perotis californicus*		CSC	
Mexican long-tongued bat	*Choeronycteris mexicana*		CSC	
Occult little brown bat	*Myotis lucifugus occultus*		CSC	
Pale big-eared bat	*Corynorhinus townsendii pallescens*		CSC	
Pallid bat	*Antrozus pallidus*		CSC	
Spotted bat	*Euderma maculatum*		CSC	
Western red bat	*Lasiurus blossevillii*		CSC	
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*		CSC	
Ring-tailed cat	*Bassariscus astutus*		CFP	

1. E=endangered; T=threatened; P=proposed; R=rare; state CSC = California Species of Concern, CFP = California Fully Protected; CNPS = California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere.

The following discussion is based on information supplied by IID (IID and USBR 2002), supplemented by Childs (1990) and Lane (1979). The IID service area contains important habitat for several special status wildlife species. Approximately 10 miles southeast of the south shore of the Salton Sea are Finney and Ramer lakes, which provide nesting habitat for Yuma clapper rail and California black rail. These species are also found within the managed marsh land around the Salton Sea. On February 1, 2001, the Service designated an area from Interstate 10 in the Thousand Palms-Palm Springs vicinity south to the Mexican border as critical habitat for peninsular bighorn sheep (Federal Register 2001). The eastern border of the critical habitat, near the Salton Sea and in the area between Highway 78 and Mexico, extends into the IID service area.

Desert pupfish inhabit irrigation drains along the southeast and southwest sides of the Salton Sea within the IID service area as well as San Felipe Creek (USBR and CVWD 2001). Razorback sucker have been found on rare occasion in the All American Canal and its tributary canals. The Colorado pikeminnow may have historically been in the All American Canal, but the species has been extirpated.

3.2.1.3 Coachella Valley Water District

The CVWD service area is located in the Colorado Desert around the north end of the Salton Sea and extending northwest of the Sea in the Coachella Valley. The Coachella Canal enters the service area from the southeast. The unlined portion is southeast of the CVWD service area. Many of the plant communities and wildlife present are the same as or similar to those described for the IID service area.

Vegetation

Natural vegetation in the Coachella Valley is predominantly Sonoran Creosote bush scrub. Other representative natural plant communities include Sonoran mixed woody and succulent scrub; desert dry wash woodland; desert saltbush scrub; desert fan palm oasis woodland; desert sink scrub; and dunes and sandfields. Palm oases can be found at natural springs and are dominated by the native fan palm (*Washingtonia filifera).* Saltbush scrub occurs in areas that are generally moist, with sandy loam soil, and a total salinity in the range of 0.2 to 0.7 percent. Many species of saltbush can be found in saltbush scrub including allscale, shadscale, and four-wing saltbush. Desert sink scrub occurs on poorly drained soils with high alkalinity and/or salt content and is dominated by succulent chenopods.

Dune and blow-sand areas are characterized by actively moving and partially stabilized sand dunes. Plant cover is sparse and consists of species adapted to this habitat. A variety of annual plant species are also present in years with optimal rainfall and temperature (USBR and IID 1994).

The Desert dry wash woodland community typically occurs on deep, sandy soils in canyons; on alluvial fans; and along normally dry stream courses (arroyos) throughout the Colorado Desert, including the lower Colorado River and Coachella Valley; and on the elevated fringes surrounding the Salton Sea. The vegetation is open woodland characterized by drought deciduous shrubs and trees whose deep roots enable them to reach the water that percolates

seasonally through sandy soils along drainages. Typically dominant species include catclaw (*Acacia greggii*), palo verde (*Cercidium floridum*), desert willow (*Chilopsis linearis*), smoke tree (*Dalea spinosa*), desert lavender (*Hyptis emoryi*), ironwood (*Olneya tesota*), and honey mesquite (*Prosopis glandulosa* var. *torreyana*). The wetter and more poorly drained areas are likely to support the non-native, invasive tamarisk (*Tamarix chinensis*) as well.

A component of the Proposed Project is the proposed lining of a portion of the Coachella Canal. The portion of the Coachella Canal that is within the CVWD service area is concrete lined. However, approximately opposite the Salton Sea (between siphons 7 and 14 and siphons 15 and 32, a distance of approximately 33 miles) the canal is unlined. About 5,223 acres, or approximately 66 percent, of the desert riparian vegetation types along that unlined portion of the canal is relatively pure stands of tamarisk. Seepage from the unlined section of the canal supplies water to desert riparian vegetation that is also known as phreatophytic vegetation (USBR and CVWD 2001). Seepage water also supports, in combination with natural artesian springs and developed groundwater well discharges, about 456 acres of marsh/aquatic habitats in the project area. The desert riparian habitat contains, in order of relative dominance: tamarisk, honey mesquite, screwbean mesquite, arrowweed, and California fan palm (less than 19 percent). There is relatively minor occurrence of Fremont cottonwood and willow in the project area. Desert riparian vegetation thrives over elevated groundwater levels and benefits from occasional flooding, but is not adapted to permanently saturated soil. Marsh/aquatic habitats supported by canal seepage contain cattail (*Typha* spp.), bulrush (*Scirpus* spp.), and other wetland plants. Marsh/aquatic areas normally occur as seeps, constructed ponds, and flowing reaches of creeks. About 40 percent of the phreatophytic vegetation and 85 percent of the marsh/aquatic vegetation along the unlined section of the Coachella Canal are located in Reach D (Siphons 23 through 29) adjacent to the Dos Palmas Area of Critical Environmental Concern (ACEC), outside the CVWD service area. This ACEC is recognized by the BLM and CDFG for its biological significance. Habitat value (and wildlife use) is higher where the community composition includes more native vegetation species and less tamarisk. Tamarisk is an invasive, non-native species providing minimal habitat value. It displaces native vegetation by competing for water and causing a build-up of salt on the surface of the ground. The BLM and The Nature Conservancy have worked to remove tamarisk from springs in the Dos Palmas ACEC (USBR and CVWD 2001).

Fish and Wildlife

The overall CVWD service area and the Dos Palmas ACEC along the unlined portion of the Coachella Canal contain a variety of wildlife typical of desert habitats. Desert riparian and marsh/aquatic plant communities supported by canal seepage are important wildlife habitats, especially in the Dos Palmas ACEC (USBR and CVWD 2001). One hundred sixty species of birds, 27 species of mammals, and 5 species of reptiles and amphibians may use these habitat types. Agricultural and native desert areas support many of the same species discussed in the IID section previously. In addition, the lined and unlined portions of the Coachella Canal contain sport fish, such as largemouth bass and catfish.

Sensitive Species

PLANTS

Two federally listed endangered plant species are known to occur in the CVWD service area, Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*), and the triple-ribbed milkvetch (*Astragalus tricarinatus*). These species are reported to occur primarily in the Whitewater and Big Morongo canyons, Snow Creek, Edom Hill/Willow Hole, and the Whitewater River Preserve areas. Another 22 special status species are also present. See Appendix E, Table E-2. The fairyduster (*Calliandra eriophylla*) (no federal or state sensitivity classification) may potentially be present near the unlined section of the Coachella Canal (USBR and CVWD 2001).

FISH AND WILDLIFE

Sixteen state or federally listed species, or species proposed for such listing, potentially occur in the CVWD service area (Table 3.2-2). In addition, 30 other special status species occur in the CVWD service area (see Appendix E, Table E-1).

Table 3.2-2. State and Federally Listed Species Potentially in the CVWD Service Area

Common Name	*Scientific Name*	STATUS[1]		
		Federal	*State*	*CNPS*
Coachella Valley milkvetch	*Astragalus lentiginosus* var. *coachellae*	E		1B
Triple-ribbed milkvetch	*Astragalus tricarinatus*	E		1B
Arroyo southwestern toad	*Bufo microscaphus microscaphus*	E	CSC	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
Desert slender salamander	*Batrachoseps aridus*	E	E	
Coachella Valley fringe-toed lizard	*Uma inornata*	T	E	
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
Palm Springs ground squirrel	*Spermophilus tereticaudus chlorus*	candidate	CSC	
Greater Sandhill Crane	*Grus Canadensis tabida*		T-CFP	
Least Bell's vireo	*Vireo bellii pusillus*	E	E	
Mountain plover	*Charadrius montanus*	PT	CSC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Swainson's hawk	*Buteo swainsoni*		T	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Ring-tailed Cat	*Bassariscus astutus*		CFP	
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	

1. E = endangered; T = threatened; P = proposed; state = California; CSC = California Species of Special Concern; CFP = California Fully Protected Species CNPS = California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere.

The Coachella Valley fringe-toed lizard is found in the CVWD service area, and the least Bell's vireo may still be found in Whitewater Canyon, in the northern tip of the service area. The Coachella Valley Preserve contains dune habitat for Coachella Valley fringe-toed lizard, and the general study area may also contain some desert tortoise. The upper Whitewater River is historic habitat for the southwestern arroyo toad. Peninsular bighorn sheep occur in the mountains west of Rancho Mirage and La Quinta, where they occasionally are observed at the urban interface. On February 1, 2001, the Service designated an area in the Santa Rosa Mountains and adjacent valley floor from Interstate 10 in the Thousand Palms-Palm Springs area south to the Mexican border as critical habitat for peninsular bighorn sheep (*Federal Register* 2001). Part of the northern portion of this habitat lies within the boundaries of the CVWD service area. The Palm Springs ground squirrel is occurs in a wide variety of habitats in the Coachella Valley. The species is a federal candidate species.

The federally endangered Yuma clapper rail and state-listed black rail use the marsh/aquatic habitats in the project area, mostly in the Dos Palmas ACEC. In addition, 39 species of birds that have been designated rare or endangered by CDFG or species of concern by the National Audubon Society commonly occur in such desert riparian and marsh/aquatic habitat types.

The marsh/aquatic habitat at the Dos Palmas ACEC (outside of the CVWD service area) and the marshes at the mouth of Coachella Valley Stormwater Channel support resident Yuma clapper rail and California black rail populations. Some CVWD irrigation drains near the Salton Sea and the lower reach of Salt Creek and its north branch contain populations of desert pupfish (USBR and CVWD 2001). There is also a potential that the razorback sucker could occur within the Coachella Canal. No recent documentation of this species in the canal has been found.

3.2.1.4 The Metropolitan Water District of Southern California

Much of MWD service area consists of urban areas where little natural habitat remains. However, there are valuable biological resources including coastal marshes, riparian systems, oak woodlands, and coastal sage scrub in the MWD service area. The area supports over 35 listed state and/or federally listed threatened and endangered plant and animal species as well as a number of sensitive habitats.

These species include the California least tern, Belding's savannah sparrow, Pacific Coast population of the snowy plover, and brown pelican. Riparian species include the least Bell's vireo, southwestern willow flycatcher, and the southwest arroyo toad. Species associated with the coastal sage scrub community are also of substantial concern. California gnatcatcher and the Stephen's kangaroo rat also exist within coastal sage scrub communities.

3.2.1.5 San Diego County Water Authority

The biological characteristics of the SDCWA service area are similar to those of the MWD service area discussed in the previous section. Much of the SDCWA service area consists of urban areas, although there is a significant amount of agricultural land in the northeast area and a large military base in the northwest area. The SDCWA service area includes habitats covered by both pending and approved broad-based, multi-species HCPs. HCPs have already been prepared for over 1 million acres of habitat in San Diego County.

3.2.1.6 Other Areas

Other areas that could be affected by the Proposed Project include the lower Colorado River between Parker Dam and Imperial Dam and the Salton Sea. Each of these areas is described below.

Colorado River

The following information is summarized from baseline technical reports prepared for the MSCP, the *Biological Assessment for Proposed Interim Surplus Criteria, Secretarial Implementation Agreements for California Water Plan Component and Conservation Measures on the Lower Colorado River (Lake Mead to the Southerly International Boundary)* (USBR 2000a), and other relevant literature and reports.

VEGETATION

Vegetation along the lower Colorado River was historically dominated by cottonwood-willow riparian forest. This plant community requires periodic flooding for short periods of time for seed germination and establishment. The events that are necessary to the continued regeneration of this plant community are generally absent on the present-day lower Colorado River because flows are controlled through the use of reservoirs. Existing stands of cottonwood-willow riparian forest are considered relict and, for the most part, are not expected to persist over the next several decades unless focused management plans are initiated.

Present-day vegetation is largely dominated by tamarisk, an invasive exotic weed species. It displaces native vegetation by competing for water and causing a build-up of salt on the surface of the ground. Tamarisk grows in pure stands in washes, streams, and ditches, and can establish quickly. Associations with honey mesquite (*Prosopis glandulosa*) and screwbean mesquite (*Prosopis pubescens*) are present in some areas, particularly on higher floodplain areas, but tamarisk appears to take over areas as other plants die.

Upland areas adjacent to the Colorado River are dominated by desert plant communities, most commonly creosote bush scrub. The primary component of this plant community is creosote bush (*Larrea tridentata*), although several other smaller shrub and succulent species are commonly found in association with this plant community including white bursage (*Ambrosia dumosa*), brittle bush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), saltbush (*Atriplex* spp.), and chollas (*Opuntia* spp.). Creosote bush scrub grades into saltbush scrub in areas that experience occasional flooding and have higher levels of salt. Many species of saltbush can be found in saltbush scrub including allscale (*Atriplex polycarpa*), shadscale (*A. confertiflora*), and four-wing saltbush (*A. canescens*). Much of the area formerly dominated by saltbush scrub has been converted to agricultural use.

A distinctive desert wash woodland community occurs on deep, sandy soils in canyons, on alluvial fans, and along normally dry stream courses (arroyos) throughout the Colorado Desert, including the Colorado River Valley within the Lower Basin. The vegetation is open woodland characterized by drought-resistant deciduous shrubs and trees whose deep roots enable them to reach the water that percolates seasonally through sandy soils along drainages. Typically dominant species include catclaw (*Acacia greggii*), palo verde (*Cercidium floridum*), desert willow

(*Chilopsis linearis*), smoke tree (*Dalea spinosa*), desert lavender (*Hyptis emoryi*), ironwood (*Olneya tesota*), and mesquite (*Prosopis juliflora*). The wetter and more poorly drained areas are likely to support invasive tamarisk (*Tamarix* spp.).

Reclamation (USBR 2000a) has estimated that there are approximately 13,900 acres of tamarisk-honey mesquite, over 30,000 acres of tamarisk, and 5,000 acres of tamarisk-screwbean mesquite within the area from Parker Dam to Imperial Dam. Only approximately 3,000 acres of honey mesquite and 1,500 acres of cottonwood-willow habitat exist in a relatively undisturbed form.

FISH AND WILDLIFE

The lower Colorado River supports several hundred species of wildlife. Over 100 of these are special status species. Large numbers of more common species of mammals, fish, birds, reptiles, and amphibians either breed or migrate to this area and depend on it for their habitat requirements. It is an extremely important migratory corridor for birds, especially waterfowl. Riparian and wetland areas sustained by the lower Colorado River support a wide variety of raptors, including sharp-shinned hawk (*Accipiter striatus)*, Cooper's hawk (*Accipiter cooperii)*, northern harrier (*Circus cyaneus)*, red-tailed hawk (*Buteo jamaicensis)*, rough-legged hawk (*Buteo lagopus johannis),* common black-hawk (*Buteogallus anthracinus),* Harris' hawk (*Parabuteo unicinctus),* bald eagle (*Haliaeetus leucocephalus)*, golden eagle (*Aquila chrysaetos)*, white-tailed kite (*Elanus leucurus)*, Mississippi kite (*Ictinia mississippiensis)*, American kestrel (*Falco sparverius)*, prairie falcon (*Falco mexicanus),* and peregrine falcon (*Falco peregrinus*). Egrets, herons, flycatchers, and woodpeckers are especially well represented along the River. Mammals, including the Colorado River cotton rat (*Sigmodon arizonae plenus*) and more than a dozen species of bats, are also found here. Reptiles and amphibians include Colorado River toad (*Bufo alvarius)*, Arizona toad (*Bufo microscaphus microscaphus*), several species of leopard frog (*Rana* spp.*),* banded gila monster (*Heloderma suspectum cinctum)*, chuckwalla (*Sauromalus obesus)*, Sonoran mud turtle (*Kinosternon sonoriense)*, desert tortoise (*Gopherus agassizii)*, and desert rosy boa (*Lichanum trivirgata gracia)*.

Backwater areas are important to native fish, because substantial changes within the main channel have rendered this area unsuitable for many species. Backwater habitats also support a variety of other wildlife, including clapper rails, flycatchers and warblers, woodpeckers, and waterfowl.

Most of the native riverine fishes have been extirpated from the study area. The razorback sucker is currently being reintroduced and is the only native fish in notable numbers in the Colorado River between Hoover and Imperial dams. Bonytail chub have been reintroduced in Lake Havasu, formed by Parker Dam, and may occur within the study area, although they have not been documented to date. The fish community in the study area is dominated by non-native species, which provide a substantial sport fishery. Predation and competition by non-native fish have been identified as major reasons for the demise of the native fish populations in the lower Colorado River. One state endangered species, the Algodones Dunes sunflower, may occur in dunes or sandy areas in and near the Algodones Dunes.

SENSITIVE SPECIES

Plants. As shown in Table 3.2-3, no federally listed species are known to occur in riparian areas within the lower Colorado River.

Table 3.2-3. State and Federally Listed Species Potentially Along the Lower Colorado River

Common Name	*Scientific Name*	STATUS[1]		
		Federal	*State*	*CNPS*
Algodones dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Colorado River toad	*Bufo alarius*	E	E	
Lowland leopard frog	*Rana yavapaiensis*		SC/A	
Northern leopard frog	*Rana pipiens*		SC/A	
Relict leopard frog	*Rana onca*		A	
Desert tortoise	*Gopherus agassizii*	T	T	
Sonoran mud turtle	*Kinosternon sonoriense sonoriense*		SC	
Bonytail chub	*Gila elegans*	E	E	
Desert pupfish/Colorado River pupfish	*Cyprinodon macularius*	E	E	
Flannelmouth sucker	*Catostomus latipinnis*		A	
Mojave tui chub	*Gila bicolor mohavensis*	E	E	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
Arizona Bell's vireo	*Vireo bellii arizonae*		E	
American bittern	*Botaurus lentiginosus*		A	
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E-CFP	
Belted kingfisher	*Ceryle alcyon*		A	
Brown crested flycatcher	*Myiarchus tyrannulus*		SC	
Burrowing owl	*Athene cunicularia*	SC	SC	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
Clark's grebe	*Aechmophorus clarkii*		A	
Common black hawk	*Buteogallus anthracinus*		A	
Cooper's hawk	*Accipiter cooperii*		SC	
Crissal thrasher	*Toxostoma crissale*		SC	
Elf owl	*Micrathene whitneyi*		E	
Fulvous whistling-duck	*Dendrocygna bicolor*	SC	SC	
Gila woodpecker	*Melanerpes uropygialis*		E	
Gilded flicker	*Colaptes auratus*		E	
Gilded northern flicker	*Colaptes auratus chrysoides*		E	
Golden eagle	*Aquila chrysaetos*		SC-CFP	
Greater sandhill crane	*Grus Canadensis tadiba*		T	
Harris hawk	*Parabuteo unicinctus*		SC	
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S		
Long-eared owl	*Asio otus*		SC	
Mississippi kite	*Ictinia mississippiensis*		A	
Mountain plover	*Charadrius montanus*	PT	SC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Summer tanager	*Piranga rubra*		SC	
Swainson's hawk	*Buteo swainsoni*		T	
Vermillion flycatcher	*Pyrocephalus rubinus*		SC	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Western least bittern	*Ixobrychus exilis*		A	
Willow flycatcher	*Empidonax traillii*		E	

Table 3.2-3. State and Federally Listed Species Along the Lower Colorado River (continued)

Yellow warbler	*Dendroica ptechia*		SC	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Allen's big-eared bat	*Idionycteris phyllotis*		A	
Big free-tailed bat	*Nyctinomops macrotis*		SC	
California leaf-nosed bat	*Macrotus californicus*		SC	
Cave myotis	*Myotis velifer brevis*	SC	SC	
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*		SC	
Greater western mastiff bat	*Eumops perotis californicus*		A	
Mexican long-tongued bat	*Choeronycteris mexicana*	SC	SC	
Occult little brown bat	*Myotis lucifugus occultus*	S	SC	
Pale big-eared bat	*Corynorhinus townsendii pallescens*		SC	
Pallid bat	*Antrozus pallidus*		SC	
Spotted bat	*Euderma maculatum*		A	
Western red bat	*Lasiurus blossevillii*		A	
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*		SC	
Ring-tailed Cat	*Bassariscus astutus*		CFP	
CNPS 1B=California Native Plant Society E=endangered, T=threatened SC=California Sensitive, CFP=California Fully Protected, A=Arizona sensitive,				

Fish and Wildlife. Table 3.2-3 lists federally and state listed fish and wildlife species known to occur along the lower Colorado River. The Service has designated much of the lower Colorado River as critical habitat for two federally listed endangered fish species: the razorback sucker and bonytail chub. Reclamation, in conjunction with the Service, USGS Biological Resources Division, National Park Service, Arizona Game and Fish Department, Arizona State University, and the Nevada Division of Wildlife, have formed the Native Fish Work Group, with the specific goal of establishing and maintaining a population of 50,000 adult razorback suckers in Lake Mohave. Reclamation also has formed partnerships with other agencies to protect and enhance native riparian habitats and to create multipurpose wetlands. Following is a discussion of the occurrence of several federally and state of California listed threatened and endangered wildlife species, fully protected species, and other species of concern that may be affected by the implementation of the Proposed Project. This discussion is not meant to be exhaustive, but rather to highlight a few high profile species.

The southwestern willow flycatcher (*Empidonax trailli extimus*) is federally listed as endangered. This species occurs along the lower Colorado River in stands of cottonwood, willow, and tamarisk, and in mixed stands of willow and tamarisk. Sixty-four nesting attempts were documented by McKernan and Braden (1999) in 1998 along the Colorado River. The bald eagle is a federally listed threatened species and a state of California listed endangered and fully protected species. The lower Colorado River is not a major breeding area for this species, but the birds may forage and could occasionally nest in the area. The area may be most important as winter foraging habitat for the species. The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a state of California endangered species and is proposed for federal listing as endangered. It is found along the lower Colorado River in riparian forests characterized by a canopy and mid-story of cottonwood, willow, and tamarisk. The California brown pelican (*Pelecanus occidentalis*) is a state- and federally listed endangered species that may occur occasionally along this portion of the River as a post-breeding wanderer. The California brown pelican does not breed along the lower Colorado River. The Yuma clapper rail (*Rallus longirostris yumanensis)* and California black rail have also been known to occur along the lower

Colorado River primarily in emergent wetland vegetation, such as dense or moderately dense stands of cattails and bulrushes. Both species are listed as threatened and fully protected species by the state of California. The Yuma clapper rail is also listed as a federally endangered species. The elf owl (*Micrathene whitneyi*) and Arizona Bell's vireo (*Vireo bellii arizonae*), both California listed endangered species, may occur within the riparian and marsh areas along the lower Colorado River.

The desert tortoise is state- and federally listed as threatened and occurs within the desert scrub habitat along the lower Colorado River. A number of bat species that are considered sensitive by the CDFG may potentially occur along the Colorado River. For the most part they would roost in caves or mines and may feed upon the insects within the River and backwaters.

The razorback sucker is a federally and state-listed fish species that occurs in the lower Colorado River as well as the mainstem reservoirs of the River. The razorback sucker was re-introduced below Parker Dam, and the backwaters and mainstem of the River are habitat for this species. Bonytail chub is a state- and federally listed endangered fish species found in Lake Mohave and Lake Havasu, but it is not found downstream of Parker Dam. Long-term plans for re-establishment of the bonytail chub in the area downstream of Parker Dam are being formulated. The desert pupfish is also a federally listed endangered fish species that once occurred along the Colorado River but no longer occurs between Parker Dam and Imperial Dam.

Salton Sea

The following baseline information is summarized from the Salton Sea Restoration Project Draft EIS/EIR (USBR and SSA 2000) and the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). Both the IID and CVWD service areas abut the Salton Sea, and the plant communities and species described for those areas adjacent to the Salton Sea also apply. For the purposes of this analysis, the study area for the Salton Sea includes both the Sea itself and upland areas within an approximately 2-mile radius of the shoreline.

VEGETATION

Terrestrial vegetation in the Salton Sea area generally can be grouped into the following categories: managed and unmanaged marshes, unvegetated areas (including open water and mudflats), alkali playa, tamarisk scrub desert scrub and developed areas (including urban and agriculture). Marsh areas can be freshwater or alkaline. Freshwater marshes are generally dominated by common reed, cattail, golden dock (*Rumex maritimus*), and rabbits foot grass (*Polypogon monspeliensis*), while alkaline marshes have species such as salt grass (*Distichlis spicata*), alkali bulrush (*Scirpus robustus*), and spreading alkali grass (*Cressa truxillensis*). Marsh areas generally occur in the deltas of the New and Alamo rivers (in the IID service area), Coachella Valley Stormwater Channel, the outlets of small irrigation drains, and the mouths of Salt Creek and San Felipe Creek. Marsh areas also occur around the margin of Imperial Waterfowl Management Area, Sonny Bono Salton Sea National Wildlife Refuge, and private hunting clubs. Marsh habitats that are also wetlands are considered sensitive habitats and are regulated by the USACE under Section 404 of the Clean Water Act. Open water habitats are always inundated. Mudflats are typically exposed for a period of time and then inundated. Neither open water nor mudflats have any appreciable vegetation.

Alkali playas form in low-lying areas where water runs off and soil permeability is low. These conditions lead to high levels of salinity and alkalinity in the soil and support a plant community of widely spaced gray-leaved and succulent shrubs. Understory in such areas is minimal.

There are substantial riparian areas containing tamarisk and other non-native species. Dry wash woodlands are typically found along sandy or gravelly washes of the desert areas. Drought deciduous woodlands are typically dense.

The desert scrub community is found in relatively undisturbed upland areas in the vicinity of the Salton Sea. Cover and species vary with environmental conditions including slope, aspect, and water capacity of the soils. Areas that are well drained and on exposed slopes contain widely spaced shrubby species with dense grasses and herbs in the understory. Areas that are low and flat typically contain a dense scrub community, such as creosote bush scrub. Semi-desert chaparral can be found in valleys where water availability is higher. Non-native grassland areas are typically found in areas that have been disturbed in the past and are generally sparse in vegetative cover.

Urban and agricultural areas are developed for human use, and little-to-no native vegetation is present. However, various types of landscaping are planted in urban areas and around agricultural areas.

The Salton Sea will continue to change over time as evaporation continues to exceed freshwater inflows. This will eventually reduce the surface area of the Salton Sea. The rivers, streams, and drains flowing into the Salton Sea will have a longer path to reach the smaller Sea, and the margins of these freshwater flows will likely be colonized by riparian and wetland plant species adapted to the particular moisture and salinity regimes present. Thus, these habitats could increase gradually in amount. The fate of marsh vegetation in areas currently managed for such habitats (e.g., waterfowl and refuge areas) will depend on whether management continues as the Salton Sea recedes.

FISH AND WILDLIFE

The Salton Sea is characterized by high algal productivity, which also sustains high secondary levels of zooplankton and benthic worms. The fish present tolerate high temperatures, high salinity, and low concentrations of dissolved oxygen. Marine fish were first introduced into the Salton Sea in the early 1950s for aquaculture, mosquito control, and recreational fisheries. Fish now occur in the canals, irrigation ditches, rivers, and the Salton Sea itself. However, the channelized canals are less productive fish habitats than the unchannelized rivers due to lower habitat diversity and higher water velocity in the former. The Salton Sea and estuaries where drains, creeks, and rivers enter the Salton Sea currently support numerous species of fish including sailfin molly (*Poecilia latipinna*), porthole livebearer (*Poeciliopsis gracilis*), longjaw mudsucker (*Gillichthys mirabilis),* mosquitofish (*Gambusia affinis*), tilapia (*Oreochromis mossambicus* and *Tilapia zillii*), sargo (*Anisotremus davidsonii*), bairdiella (*Bairdiella icistia*), and orange mouth corvina (*Cynoscion xanthulus*). The Mozambique tilapia was the most abundant species captured in 1999 gill-net surveys, with highest numbers found in nearshore and estuarine areas (Costa-Pierce and Riedel 2000). Mosquitofish, carp, channel catfish, and

flathead catfish (*Pylodictis olivaris*) were only found in riverine habitats. Desert pupfish are present and discussed below in the Sensitive Species section.

Since the Salton Sea has no outlet, the high evaporation rates in the area have resulted in increasing salinity of the Salton Sea. Reclamation, in the recent Salton Sea Restoration Project EIS/EIR, has projected that the Salton Sea will eventually reach salinity levels that will change the fish species present (USBR and SSA 2000). Substantial fish kills occur on a frequent basis, especially during summer months, due to a decline in dissolved oxygen. The gradual increase in salinity is expected to change the current biotic community composition (plants, invertebrates, and fish) over time. As salinity increases to exceed the tolerances of existing invertebrates, the species composition will change to those with higher salinity tolerances. Increased salinity will also reduce fish reproductive capacity within the main body of the Salton Sea and eventually cause a decline in the number of species and individuals within a species, even with the current inflows to the Salton Sea. Ultimately, fish will no longer be able to survive in the Salton Sea (away from the estuaries where freshwater inflow occurs), although a number of invertebrate species will likely survive. The timing of the eventual elimination of the Salton Sea fisheries is uncertain as it involves a number of external environmental factors as well as the adaptation potential of the fish.

Over 400 species of birds have been recorded at the Salton Sea. The 1999 census by Point Reyes Bird Observatory (PRBO) found that eared grebes (*Podiceps nigricollis*) number 47,000 in the spring and over 320,000 in the winter at the Salton Sea, while populations of black-necked stilts, American avocets (*Recurvirostra americana)*, and ring-billed gulls each numbered in the hundreds of thousands. The Salton Sea also has experienced die-offs of birds, especially the brown pelican. As noted above, the structure of the biotic community currently in the Salton Sea will change over time due to increasing salinity. Pollutants and eutrophication may also exacerbate the effects of salinity. A loss of fish (numbers and species) and changes in the invertebrate community will affect bird species that feed on these organisms at the Salton Sea. As the number of fish declines, the prey base for fish-eating birds will decline. How changes in the invertebrate community will affect birds will depend on the extent to which the new invertebrate populations are accessible and acceptable to foraging birds. Bird populations could change in abundance and species composition as a result of the changes in the invertebrate and fish prey base. An effort is underway to reduce and stabilize the overall salinity of the Salton Sea and stabilize its surface elevation. However, no final commitment has been made and no federal funds have been allocated for implementation of a restoration program.

SENSITIVE SPECIES

Plants. Four species that are state and/or federally listed as threatened, endangered, or rare are known from habitats around the Salton Sea (Table 3.2-4). Another 13 special status plant species are known to occur within the general area of the Salton Sea (see Appendix E, Table E-2). None of the species known from the area are apparently adapted to conditions at the shore of the Salton Sea. A complete listing and discussion of these species can be found in the Salton Sea Restoration Project Draft EIS/EIR (USBR and SSA 2000).

Table 3.2-4. State and Federally Listed Species at the Salton Sea

Common Name	*Scientific Name*	STATUS[1]		
		Federal	*State*	*CNPS*
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Coachella Valley milkvetch	*Astragalus lentiginosus* var. *coachellae*	E		1B
Peirson's milkvetch	*Astragalus magdalenae* var. *peirsonii*	T	E	1B
Wiggin's croton	*Croton wigginsii*		R	2
Arroyo southwestern toad	*Bufo microscaphus microscaphus*	E	CSC	
California red-legged frog	*Rana aurora draytonii*	T	CSC	
Desert slender salamander	*Batrachoseps aridus*	E	E	
Coachella Valley fringe-toed lizard	*Uma inornata*	T	E	
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
Greater Sandhill Crane	*Grus Canadensis tabida*		CFP	
Aleutian Canada goose	*Branta Canadensis leucopareia*	T		
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E-CFP	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
California least tern	*Sterna antillarum browni*	E	E-CFP	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Jaguar	*Felis onca arizonensis*	E		
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	

1. E=endangered; T=threatened; R=rare; state=California; CSC=California Species of Special Concern; CFP=California Fully Protected, CNPS=California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere

Fish and Wildlife. Sixty-nine special status animal species are found at or near the Salton Sea (Appendix E, Table E-1), Nineteen species are state and/or federally listed as threatened or endangered (Table 3.2-4). Of the over 400 species of birds that have been recorded at the Salton Sea, 58 are considered special status species. Thirty of these special status bird species nest at the Salton Sea, of which five are federal special status species and seven are state special status species. In many cases, a substantial proportion of the population of a species may be found at the Salton Sea. The Yuma clapper rail is a federally endangered species and a state of California threatened and fully protected species that occurs in the marsh areas around the Salton Sea and near the irrigation drains. Over 200 individuals were noted in 1999 around the Salton Sea, with the major concentrations at the Wister Unit of the Imperial Wildlife Area and the Salton Sea National Wildlife Refuge. Smaller populations were recorded at Barnacle Beach and the Holtville drain. On average, about 365 Yuma clapper rails are counted each year, which is 25 to 40 percent of the entire United States population. The Salton Sea also serves as a foraging area for some individuals. Over 5,000 California brown pelicans have been found here, and some breeding of brown pelicans has occurred at the Salton Sea in the last few years.

The California black rail, a state-listed threatened species and a fully protected species, occurs around the Salton Sea in habitat similar to the Yuma clapper rail. February 1999 PRBO surveys found 2,486 snowy plovers (*Charadrius alexandrinus nivosus*) in the Salton Sea basin, representing about half of the California population. The Salton Sea serves as important nesting areas for the snowy plover and is considered one of the best inland nesting areas for this population.

Although Pacific Coast populations of snowy plover are a federally listed threatened species, the inland population at the Salton Sea is not. Inland populations of the snowy plover are, however, a California Species of Special Concern. In addition, as many as 33,000 American white pelicans (*Pelecanus erythrohynchos*) may also winter here. It is estimated by the Service that 80 to 90 percent of the entire population stops at the Salton Sea in the winter. The Salton Sea hosts the second largest wintering population of white-faced ibis in California, with over 24,000 counted in the 1999 PRBO census. The Salton Sea is also an important nesting area in California for the gull-billed tern.

Desert pupfish still exist at various locations in and around the Salton Sea, but in relatively low numbers. However, the agricultural drains at their interface with the Salton Sea support the largest number of pupfish within the Salton Sea system. The non-native fish species have adversely affected pupfish population through competition, predation, and behavioral interference. The limited populations around the Salton Sea appear to be occupying habitat marginally suited for pupfish.

As shown in Table 3.2-4, there are also a number of bird species that overwinter or otherwise use the Salton Sea on an occasional basis.

3.2.2 Impacts

3.2.2.1 Significance Criteria

The criteria used to determine the significance of impacts on biological resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it would:

- have a substantial adverse impact, 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 CDFG or the Service; or

- have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or the Service; or

- adversely impact federally protected wetlands (including marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means; or

- interfere substantially with the movement of any resident or migratory fish or wildlife species or with the established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or

- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan.

3.2.2.2 Methodology

Potential impacts to biological resources were assessed by comparison of project-induced changes to the biological baseline. The exception to this approach is the evaluation of potential impacts to the biological resources of the Salton Sea. The Potential impacts at the Salton Sea are different when measured against Existing and Future Baselines at the Salton Sea. The Future Baseline at the Salton Sea is described in Section 5.0. Potential changes associated with the implementation of the Proposed Project were measured against the appropriate baseline conditions, and impacts were determined using the significance criteria in section 3.2.2.1.

3.2.2.3 Summary of Impacts

Implementation of the Proposed Project has the potential to adversely affect biological resources as a result of the following:

- A decrease in seepage-fed areas adjacent to both the All American and Coachella canals, as a result of lining the Coachella Canal and construction of a lined parallel canal to the All American Canal.

- Minor, short-term construction disturbances associated with construction and lining of the canals.

- An increase in the rate of salinity change in the Salton Sea due to a net decrease in the drainage inflows to the Salton Sea as a result of conservation measures by IID.

- Changes in the quantity and quality of flows within the rivers and drains of the IID associated with implementation of on-farm water conservation.

- A change in habitat due to a decrease in median water level of the lower Colorado River between Parker Dam and Imperial Dam due to a change in the point of diversion. The decrease in flows would range from 183 to 388 KAFY.

- Site-specific activities associated with construction of recharge basins, pipelines, and pump stations as part of implementation of the Proposed Project portion of the CVWMP.

- Short-term construction activities associated with construction of canals, reservoirs, and pump stations associated with on farm conservation measures within the IID service area.

Imperial Irrigation District

VEGETATION

Impacts to vegetation would be restricted to the vicinity of the portions of the All American Canal that would be lined under the Proposed Project. Construction of a parallel lined canal would reduce seepage into adjacent wet areas and areas supporting phreatophytic vegetation. It would also remove wetland plants inside the canal. Losses of wet areas due to seepage and

phreatophytic vegetation are anticipated to be significant, but would be mitigated to less-than-significant levels by habitat replacement and enhancement that are part of that project. Specific impacts and mitigation measures for the All American Canal Lining Project were delineated by Reclamation and IID in the All American Canal Lining Project EIS/EIR issued in 1994.

On-farm conservation programs in the IID service area have the potential to decrease drain water flows and to increase the salinity of these flows (although not total salt load). This could result in alteration of the amount and characteristics of emergent and in-channel vegetation along these drains. This impact to vegetation is considered significant because emergent vegetation provides habitat for the Yuma clapper rail, a California- and federally listed species.

Construction activities associated with water conservation improvements, such as tailwater return systems, lateral interceptions, reservoirs, seepage interceptors, and conveyance lining also have the potential to cause both temporary and permanent losses of phreatophytic or emergent vegetation, depending on the exact location and extent of such activities (including staging/storage areas and access routes). The level of impact will be determined by the amount and type of vegetation affected as well as the restoration (revegetation) to follow the work. Impacts will likely be less-than-significant.

FISH AND WILDLIFE

Construction of a new lined canal parallel to the All American Canal would decrease vegetation along the canal banks and increase water velocity in the canal. This would reduce habitat in the form of shade (cover) and the food base (plant material and insects falling into the water) for non-native fish (including sport species) residing in the canal. Reclamation and IID have proposed to mitigate this impact by installing artificial reefs in the canal to provide protective cover and reduce flow velocity in the canal. Stabilizing or enhancing regulating reservoirs would then be implemented.

Lining the parallel canal would also decrease seepage-fed areas adjacent to the canal. These habitats are important to wildlife species, especially birds, for a variety of reasons. Reclamation and IID have proposed to mitigate impacts to a less-than-significant level in these areas by replacing these marshes and desert riparian habitats.

Canals typically transect normal movement patterns of terrestrial wildlife (other than birds), and in the desert environment, attract wildlife as a drinking water source. There is also a potential for large mammals to enter and drown in the canals. Reclamation and IID have proposed escape routes along the entire length of the new canal. If that is not effective, then a series of structures to allow animals entering the canals to escape would be constructed (USBR and IID 1994).

Construction activities associated with canal lining that occur in adjacent uplands could cause temporary and permanent impacts to wildlife habitat. These impacts have been addressed in the Final EIS/EIR for that project.

Changes in amount or composition of vegetation resulting from reduced flow or increased salinity of drain water due to conservation measures in the IID service area could adversely impact bird and amphibian species using that habitat. This would be considered a significant

impact. Implementation of measures identified in IID's HCP for the Water Conservation and Transfer Project would reduce those impacts to less-than-significant levels. Loss of phreatophytic or emergent plant habitats as a result of constructing water conservation improvements, such as recharge basins, pipelines, and pump stations, would have less-than-significant impacts to common and typical wildlife species using those habitats because most activities would be in previously disturbed areas.

SENSITIVE SPECIES

Plants. None of the rare, threatened, or endangered plant species that are known to occur in the IID service area occur in wetland or riparian habitats. There is a chance that sensitive plant species may occur in areas selected for staging or other construction-related activities associated with the All American Canal Lining Project and could be impacted by those activities. However, selection of sites for construction-related disturbances would consider environmental concerns and sensitive plants species. Potential impacts and mitigation measures to sensitive plant species from the All American Canal lining were identified in the project-specific environmental document (USBR and IID 1994). Any impacts to sensitive plant species would be mitigated to a less-than-significant level.

Construction-related activities associated with other conservation measures are unlikely to adversely affect any listed or special concern plant species because the work would be primarily in previously disturbed areas. Locations for such activities, however, would need to be checked for the presence of sensitive plant species prior to the work, and mitigation developed and implemented if any are found.

Fish and Wildlife. Altering drain flows and salinity as a result of water conservation measures in the IID service area has the potential to impact desert pupfish residing in the drains through a reduction in the quantity and quality of habitat available as well as by altering interactions between this species and non-native fish species present in the drains. Impacts could range from less-than-significant, if little change in habitat or species interactions occur, to significant if the changes reduce the population size of the pupfish. Restoration or enhancement of pupfish habitat could reduce any specific potentially significant impacts to less-than-significant levels.

Effects of reducing the volume of water in the drains has the potential to adversely affect special status species using the Salton Sea within the IID service area. These impacts are discussed below, under the Salton Sea. Impacts to sensitive wildlife within the river and drains are potentially significant. Mitigation measures outlined below will reduce any significant impact to less-than-significant levels.

Construction of the canal parallel to the All American Canal section and water conservation measures within the IID service area would not have any adverse effects on peninsular bighorn sheep or American peregrine falcon. The proposed water transfers would have no significant impacts to sensitive birds using agricultural fields for food because the amount and type of agriculture present are not expected to change substantially due to water conservation, and thus, food for special status species using agricultural fields would not decrease.

Coachella Valley Water District

Potential physical impacts associated with the implementation of the Proposed Project within the CVWD service area are described below. Additional water provided to the CVWD service area would reduce the current groundwater overdraft conditions. It is anticipated that the use of Colorado River water and conserved water would not result in modification of existing farmland or conversion of additional natural areas to farmland since this water would replace current overdrafted groundwater supplies.

VEGETATION

Lining the unlined portions of the Coachella Canal outside the CVWD service area would decrease seepage into adjacent wetlands and riparian areas, which has the potential to impact marsh and desert riparian vegetation supported by canal seepage. It would also remove wetland plants inside the canal. One area of concern is Salt Creek where canal seepage supports riparian and marsh habitats. Losses of wetland and riparian plant communities are potentially significant impacts that would require mitigation. Construction activities could also result in a temporary loss of upland native vegetation where staging areas and access routes are developed. The area thus affected would be small and can be restored after construction is complete. Impacts and mitigation for this project have been addressed in the Coachella Canal Lining Project EIS/EIR.

It is expected that the alleviation of overdrafted groundwater conditions would result in the eventual rise in groundwater levels, which would increase the levels of drain water and water flowing into the Salton Sea. No changes in vegetation are expected since the drains are currently maintained to allow free flow of water. Construction activities associated with installation of recharge basins, pipelines, and pump stations that are part of the CVWMP have the potential to cause both temporary and permanent impacts to native vegetation. Based on a review of the potential facilities associated with the CVWMP, it is estimated that the facilities required may result in the loss or disturbance of approximately 250-600 acres in total. Much of the area where pipelines may be placed has been previously disturbed from agriculture and other activities such as road construction; however, it is anticipated that some areas of desert scrub and desert wash habitat could be impacted by the construction of other facilities. Impacts would be less-than-significant, particularly in previously disturbed areas, but could potentially be significant if native vegetation is permanently lost. Therefore, site-specific studies and mitigation measures would be developed when specific projects are developed.

FISH AND WILDLIFE

Constructing groundwater recharge facilities may impact wildlife habitat. It is anticipated that many of these facilities would be located primarily in disturbed areas such as roadways or adjacent to existing facilities. No substantive impacts to wildlife are expected in these areas. Construction of recharge basins in other areas have a potential to impact wildlife resource. It is anticipated that these adverse impacts would be less than significant. Site-specific surveys may be required when specific sites and a project design are provided.

SENSITIVE SPECIES

CVWD is participating in a multi-agency, multi-species habitat conservation plan with others in the Coachella Valley (the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). Potential impacts to sensitive species from CVWD's delivery and use of water related to the Proposed Project will be addressed in the CVMSHCP and the Program EIR, both of which are currently in development. Locations for recharge basins and additional delivery facilities have not been identified. Increased flow in drains is not expected for 10-15 years, based on the build-up schedule for Proposed Project water deliveries and time lag in recharging the aquifer. However, based on available information, the following is a discussion of the potential impacts to sensitive species of plants and fish and wildlife.

Plants. Construction of facilities for groundwater recharge and expansion of the existing water distribution system are unlikely to impact sensitive plant species since most activities would be in previously disturbed areas. Any native plant community areas that could contain sensitive species would be evaluated for such species prior to approval of the facility and any avoidance or mitigation measures necessary would be implemented as part of those specific projects.

Fish and Wildlife. Lining of the unlined portions of the Coachella Canal has the potential to adversely affect habitat for the Yuma clapper rail, California black rail, desert pupfish, and desert tortoise. Mitigation for these impacts has been developed in the EIS/EIR for canal lining project (USBR and CVWD 2001) and consultation under Sections 7 of the ESA.

The Yuma clapper rail and California black rail would not be impacted by changes in the marsh habitat in or near agricultural drains. The drains are currently maintained to remove vegetation and are not a current habitat for these species. Currently, desert pupfish reside within the drains in the CVWD service area. It is anticipated that the flows in the drains would increase. The increase in the quantity of water plus the increased velocity of the drain flows has a potential to affect the pupfish in the drains. The exact effect is not well known, however, there is a potential significant impact to these species due to these changes in flows. A monitoring program, plus additional measures deemed necessary should an impact to these species be identified, will reduce any significant impacts to less-than-significant levels. Construction of groundwater recharge basins and expansion of the distribution system within the CVWD service area are not expected to have any adverse impacts on the American peregrine falcon, Swainson's hawk (*Buteo swainsoni*), or mountain plover because activities associated with these measures are not likely to occur in habitat for these species. However, if the Dike 4 recharge facility is ultimately constructed within critical habitat for the peninsular bighorn sheep (*Ovis canadensis*), specific mitigation measures would be developed to avoid any impact to the sheep during site-specific verification studies.

The Metropolitan Water District of Southern California

Because water diverted under the Proposed Project is within the normal operating parameters of MWD's existing Whitsett intake at Lake Havasu and its conveyance into MWD's service area would be via the existing CRA, no impacts to biological resources would result from MWD's diversion or delivery of QSA-related water. The implementation of the Proposed Project would not result in any physical changes within the MWD service area that would impact biological resources. There would be no construction associated with implementation of the Proposed

Project in the MWD service area, involving the Whitsett Diversion or along the CRA. Therefore, there would be no direct impact to biological resources. Implementation of the Proposed Project would not alter any general plans or other planning activities implemented by those local and regional agencies planning land use in the MWD service area. Population growth and development within the region would likely continue at their projected rates, but this growth would occur whether or not the Proposed Project were implemented. Therefore, no significant biological impact in the MWD service area would occur from implementation of the Proposed Project. Similarly, the implementation of the Proposed Project would not result in impacts to biological resources because no physical changes to the environment would occur that would be attributable to the Proposed Project.

San Diego County Water Authority

As discussed above under MWD, there would be no physical/construction impacts associated with the implementation of the Proposed Project within the SDCWA service area. Additionally, maintaining reliability of a portion of the water supply as a result of the implementation of the Proposed Project is not expected to have an effect on current planning within the SDCWA service area. Although continued planned growth within the service area may impact biological resources, this would occur whether or not the Proposed Project were implemented. Therefore, no significant adverse impacts associated with the implementation of the Proposed Project would occur.

Other Areas

COLORADO RIVER AREA

The environmental baseline for this assessment includes the effects of past and ongoing human and natural factors leading to the current status of biological resources within the LCR. The environmental baseline includes existing facilities, ongoing operations and maintenance activities, the existing extent of land cover types, and the existing species abundance and distribution and is considered the Existing Baseline.

The Proposed Project covers transfers that will influence flows on the lower Colorado River between Parker Dam and Imperial Dam. Some components of the Proposed Project would result in increased diversions of water at Lake Havasu and reduce the amount of river flow to Imperial Dam. Conversely, some Proposed Project components would increase deliveries at Imperial Dam. As discussed in section 2.5 and shown in Table 2.5-1, the net effect of the QSA is that deliveries to Imperial Dam would be reduced by 183 to 388 KAFY and this water would instead be delivered to the MWD facility at Lake Havasu. MWD's intake is an existing structure, and the volume of water to be diverted to account for the QSA transfer is within the range of diversion volumes at this point over the past several decades.

Historically, the CRA has transported up to approximately 1.3 MAFY of Colorado River water into southern California. Implementation of the transfer would only change the agency's entitled apportionment from which the Colorado River water is derived. Historically, the water in the CRA has consisted of some combination of MWD's basic apportionment, water from a previous conservation agreement with IID, any unused higher priority agricultural water within California, unused apportionment from the states of Arizona and Nevada, and water

declared by the Secretary to be surplus. Under the transfer (and related lining actions), the CRA would continue to transport approximately the same amount of Colorado River water each year, with a greater proportion of that water coming from agricultural conservation efforts.

The Whitsett Intake and CRA are existing facilities that have been operating at or near full capacity since the 1960s, and would continue to operate unchanged with implementation of the Proposed Project. Therefore, these physical structures and diversion volumes represent Existing Baseline conditions and thus no project-related impact would result from divergence or conveyance of Proposed Project-related Colorado River Water. This assessment is focused upon potential biological effects on the lower Colorado River between Parker Dam and Imperial Dam in which physical changes from Existing Baseline conditions may occur. The assessment of impacts is based on the modeling efforts conducted by Reclamation in association with the Biological Assessment (USBR 2000a) and the Service's Biological Opinion (USFWS 2001).

Reclamation modeled potential impacts to open water, marsh habitat, and riparian habitat as a result of the potential decrease in flow. Reclamation used a hydrologic model coupled with a GIS vegetation database to predict potential impacts. Reclamation modeled a conceptual change in river flows of over 1.574 MAFY, which is a theoretical maximum cumulative change in flow that could occur in the future. Assuming that the model was linear in its prediction of impacts, Reclamation then interpolated these results to estimate habitat loss associated with implementation of the IA and QSA components, which accounts for approximately one quarter of the annual river flow reductions modeled by Reclamation. The impact assessment by Reclamation assumed a maximum change in river flows of 400 KAFY associated with the Proposed Project components.

Based on this methodology, it was determined that the Proposed Project would reduce Colorado River flows in the Parker Dam to Imperial Dam reach by 183 to 388 KAFY. Therefore, under the most conservative assumptions, the flow between Parker Dam and Imperial Dam could be reduced by 388 KAFY (see further discussion in section 3.1 of this document). The resulting overall change in the river flow is small (no more than 0.4 feet[1]) and is within the historical hourly, daily, and weekly fluctuation of water levels for the area.[2]

The Proposed Project components that would alter diversion volumes would occur incrementally over a period of 10 to 20 years or more. Assuming the minimum time of 10 years

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1 For total annual flow reduction of 400 KAF, reduction in median water surface elevations throughout the segment of the River from Parker to Imperial dams ranged from a low of 0.03 feet (0.5 inch) to a high of 0.37 feet (4.4 inches). This 2000 model result is very consistent with the previous 1991 analysis which concluded that: "Reduction of the river's discharge below Parker Dam by 480,000 acre-feet per year…would cause, at most, a 4-inch reduction in median water surface elevations when more or less normal flows occur" (USBR 1991). For more information, refer to the EIS for the Implementation Agreement, Inadvertent Overrun Policy, and Related Federal Actions.

2 During the spring, summer, and fall, the average monthly flow of the river as it approaches Imperial Dam varies between 9,000 and 11,000 cfs. During winter months, the average monthly flow drops to about 5,000 cfs. River flows are determined by release schedules from the dams, and water levels vary throughout the day. At Parker Dam, this daily variation is on the order of 5 feet (60 inches) during summer peak irrigation season, and about 2.5 feet (30-inches) in winter low demand periods. Flow variations are dampened by channel storage downstream of Parker Dam; the daily fluctuation at Imperial Dam is about 0.5 feet (6 inches).

for purposes of conservatively estimating maximum potential impacts, and diversion of up to 400 KAFY, median water surface elevations are predicted to decrease by no more than 0.4 feet. At completion of full diversion volumes (assuming a maximum of 400 KAFY), the change in median water surface elevation would be no more than 0.4 feet.

The 10- to 20-year implementation time factor permits biological resources substantial adjustment to this change in median water levels, as successional colonization of plants occurs naturally along the newly wetted perimeter. Even in backwater and slough areas, plant root systems should be able to adjust to the very minor water levels reductions occurring in minute increments over a prolonged period.

The assessment of potential effects on biological resources covers a wide variety of habitat types and the species that rely upon that habitat and its specific characteristics for feeding, cover, nesting, breeding and rearing young. Federal and state special-status species are addressed using this habitat-based approach as well, under the premise that if the underlying habitat is protected or mitigated for sensitive species, potential impacts on more common species and general habitat conditions will be avoided and mitigated as well. Exhaustive evaluation of water surface elevation effects on every individual species encountered in the project region has therefore not been performed, and is not needed to reach meaningful conclusions regarding potential impacts of implementation of the changes in the location of diversions from Imperial Dam to Lake Havasu and the changes in river flow.

Based on all available evidence for determining water surface elevation changes, the transfer may have potentially significant adverse impacts to habitat in riparian and backwater marsh areas along the River. As an individual project, this small increment of water level reduction would not substantially diminish the value of habitat for any species or cause the direct demise of any species associated with those habitats. However, using the worst-case cumulative methodology based upon a total flow reduction of 1.574 MAFY, the reduction of river flows by about 400,000 acre-feet annually could be found to contribute to a potentially significant cumulative impact on habitat areas along the river corridor between Parker Dam and Imperial Dam.

A Biological Opinion for the IA was issued by the Service on January 12, 2001. The impacts to habitat and sensitive species would be the same as those of the Proposed Project along the Colorado River. Using Reclamation's cumulative hydrologic model, the Biological Opinion estimated that there could be a loss of 35 acres of main channel open water habitat (used by fish), 17 acres of backwater habitat, 28 acres of marsh habitat, and up to 372 acres of riparian habitat. Depending upon the diversion of water, a reduction in flow by 188 to 388 KAFY would account for approximately 46 to 97 percent of the aforementioned habitat loss.

Vegetation. As a result of the Proposed Project, groundwater levels are predicted to drop a maximum of 0.4 feet (USFWS 2001), which has the potential to impact riparian vegetation with shallow roots along the outward fringes of the riparian zone. Deeply rooted plants would not be impacted. However, only 8 percent of the total riparian vegetation is relatively undisturbed native riparian woodland. Cottonwood and willow trees as well as marsh vegetation are more susceptible to lowering of groundwater levels than are other riparian plants such as mesquite, salt cedar, and arrow weed (USBR 2000a). Potential impacts to aquatic, marsh and riparian habitats would be considered potentially significant. However, with implementation of habitat

restoration actions these can be reduced to levels that are less-than-significant. Impacts to mesquite areas would not be significant due to less dependency of this habitat type on river flows.

Fish and Wildlife. No increase in the quantity of water diverted to the CRA would result from the Proposed Project. Therefore, there would be no impact to fish in Lake Havasu due to entrainment or other impacts associated with diversion of additional water into the CRA. No changes to reservoir levels would occur that would significantly impact fish within the reservoir.

Implementation of the Proposed Project would result in lower river flows between Parker Dam and Imperial Dam. Since the flows would be within the range of normal fluctuations, and because sport fishes are more adaptable to changing conditions and are in greater abundance than native species, an adverse impact to sport fisheries would not occur. As discussed above, implementation of the Proposed Project has the potential to reduce wetland and riparian habitat along the Colorado River that is used by amphibians, reptiles, riparian and marsh obligate birds, and mammals. This potential loss of habitat would potentially be a significant impact, but can be fully mitigated by habitat restoration.

SENSITIVE SPECIES

Plants. The Proposed Project would not impact any sensitive plant species because no sensitive plant species are known to be located within the potential area of impact (i.e., along the margins of and within wetlands associated with the Colorado River).

Fish and Wildlife. As discussed above, Reclamation (USBR 2000a) and the Service's Biological Opinion (USFWS 2001) anticipate a potential loss of 35 acres of open water, 17 acres of backwater and 28 acres marsh habitat within backwaters due to the implementation of the Proposed Project. Loss or modification of main channel (35 acres) and backwater (17 acres) open-water areas, such as through making them shallower (and warmer), has the potential to affect habitat that razorback suckers use for rearing and foraging. This potential loss of open water and backwater habitat would be a potentially significant impact, but can be fully mitigated by habitat restoration and fish enhancement measures.

No impact to the desert tortoise would occur, since the desert habitat occupied by this species would not be impacted by the implementation of the Proposed Project. No significant adverse impact to the southern bald eagle or California brown pelican would occur since they are occasional visitors to the area and no substantial reduction to their foraging habitat would result from the Proposed Project. There is also expected to be no significant impact to the sensitive raptor species since little impact would occur to potential nesting or foraging habitats.

The projected reduction in emergent vegetation (28 acres) that would result from implementation of the Proposed Project (USBR 2000a) may result in the reduction of feeding and breeding habitat for the Yuma clapper rail and the California black rail. This potential loss of habitat would be a potentially significant impact that can be fully mitigated by the proposed mitigation measures.

There is a potential, but less well-defined impact to riparian vegetation along the lower Colorado River due to decreased river flows and the resultant decline in surface and groundwater levels that would lower water in the root zone of riparian species. This impact would be gradual and some of the riparian vegetation may be redistributed as ground water levels change. Loss of up to 372 acres of riparian habitat currently used by southwestern willow flycatchers along the lower Colorado River was predicted (USFWS 2001). Using the worst-case projections based upon the 1.574 MAFY total river depletions, there is a potentially significant impact to riparian vegetation that is habitat for the southwestern willow flycatcher and the western yellow-billed cuckoo. Since the Arizona Bell's vireo, elf owl, Gila woodpecker, and gilded flicker occupy similar habitat, there would also be a potential loss to their habitat. Although this represents less than 1 percent of the total riparian habitat present, impacts to this habitat would be considered potentially significant, but will be fully mitigated by the proposed mitigation measures.

SALTON SEA

Implementation of the Proposed Project would result in the acceleration in the decline of the Salton Sea levels as described in section 3.1. The salinity of the Salton Sea has been increasing since its formation, caused primarily by high evaporative water loss and salt input through irrigation drainage. Reduced inflow to the Salton Sea would accelerate the rate of salt accumulation (IID and USBR 2002). Refer to section 3.1 for further discussion of projected Salton Sea salinity.

Vegetation. The accelerated decline in Salton Sea levels caused by the implementation of the Proposed Project has the potential to result in the loss of tamarisk scrub vegetation. The Salton Sea maintains several thousand acres of tamarisk scrub. The water source supporting tamarisk-dominated wetlands is most likely a combination of shallow groundwater and seepage from the Salton Sea. Therefore, a change in the surface elevation of the Salton Sea could decrease the amount of tamarisk habitat (IID and USBR 2002). Declining Salton Sea level could affect water-dependent vegetation along the drains, rivers, and streams entering the Salton Sea. If the decline is too rapid, plant adaptation and colonization may not be able to keep up with the changing location of the Salton Sea shoreline. This impact to vegetation is considered adverse, but not significant since the impact will be to non-native vegetation. No significant impact to managed marsh vegetation is anticipated since the hydrology of these areas is not dependent upon the Salton Sea.

Fish and Wildlife. Implementation of the Proposed Project is expected to result in the lowering of the Salton Sea level and to accelerate the increased salinity of the Salton Sea. An acceleration of the increase in salinity of the Salton Sea will likely change the species composition of the invertebrate and fish populations and cause a decline in their general population size. Fish may also become concentrated within areas where freshwater inflow would continue. This impact to fisheries (more rapid loss) is considered less–than-significant since these species are not native to the Salton Sea. The reduced surface area of the Salton Sea would also reduce the length of shoreline. Increased salinity in the Sea is not expected to affect upland wildlife species using habitats adjacent to the Salton Sea. Any loss of wetland or riparian habitat as described above for vegetation would reduce wildlife habitat, however, and could have adverse, but not significant impacts for species dependent upon those habitats.

The accelerated increase in salinity levels and subsequent loss of fish, particularly tilapia, would reduce food sources for fish-eating bird populations; thus these fish-eating bird populations may decline sooner. Some fish would likely remain in the portions of the Salton Sea where substantial freshwater inflow remain and provide forage for birds so that some smaller bird populations would use the Salton Sea. This loss of food sources for fish eating birds is considered a potentially significant impact. Bird populations that feed on invertebrates may potentially be affected sooner as well, but the level of impact is considered adverse, but not significant since the invertebrate populations that birds would feed upon is expected to remain. Birds that only use the Salton Sea surface for resting, but forage in upland areas, would not be affected by the Proposed Project.

SENSITIVE SPECIES

Plants. No impacts to sensitive plant species in the vicinity of the Salton Sea are anticipated as a result of the implementation of the Proposed Project, which would cause a more rapid reduction in size and increased salinity to the Salton Sea because none of the species are found in the habitats

Fish and Wildlife. The accelerated lowering of the Salton Sea level combined with the projected increase in salinity levels would shorten the time over which these changes would affect the desert pupfish population. These changes would affect individuals within the shallow portions of the Salton Sea itself as well as individual populations within the lower portions of drains. This accelerated change in the natural habitat of the desert pupfish is considered a significant impact since there is a potential that the lowered sea level and increased salinity can isolate the populations of pupfish within the mouths of drains or rivers.

Implementation of the Proposed Project would not create significant impacts to populations of the Yuma clapper rail and the California black rail since their primary habitat is within the managed marshes not directly affected by the decline in the Salton Sea. There also could be a decline or change in invertebrate food sources for these species.

Impacts from increased salinity of the Salton Sea to the California brown pelican, American black skimmer, double-crested cormorant, and other resident and migratory birds that forage on fish would also be accelerated. The fish that are food sources for many of the species will decline more rapidly, thus decreasing the length of time that the Salton Sea can support these bird species. This impact is considered significant.

Species associated with uplands adjacent to the Salton Sea, such as desert tortoise, Coachella Valley fringe-toed lizard, and desert slender salamander, would not be adversely affected by a reduction in size of the Salton Sea.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to biological resources along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in any changes to the physical environment that would impact biological resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact biological resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project and changes to biological resources from a change in point of diversion and diversion of water for the Proposed Project (including this component) was analyzed above for the Colorado River. No other impacts to biological resources would result from this action because no construction of water conveyance facilities would be required.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause significant impacts to biological resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to biological resources or that would increase seismic-related risks.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to biological resources would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, no impacts to biological resources would result from the conveyance or use of water tied to this Project component.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from

Parker to Imperial dams. This would create a slight beneficial impact to biological resources associated with river flows. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. No impacts to biological resources would result from the diversion or conveyance of the water by CVWD because no new facilities would be required to be constructed. Use of this water within CVWD's service area would be used to offset groundwater overdraft conditions and therefore no impacts to biological resources would occur. Similarly, the exchange of SWP entitlements under this Project component would not result in significant impacts to biological resources because no physical changes to environmental conditions would occur and no construction of water conveyance infrastructure would be required.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This Project component establishes an accounting method for water transfers and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to biological resources since it would not physically change the amount of water diverted or conveyed.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead. This change in river flows is within historic fluctuations and would not create a significant impact to biological resources associated with river flows. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction of any new facilities, and would not increase the amount of water used within its service area. Therefore, no impacts to biological resources would result.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

The change in the point of diversion on the Colorado River from Imperial Dam to Lake Havasu to support PPR water use was analyzed in the above analysis for the Colorado River. Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. Because these changes of flow are within the range of normal River fluctuations, no significant impacts to biological resources would occur.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. Additional conservation/shortage management would also be short-term and is not anticipated to involve ground disturbance or construction activity. The potential impacts to biological resources due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.2.3 Mitigation Measures

Imperial Irrigation District

Mitigation measures for the All American Canal Lining Project have been developed in the EIS/EIR for this project and consist of the following:

1. Site-specific surveys for sensitive species will be conducted. Species will be avoided or programs will be developed for replacement of the habitat or other compensation.

2. The canals will be restocked with channel catfish after completion of construction.

3. Structures will be constructed to allow wildlife to escape if they enter the canals.

4. Structures will be constructed in the canals to increase edge areas for fisheries.

5. Marsh and other seepage-fed habitats will be replaced, as necessary.

IID is preparing an HCP to address the impacts to sensitive species and the overall habitats within the IID service area as a result of conservation by IID in connection with the Project and IID's normal operations and maintenance. Non-Salton Sea components of the HCP that are intended to mitigate the impacts of any take of covered species that might occur as a result of the activities covered by the HCP, including the Proposed Project, within the IID service area and the Salton Sea potentially could include the following:

- *Tamarisk Scrub-Habitat Conservation Strategy*: Replacement of habitat disturbed through planting of mesquite bosques and/or cottonwood willow habitat. Additional habitat

replacement where subsurface drainage is affected by canal construction or other activities.

- *Drain Habitat Conservation Strategy*: IID would create at least 190 acres of managed marsh habitat to a maximum of 652 acres.
- *Desert Habitat Conservation Strategy*: This strategy involves an extensive monitoring program and habitat replacement associated with construction of canals and other facilities within desert habitat.
- *Burrowing Owl Conservation Strategy*: This strategy would involve pre-construction monitoring; avoidance, where possible, of nesting and foraging areas; and other methods, such as nest boxes, to mitigate any impact to the species.
- *Desert Pupfish Conservation Strategy*: IID would manage its drains to minimize water quality impacts to the species and develop measures to enhance habitat within the drains. IID would also minimize impacts during maintenance of the drains to reduce any impact to the species.
- *Razorback Sucker Conservation Strategy*: Any fish found within the canals would be transported back to the Colorado River.

Implementation of the HCP measures would reduce the significant impacts to biological resources to less-than-significant levels. There may be short-term biological, water quality, cultural resource, and air quality impacts associated with the implementation of these mitigation measures. Furthermore, to the extent farmland is converted to non-agricultural use, there may be unavoidable significant impacts to agricultural resources.

Coachella Valley Water District

Mitigation measures for the lining of the Coachella Canal have been adopted as part of the EIS/EIR prepared for that project and include the following:

1. Site-specific surveys for desert tortoise. Avoidance or relocation will be conducted for any tortoises found within construction areas.

2. The canals will be restocked with channel catfish one time after completion of construction.

3. Structures will be constructed to allow large mammals to escape if they enter the canal.

4. Structures will be constructed in the canals to increase edge areas for fisheries.

Reclamation and CVWD have developed a plan to provide flow into Salt Creek to provide water for the marsh areas downstream of the Coachella Canal.

Implementation of the QSA portion of the CVWMP would involve the construction of facilities such as recharge basins, pipelines, and pump stations. The exact location of these facilities is not known at this time although location, near Dike 4 and Martinez Canyon are being considered as potential sites for the recharge basins. Subsequent CEQA documents will address site-specific mitigation measures. In general, site-specific surveys will be conducted on all

potential sites early in the planning stage. Any potential impacts to biological resources will be determined and mitigation measures developed. These measures could include habitat restoration on site or nearby, or use of an alternative site that does not have significant biological impacts.

Specific mitigation measures for bighorn sheep and other resources could include the following:

- No persistent pesticides would be used at the recharge basin sites.
- No sheep would be handled unless they are in immediate danger.
- Vehicle travel on the basin site would be no more than 20 mph.
- Hydroseeding with native species (palette specified) for erosion control would be provided for disturbed areas that were vegetated before project construction, as appropriate.
- Construction would be conducted outside the lambing season (February 1 through June 30).
- Workers would be prohibited from bringing dogs, or other pets, or firearms to the site during construction or operation of the facilities.
- A Worker Environmental Awareness Training Program for construction personnel would be conducted before and during construction by a qualified biologist approved by the Service. The program would provide workers with information on their responsibilities with regard to bighorn sheep and an overview of the life history of the species.
- Site-specific surveys would be conducted at each potential facility site once those sites have been defined in order to determine if sensitive plant and animal species may be on the site. These include such species as the desert tortoise, flat-tailed horned lizard, and Palm Springs ground squirrel. Site-specific mitigation measures would then be formulated.
- A monitoring program would be developed for the pupfish in the drain system of CVWD. If the monitoring indicates a potential adverse effect to these species, specific mitigation measures would be developed in coordination with the Service and CDFG. These measures could include creation of additional habitat, modification of drain flows, or other measures identified in the CVMSHCP or a site-specific HCP.

Colorado River

The following mitigation/conservation measures were identified in the Biological Opinion (USFWS 2001) and are incorporated herein to mitigate impacts to sensitive habitat and special status species along the lower Colorado River. A summary of the measures follows:

1. Stock up to 20,000 razorback suckers (25cm or greater in length) into the Colorado River between Parker and Imperial dams.

2. Restore or create 44 acres of backwater habitat along the lower Colorado River between Parker and Imperial dams.

3. Provide 5-year funding for the capture of wild-born or F1 generation of bonytails from Lake Mohave to be incorporated into the broodstock for the species or to support rearing at a satellite rearing facility.

4. Implement a two-tiered conservation plan to minimize the impact to willow flycatcher and other riparian species. This will involve the following:

    a. Identifying and monitoring up to 372 acres of currently occupied willow flycatcher habitat that may be impacted by implementation of the QSA.

    b. Restoring and maintaining 372 acres of new replacement willow flycatcher habitat along the lower Colorado River.

    c. In a second tiered program, restoring up to 1,116 total acres of willow flycatcher habitat depending upon the results of initial monitoring and the overall status of the willow flycatcher along the lower Colorado River.

The mitigation measures listed above were developed using a habitat–based approach with the federally listed willow flycatcher as a representative riparian species. Based on an assessment of the Proposed Project, implementation of these measures would mitigate potential impacts to species using similar habitat types along the Colorado River to less-than-significant levels. If impacts to California-listed species require issuance of a take authorization pursuant to the CESA, consultation with CDFG will be initiated. Other actions, similar to measures described above may be employed, as appropriate, to further reduce impacts to California-listed species. These potential actions may include the following:

1. Removal and control of exotic species and other pest management measures;

2. Purchase of conservation easements or fee title lands for long-term preservation;

3. Construction of nesting boxes or other platforms.

Potential short-term significant impacts to biological resources, water quality, air quality, and cultural resources may occur due to the activities associated with the restoration of habitat. It is expected that these significant impacts will be reduced to less-than-significant levels through implementation of site-specific mitigation measures once mitigation sites have been identified. If existing farmland is used to develop habitat, there may also be a significant unavoidable impact of loss of agricultural resources since these areas would be removed from production for the foreseeable future.

Salton Sea

A mitigation strategy has been developed by IID, in consultation with the Service and CDFG, to mitigate the earlier reduction in fish abundance expected from the acceleration of the salinization of the Salton Sea as a result of the Proposed Project. This measure is outlined below; it may be subject to refinement in the course of the permitting process. It is referred to as Mitigation Strategy 2 for consistency with the Draft PEIR, which included another mitigation

strategy (Mitigation Strategy 1) that was eliminated during the public review period in response to concerns expressed by the Service and CDFG.

Mitigation Strategy 2

This mitigation strategy would involve providing water to the Salton Sea to offset reductions in inflow to the Salton Sea as a result of the Proposed Project. On-farm irrigation system improvements, water delivery system improvements, and/or fallowing, or any combination of these methods, could be used to generate this mitigation water. For example, if all water conservation was achieved through fallowing, approximately 50,000 acres of fallowed land would be required to generate the water necessary for transfer and an additional 25,000 acres of fallowing would be required to generate the water necessary to offset changes in inflow to the Salton Sea. This mitigation strategy would maintain salinity and elevation changes on the baseline trajectory and thus avoid biological impacts to the Salton Sea resulting from Project-related inflow reductions. Implementation of this mitigation strategy could result in significant unavoidable impacts to agricultural resources due to long-term loss of agricultural lands if fallowing is used to conserve the water and farmland is converted to non-agricultural use.

3.2.4 Significant Unavoidable Adverse Impacts

The mitigation measures described above would reduce impacts in the CVWD service area and along the Colorado River to less-than-significant levels. The goal of IID's HCP is to reduce significant impacts within the IID service area and the Salton Sea to less-than-significant levels. Implementation of the measures outlined above will accomplish this goal.

3.2.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to biological resources have been identified as a result of the implementation of the Proposed Project.

3.3 GEOLOGY, SOILS, AND MINERALS

3.3.1 Environmental Setting

3.3.3.1 Geology and Soils

The description of the environmental setting focuses primarily on those areas in which physical changes would occur if the Proposed Project were implemented. Because there would be no physical changes such as new construction within the MWD or SDCWA service areas, these areas have not been addressed in detail in this section. To the extent possible, the discussions of existing conditions are grouped according to service area or other geographic area, such as the lower Colorado River and Salton Sea. In some cases, however, geologic conditions are applicable to a wider region.

The Imperial and Coachella valleys are located in the Salton Trough of the Basin and Range Physiographic Province. The Salton Sea is in the lowest part of the trough. The trough is an extension of the Gulf of California, separated by the delta of the Colorado River. The southern part of the trough consists of the Imperial Valley, which is bounded by the Chocolate Mountains to the northeast and the Peninsular Range on the southwest. The land in the Imperial Valley slopes gently from sea level at the international boundary with Mexico, northwest to the Salton Sea. The majority of the cultivated land in the Imperial Valley is within the area of the prehistoric Lake Cahuilla. The silty clay loam to silty clay soils of the cropland were formed from these fine- to moderately fine-textured lakebed sediments. To the east of the Lake Cahuilla basin are the East Mesa, a terrace of the Colorado River, and the Algodones Sand Hills, formed from wind-blown sand from the beach and terrace sediments (United States Department of Agriculture – Soil Conservation Service [USDA-SCS], UC Agricultural Experiment Station, and IID 1981). The main part of the aquifer in the Imperial Valley is composed of Pliocene and Quaternary, predominantly nonmarine, alluvial deposits of sand, silt, and clay from the Colorado River. These deposits are thousands of feet thick, increasing in depth near the center of the valley (Loeltz et al. 1975).

The soil texture along the All American Canal ranges from fine sand to silty clay. The sands are rapidly permeable with low shrink-swell potential, and most of the finer-textured soils are very slowly permeable to impermeable with moderate to high shrink-swell potential. Salinity in the soils along this canal ranges from very slight to slight. The coarser soils are slightly to moderately susceptible to water and wind erosion; the finer-textured soils are moderately susceptible to water and wind erosion.

The soils along the Coachella Canal are much lighter in texture than those described above. They range from loam to sand, with all but one having low shrink-swell potential and moderately rapid to rapid permeability throughout the soil profiles. The Holtville loam has a clay subsoil layer with high shrink-swell potential and low permeability. Other than the Holtville loam soil, wind and water erodibility is low. The Holtville soil is highly susceptible to water erosion and moderately susceptible to wind erosion.

The area along the lower Colorado River contains young, unstable alluvial and floodplain surfaces, subject to periodic flooding, sedimentation, and dynamic alteration. The soils along

the silt-filled channels have a high organic matter content. Desert pavement is locally present, consisting of a thin, sheet-like concentration of wind-polished, closely packed pebbles (Parsons et al. 1986).

The soils in and along the shoreline of the Salton Sea are predominantly silty clay loam to silty clay in texture with moderate to high shrink-swell potential. They are subject to water erosion if left bare and are moderately susceptible to wind erosion. They are slightly to moderately saline and have very low permeability (USBR and SSA 2000; USDA-SCS 1980, 1981).

Prime and Unique Farmland and Farmland of Statewide Importance are classified on the basis of physical and chemical features of the soil types, as well as climate and water supply. These soils are discussed in section 3.5, Agriculture Resources.

Earthquakes are the main geologic hazard in the area affected by the Proposed Project. The Project area, particularly along the San Andreas, Imperial, and San Jacinto faults, is seismically active (California Department of Conservation [CDC], Division of Mines and Geology 2000). The surface geologic materials near these major faults are predominately hard rock, but they include a substantial amount of softer materials that can amplify shaking and lead to increased damage from an earthquake (CDC Division of Mines and Geology 2000). Other natural hazards include floods, landslides, and other mass wasting.

3.3.3.2 Mineral Resources

Significant geothermal resources and oil and gas fields exist primarily in the western part of the Project area (CDC Division of Mines and Geology 1980). According to the CDC, Division of Mines and Geology (1998), a variety of mineral resources are scattered throughout the Project area, as shown on the following table.

Table 3.3-1. Mineral Resources by County

County	*Mineral Resources*
Ventura	Clay, gypsum, shale, specialty sand, sand and gravel
Los Angeles	Clay, decorative rock, sand and gravel, crushed stone, titanium, tungsten
Orange	Silica, sand and gravel
Riverside	Clay, crushed stone, dimension stone, sand and gravel
San Bernardino	Alumina, clay, crushed stone, decorative rock, feldspar, sand and gravel, limestone, gold, talc, rare earths, salt, saline compounds, pumice, volcanic cinders, zeolites
San Diego	Crushed stone, dimension stone, gemstones, specialty sand, sand and gravel
Imperial	Clay, gypsum, sand and gravel, gold
Source: CDC Division of Mines and Geology 1998.	

3.3.2 Impacts

3.3.2.1 Significance Criteria

The criteria used to determine the significance of an impact regarding geology, soils, and mineral resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant impact on these resources if it would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - strong seismic ground shaking;
  - seismic-related ground failure, including liquefaction;
  - landslides; or
- result in substantial soil erosion or the loss of topsoil; or
- involve construction 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, subsidence, liquefaction, or collapse; or
- be located on expansive soil, as defined in the Uniform Building Code, creating substantial risks to life or property; or
- result in the substantial loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- result in the substantial loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.3.2.2 Methodology

Potential impacts to geology, soils, and mineral resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. The exception to this approach is the evaluation of liquefaction potential. This analysis is based on the groundwater modeling described in section 3.1, which uses a predictive Future Baseline for groundwater conditions. The extent and nature of ground disturbance and new facilities were considered, along with the potential proximity of new construction to population centers. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

3.3.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to geology, soils, or minerals from construction or operation of this component of the Proposed Project. The following references to canal lining refer to additional actions that would be taken within the IID service area.

Earthmoving during construction of on-farm water conservation measures (such as tailwater return systems) and water delivery system-based conservation measures (such as new lateral interceptors, reservoirs, seepage interceptors, and canal lining) could cause a temporary increase in wind and water erosion of bare soils. This is a potentially significant impact that is mitigable through the use of standard construction practices.

Operation of water conservation measures could increase the long-term potential for soil erosion, and wind and water erosion could occur within any new unlined interceptors/canals and reservoirs. The amount of erosion would not be substantial, however, because relatively small areas would be involved, and standard Best Management Practices would be implemented. Impacts would not be significant. Lining canals would have the long-term effect of reducing erosion because the concrete lining would stabilize the canals' banks. Fallowing could be implemented within IID's service area as a means of conserving water. No water would be applied to fallowed areas; thus, no water erosion of soils would occur. The potential for wind erosion of fallowed farmland is addressed in section 3.7, Air Quality.

In general, the water conservation measures would not involve the type of construction that is highly susceptible to geologic hazards, such as liquefaction, ground shaking, and fault rupture. If damage were to occur due to a seismic event, impacts would be localized and would not result in increased risk to the public. This is particularly true since the Proposed Project would be located in a largely undeveloped and unpopulated rural area. Additionally, lined canals are structurally stronger than unlined canals.

Soil erosion from irrigation water applied to fields could be reduced, since water conservation measures would reduce the amount of tailwater entering the drains, which could diminish the amount of soils removed from each field. This would be a beneficial impact.

Project components would affect relatively small areas and would not result in a substantial loss of availability of a mineral resource with local, regional, or state-wide importance. No new risks to life and property would result from construction on expansive soils given the nature of the facilities that would be constructed and the sparsely populated locations in which they would be located.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to geology, soils, or minerals from construction or operation of this component of the Proposed Project. It concluded that lining the Coachella Canal would have the long-term effect of reducing erosion because the concrete lining would stabilize the canal's banks. The addition of a concrete lining also would strengthen the canal structurally.

Certain facilities, such as pumping stations, recharge facilities, and pipelines, may be constructed by CVWD as part of the Proposed Project. Earthmoving during construction could cause a temporary increase in wind and water erosion of bare soils. It is estimated that approximately 250 and 600 acres could be disturbed, which could significantly increase the short-term potential for localized wind and water erosion. This impact would be mitigated through the implementation of standard construction practices.

Structures such as pumping stations, recharge facilities, and pipelines could fail during an earthquake, which could result in a release of water in the immediate vicinity of the facility. Pipelines and pumping stations would likely be located in sparsely populated agricultural areas. Two sites currently under preliminary consideration for the recharge facilities, among others, are in the vicinity of Dike 4 (a flood control dike) and the Martinez Canyon alluvial fan located west of the community of Valerie Jean. If selected, since these facilities would be located in remote areas, the release of water would not cause a public hazard. Shallow excavations would not create unstable earth conditions or cause changes in geologic substructures that would increase earthquake hazards.

Implementing the Proposed Project would allow the use of Colorado River water to stabilize or raise groundwater levels in the Lower Valley (although not above historic levels). Agricultural drains have been installed in this area, which maintain a fairly constant water level even if water levels rise. If water levels increase as a result of the Proposed Project to within 30 feet of the ground surface under habitable structures or important infrastructure, such as bridges, the liquefaction hazard could increase, which would be a potentially significant but mitigable impact.

The Proposed Project would assist in the increase of groundwater levels to historic levels, which would reduce the potential for subsidence. This would be a beneficial impact. The Proposed Project could result in the disturbance of approximately 250 to 500 acres. This would not result in a substantial loss of availability of a mineral resource with local, regional, or state-wide importance. No new risks to life and property would result from construction on expansive soils given the nature of the facilities that may be constructed and the sparsely populated locations in which they would probably be located.

The Metropolitan Water District of Southern California

No new construction or changes in the operation of existing facilities would occur in this service area that would impact geology, soils, or minerals. Implementation of the Proposed Project would not increase the exposure of people and structures to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not

result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soils or would result in the substantial loss of availability of a known mineral resource.

San Diego County Water Authority

No new construction or changes in the operation of existing facilities would occur in this service area that would impact geology, soils, or minerals. Implementation of the Proposed Project would not increase the exposure of people and structures to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soil or would result in the substantial loss of availability of a known mineral resource.

Other Areas

COLORADO RIVER

The only change to the Colorado River would be the very slight lowering of the median water surface elevation by an amount that is within historic levels. The shoreline would be exposed very gradually, minimizing the potential for erosion until the soils stabilize. This impact would not be significant in either California or Arizona. People and structures would not be exposed to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soil or would result in the substantial loss of availability of a known mineral resource.

SALTON SEA

The lowering of the Salton Sea's elevation over time, as described in Chapter 3.0, would cause additional bare soil to be exposed. The newly exposed soil would be subject to wind and water erosion; however, the high salt content of the Salton Sea and the underlying soils would cause a crust to form as the soils dried. The soil system at the Salton Sea is predominately sodium sulfate and sodium chloride. These salts do not change in volume significantly with fluctuations in temperature, so the crust at the Salton Sea should be fairly stable and resistant to erosion (IID and USBR 2002). Impacts would be less than significant.

No other elements of the Proposed Project would impact geology, mineral, or soils in this area. People and structures would not be exposed to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. No construction

on expansive soils would be required, nor would the Proposed Project result in the substantial loss of availability of a known mineral resource.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to geology, soils, or mineral resources or increase seismic-related risks along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in any changes to the physical environment that would impact soils, geology, or mineral resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact geology, soils, or mineral resources or that would result in an increase of seismic-related risks.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project and would not require the construction of water conveyance facilities. Therefore, no impacts to geology, soils, and minerals, or an increase in seismic risks would result from implementation of this Project component.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause significant impacts to geology, soils or mineral resources or otherwise increase seismic-related risks. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to geology, soils, or mineral resources or that would increase seismic-related risks.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions that could potentially impact geology, soils, or mineral resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would impact geology, soils, or mineral resources or cause an increase in seismic-related risks.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to geology, soil, or mineral resources or increase seismic-related risks. No impacts to geology, soils, or mineral resources or increased seismic-related risks would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would not result in significant impacts to geology, soils, or mineral resources or increase the risks associated with seismic-related events because no physical changes to environmental conditions would occur and no construction of water conveyance infrastructure would be required.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to geology, soils, or mineral resources because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD by reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to geology, soils, or mineral resources or create an

increased risk from seismic-related events. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the River under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact geologic, soils, or mineral resources or increase the risk from seismic-related events.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to geology, soils, or mineral resources or create an increased risk from seismic-related events.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. Additional conservation/shortage management would also be short-term and is not anticipated to involve ground disturbance or construction activity. The potential impacts to geological resources, such as the potential for wind erosion, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.3.3 Mitigation Measures

The following measure will be implemented to mitigate the potential significant impact from increased risk of liquefaction in the Coachella Valley.

- CVWD shall monitor water levels in the vicinity of recharge basins and manage recharge operations such that water levels will remain greater than 30 feet below the ground surface near the recharge site.

To minimize soil erosion from construction in the CVWD and IID service areas, one or more of the following measures could be implemented as standard operating practices during construction activities (this list does not preclude the use of additional mitigation measures as needed):

1. Apply water to areas where vehicles and equipment are involved in ground-disturbing activities.
2. Pave dirt roads or keep them wet.
3. Increase water applications or reduce ground-disturbing activities with increasing wind speeds.
4. Minimize the amount of disturbed area and vehicle speeds onsite.
5. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents.
6. Designate personnel to monitor erosion control program activities to ensure that they are effective in minimizing soil erosion.

3.3.4 Significant Unavoidable Impacts

No significant unavoidable impacts would occur.

3.3.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes would occur.

3.4 LAND USE AND PLANNING

3.4.1 Environmental Setting

3.4.1.1 Regulatory Framework

Land use is under the jurisdiction of local municipalities and counties. Each city and county in Southern California has a general plan that guides its future growth. In addition to general planning, cities and counties also provide land use planning for smaller areas within their jurisdictions. These more localized land use planning documents include community and specific plans. All of these plans must be consistent with the sub-regional and regional plans, which in turn must be consistent with state land use planning and zoning laws.

The DOI, U.S. Department of Agriculture (USDA), and the U.S. Department of Defense are primarily responsible for land use on federal property, and the California State Lands Commission, Parks and Recreation Department, Coastal Commission, Department of Fish and Game, and the University of California are among the agencies that govern land uses on state-owned lands.

Section 15125 of the State CEQA Guidelines requires that an EIR discuss any inconsistencies between the Proposed Project and applicable general and regional plans. This PEIR section addresses the planning programs and policies of the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG), the regional planning entities within the Project area, as well as the BLM and IID.

Southern California Association of Governments - Regional Comprehensive Plan and Guide

SCAG is a regional agency whose functions include regional transportation planning, air quality planning, demographic projections, and the review of Proposed Projects of regional significance to determine consistency with regional plans, including SCAG's Regional Comprehensive Plan and Guide (RCPG). SCAG's RCPG (1996) contains the following relevant planning principles:

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

3.09 Support local jurisdictions' effort to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

5.11 Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.

Water Resources Chapter Recommendations

SCAG signed a Memorandum of Understanding (MOU) with MWD, as the largest wholesale water agency in the region, to develop the Water Resources Chapter (WRC). The WRC,

published in 1996, includes projections of water supply and demand for areas outside the MWD service area within the SCAG region. The recommendations contained in this chapter do not create new legal mandates for local governments or other regional organizations. The WRC identifies potential programs that would help meet the projected future water supply needs for the region. These include programs related to Colorado River water supply and use, and thus the QSA, such as the All American Canal and Coachella Canal lining projects, Phase II water conservation program with IID, and IID's modified irrigation practices and land fallowing proposal. The WRC also recognizes currently planned State Water Project transfer programs, water transfer and exchange programs, and local management strategies.

San Diego Association of Governments – Regional Growth Management Strategy

SANDAG works with local cities within San Diego County, the County of San Diego, and other local agencies to conduct certain planning activities at a regional level. These activities consist of planning for public facilities financing, housing, energy, land use, growth management, open space/environmental/habitat conservation, waste management, airport land use, bi-national coordination, watershed/water quality, and shoreline erosion on a regional scale. A Memorandum of Agreement between SDCWA and SANDAG was adopted in 1992 (SANDAG and SDCWA 1992) whereby SDCWA agrees to use SANDAG's most recent regional growth forecasts for planning purposes. These forecasts are to provide a basis for SDCWA to plan the amount of land and types of facilities needed to serve the forecast population. While the region's cities and the County of San Diego have control over local land use policies, SANDAG provides a forum for these jurisdictions to coordinate planning for the San Diego region as a whole (SANDAG 1999).

In 1999, SANDAG launched REGION 2020, which is its regional growth management strategy update. The strategy consists of five interrelated elements and is based on the idea that most growth-related issues can be addressed within the context of one or more of the elements. The elements include economic prosperity, transportation, housing, open space and environment, and fiscal reform/infrastructure financing. REGION 2020 provides a comprehensive, cohesive framework for dealing effectively with the impacts of growth in the San Diego region. The actions contained in the REGION 2020 are intended to preserve or improve the region's quality of life. The following policy related to the water supply/water quality of life factor is applicable to the Proposed Project:

> *Ensure a sufficient supply of water, and improve the quality of our coastal waters, bays, reservoirs, streams and groundwater.*

Bureau of Land Management – California Desert Conservation Area

The BLM administers extensive lands in the Southern California desert region. Portions of the Project area are located within the California Desert Conservation Area (CDCA). The CDCA is a 25-million-acre area that was created by the Federal Land Policy and Management Act of 1976. The act directed the Secretary of the Interior to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of public lands within the CDCA.

The goal of the CDCA plan is to "Provide for the use of the public lands and resources of the CDCA, including economic, scientific, educational, and recreational uses, in a manner which enhances wherever possible—and which does not diminish, on balance—the environmental, cultural, and aesthetic values of the Desert and its future productivity" (BLM 1980).

Land Use Plans and Policies – Western Arizona

The Western Arizona Council of Governments (WACOG) is a regional agency that includes Mohave, La Paz, and Yuma Counties in western Arizona. Currently, WACOG does not have a regional plan in place that addresses water resources policy issues for western Arizona.

Many Arizona counties and municipalities are currently in the process of updating their general plans in accordance with recent growth management legislation by the State. In western Arizona, La Paz County does not currently have a general plan in place, but will be developing a plan in late 2001 and 2002. Mohave County is currently revising water-related policies in the natural resources element of its general plan. Yuma County is currently preparing a general plan update that will include water resources policies.

Local Planning Programs

Each of the counties within the area maintains a general plan that guides land use and development decisions within the respective county jurisdictions. These plans include population and housing projections established by the regional planning agencies, SCAG and SANDAG. Comparable plans are in place for each of the cities. These plans are required to be consistent with regional plans.

3.4.1.2 Regional Issues

The region of influence includes much of Southern California, a region that has a diverse array of land uses. A large portion of the area is urbanized, with major centers in metropolitan Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. Urban development is also rapidly occurring in portions of Riverside and San Bernardino counties. Agriculture is a major land use in certain counties, particularly Imperial, Riverside, and San Diego counties. There also are large, relatively undeveloped land areas that are in private ownership or owned by state and federal governments. The region of influence also includes a small portion of western Arizona extending along the lower Colorado River.

SCAG is the regional planning entity for six of the seven counties (Ventura, Los Angeles, Orange, San Bernardino, Riverside and Imperial counties) that are served by the four co-lead agencies. As the designated Metropolitan Planning Organization, SCAG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the state level. A number of subregional agencies are members of SCAG, including the Coachella Valley Association of Governments, Imperial Valley Association of Governments, and the Western Riverside Council of Governments. The regional planning entity for San Diego County, is SANDAG.

3.4.1.3 Imperial Irrigation District

The IID service area is within Imperial County, and includes the local municipalities of Calipatria, Westmorland, Brawley, Holtville, El Centro, and Calexico. Agricultural lands with scattered suburban and rural development occupy the majority of the IID service area. Actions that would occur within the IID service area as a result of the implementation of the Proposed Project would take place in rural areas.

Constructing a new canal parallel to the existing All American Canal would begin downstream from the Fort Yuma Indian Reservation (see Figure 1.1-2) and the Pilot Knob ACEC. This is archaeologically important land located outside of the Fort Yuma Indian Reservation (Pilot Knob is west of the western boundary of the reservation). The parallel canal would be constructed on federal land previously withdrawn from the public domain for irrigation development in the IID service area and for construction of the All American Canal.

3.4.1.4 Coachella Valley Water District

The CVWD service area is located primarily in Riverside County with small portions in Imperial and San Diego counties. It includes numerous municipalities, including the cities of Coachella, Indio, Palm Desert, Cathedral City, La Quinta, Indian Wells, and Rancho Mirage. Based on the existing land use acreage compiled by the Coachella Valley Association of Governments (as of 1995), over 90 percent of the Coachella Valley is open space (including agriculture), and only 3 percent of the land is residential. Most of the lands within the service area are either private lands or are public lands administered by the BLM, although land owned by Indian tribes is also present. Actions that would take place in the CVWD service area as a result of the implementation of the Proposed Project would primarily take place in the lower Coachella Valley. Land uses in the lower Coachella Valley include extensive agricultural uses and recreational uses such as resorts and golf courses.

Most of the land bordering the Coachella Canal right-of-way is federal land. The area east of the canal and part of the area west of the canal is part of the U.S. Navy's Chocolate Mountain Aerial Gunnery Range. The area west of the canal also contains land administered by the BLM under the CDCA Plan. A portion of land on the west bank is owned by the State of California. Approximately 97 percent of the land adjacent to the canal is undeveloped desert. Approximately 2 percent of the land along the southern and western boundaries of the canal right-of-way has been developed with single-family residences and with spaces that include mobile home/recreational vehicle (RV) parks. Minor amounts of agricultural and quarry operations also are present.

3.4.1.5 The Metropolitan Water District of Southern California

The MWD service area includes the California coastal plain. It extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north to the Mexican border on the south. It extends about 70 miles inland from the coast. The service area includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Much of the area is urbanized; only 13 percent of the land area of these six counties is within the MWD service area, but nearly 90 percent of the population of those counties lives within the service area boundaries (MWD 1995). The urbanized areas contain a wide variety of land use patterns,

including residential, commercial, recreational, educational, and industrial/manufacturing uses. The service area also includes largely undeveloped lands in areas such as the Santa Monica Mountains in Los Angeles County, and the Santa Margarita Mountains, Merriam Mountains, and Agua Tibia Wilderness Area in San Diego County. Some agricultural uses are present in the service area, including, but not limited to, rural portions of Ventura and San Diego counties.

3.4.1.6 San Diego County Water Authority

The SDCWA service area is located in the western portion of San Diego County. It extends from the U.S.-Mexico border in the south to Orange and Riverside counties in the north and from the Pacific Ocean to the foothills that end the coastal plain in the east. It is characterized primarily by urban and suburban uses, but it currently includes approximately 74,000 acres of land in agricultural production (SDCWA 2000). The urbanized areas contain a wide variety of land use patterns, including residential, commercial, recreational, educational, and industrial/manufacturing uses. Largely undeveloped areas are found in the Santa Margarita Mountains, Merriam Mountains, and Agua Tibia Wilderness Area. The military has a substantial presence in San Diego County, including the Naval Air Station Miramar and the Marine Corps' Camp Pendleton. Camp Pendleton alone comprises about 135,000 acres, or about 15 percent of the total service area. Both Naval Air Station Miramar and Camp Pendleton contain large open spaces next to urbanized areas.

3.4.1.7 Other Areas

Colorado River

Land uses along the lower Colorado River are under a number of jurisdictions, including La Paz and Yuma counties, Arizona; and San Bernardino, Riverside, and Imperial counties, California. Incorporated cities along the River include Needles and Blythe, California; and Parker, Arizona. Several Indian reservations are located along the River, as well, including the Colorado River Indian Tribes Reservation and Yuma Project Reservation Division. Indian tribes are sovereign nations and reservation lands are not subject to local land use controls. A number of federal agencies manage federally owned land along the River, including the BLM, the Service, and the Department of Defense. Other land is under the jurisdiction of individual states. The majority of the Colorado River region is undeveloped, although scattered suburban and rural development is present.

Salton Sea

The Salton Sea crosses the Riverside and Imperial County boundaries and borders upon San Diego County. It is the dominant feature in the region and covers 376 square miles. Agricultural lands with scattered suburban and rural development occupy the majority of the lands surrounding the Salton Sea. A number of unincorporated communities surround the Sea and consist primarily of single-family residences, RV and trailer parks, beaches, marinas, and commercial uses. The latter provide services for tourists and area residents.

Recreational uses, including the Salton Sea State Recreation Area, are prevalent in the immediate vicinity of the Sea, as described in section 3.6. The Sonny Bono Salton Sea National

Wildlife Refuge is located in and along the southern portion of the Sea, and the Imperial Wildlife Refuge Area-Wister Unit is located along the east shore of the Sea. Geothermal hydroelectric facilities are present on the southwest shore. The U.S. Navy's Salton Sea Test Base covers 12,180 acres of water in the southwest portion of the Sea, as well as 7,240 acres of the adjoining land.

3.4.2 Impacts

3.4.2.1 Significance Criteria

The criteria used to determine the significance of an impact on land use and planning are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would be considered to have a significant environmental impact if it would:

- physically divide an established community; or
- conflict with any applicable land use plan, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with any applicable habitat conservation plan or natural community conservation plan.

3.4.2.2 Methodology

Potential impacts to land use in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is derived from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001). The consistency of the Proposed Project with existing regional land use policies was analyzed, along with the potential for physical changes to land uses. Given the programmatic level of analysis, this EIR focuses on regional policies and plans. Consistency with specific local plans and policies will be evaluated in subsequent project-level environmental analyses once specific sites are identified.

3.4.2.3 Summary of Impacts

Consistency with Regional Land Use Plans and Policies

Table 3.4-1. Consistency with Regional Land Use Plans and Policies

SCAG Regional Comprehensive Plan and Guide		
3.03	*The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.*	Policy 3.03 provides planning guidance to SCAG with regard to the implementation of growth policies. The Proposed Project would be consistent with this policy because it would not conflict with the timing, financing, and location of public facilities, utility systems, and transportation systems.
3.09	*Support local jurisdictions' effort to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*	Policy 3.09 addresses the costs and funding sources of infrastructure and public service systems. The Proposed Project would be implemented in a manner that would maximize cost-effectiveness and efficiency for all parties involved and would thus be consistent with this policy.
3.20	*Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*	Policy 3.20 addresses protection of important natural resources. This PEIR includes mitigation measures for significant impacts that may occur from implementation of the Proposed Project. In addition, a number of related programs are being planned by various agencies to address resource conservation issues. These programs include the lower Colorado River Multi-Species Conservation Program, CVWD's proposal to recharge groundwater using Colorado River water, and IID's HCP. The Proposed Project would be consistent with this policy.
5.11	*Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*	Policy 5.11 deals with issues of consistency during the environmental review process for planning projects. As documented in this PEIR, the Proposed Project is being thoroughly reviewed as required under CEQA. Because the Proposed Project is being evaluated at a programmatic level, appropriate environmental review would be conducted in the future for specific projects as appropriate.
SANDAG Regional Growth Management Strategy		
Ensure a sufficient supply of water, and improve the quality of our coastal waters, bays, reservoirs, streams and groundwater.		The Proposed Project is intended to maintain a reliable water supply to meet demands in the SDCWA service area. The Proposed Project would not specifically improve water quality in the SANDAG region, but neither would it have adverse impacts. Implementation of the Proposed Project would be consistent with this policy.

Table 3.4-1. Consistency with Regional Land Use Plans and Policies

California Desert Conservation Area	
Provide for the use of the public lands and resources of the CDCA, including economic, scientific, educational, and recreational uses, in a manner which enhances wherever possible – and which does not diminish, on balance – the environmental, cultural, and aesthetic values of the Desert and its future productivity.	The Proposed Project would result in the implementation of water conservation measures in the IID service area that would cause the Salton Sea water elevation to decline at a more rapid rate and to a greater extent than would occur under current conditions. The Proposed Project also would result in an acceleration of salinity increases. This would result in significant or potentially significant impacts to biology, recreation, air quality, aesthetics, and cultural resources. This PEIR includes mitigation measures that would mitigate impacts to the Sea to a less than significant level, with the exception of potential fugitive dust emissions. Should the Proposed Project not be implemented, the Sea level would decline and salinity would increase, although at a slower rate. No mitigation would be provided to offset this impact, unless it were included as part of another project. Other significant impacts to environmental resources or public lands within the CDCA area (including those identified in the IID and CVWD service areas and along the Colorado River) are mitigable to less than significant levels with the exception of short-term air quality impacts from the Coachella Canal Lining Project and water quality impacts to the Alamo River and the lower aquifer groundwater of CVWD's Upper Valley. With mitigation, the Proposed Project would be consistent with the goal of the CDCA. It would not diminish, on balance, the environmental, cultural, and aesthetic values of the Desert and its future productivity.

Imperial Irrigation District

No significant land use impacts were identified in the EIS/EIR for the All American Canal Lining Project.

Implementation of the Proposed Project would result in water conservation programs to implement IID's consensual cap on Priority 3a diversions and the proposed water transfers to CVWD, MWD and SDCWA. The water conservation measures, which may include on-farm measures and/or system measures, would be implemented on agricultural land and would not result in changes in land use that would meet the significance criteria described above. As discussed in section 3.5, farmland may be fallowed within the IID service area to generate conserved water for purposes of transfer or to comply with the consensual cap on Priority 3a diversions. As discussed in section 3.5, if this resulted in the conversion of Important Farmland to non-agricultural use, this would be a significant impact to agricultural resources in the Imperial Valley. It would not represent a significant land use impact, however, because this change would not physically divide an established community; conflict with any applicable

land use plan, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or conflict with any applicable habitat conservation plan or natural community conservation plan (IID and USBR 2002).

Coachella Valley Water District

As noted in the EIS/EIR for the Coachella Canal Lining Project, lining the existing canal would be consistent with land use plans and policies and would not otherwise significantly affect land use.

No aspects of the Proposed Project would significantly alter land uses in the CVWD service area. The additional water transferred to CVWD would be used to replenish overdrafted groundwater aquifers, which is consistent with current regional planning and therefore would not create additional water supply for new users. Other facilities would likely be located in rural or remote areas, such as the vicinity of Dike 4 or Martinez Canyon. Pipelines and pumping stations are common in such areas, as are water retention facilities. These facilities would not physically divide an established community. CVWD is participating in a multi-agency, multi-species habitat conservation plan (CVMSHCP) with others in the Coachella Valley. Potential impacts to sensitive species from CVWD's delivery and use of water related to the Proposed Project will be addressed in the CVMSHCP and the CVWMP EIR currently in preparation.

Metropolitan Water District

No new construction or operational changes would occur in this service area. The Proposed Project would not physically divide communities, and since no physical or operational changes would occur, no conflicts with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect would occur; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan.

San Diego County Water Authority

No new construction or operational changes would occur in this service area. The Proposed Project would not physically divide communities, and since no physical or operational changes would occur, no conflicts with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect would occur; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan.

Other Areas

COLORADO RIVER

The Proposed Project would not result in any construction or changes to land use patterns around the Colorado River, either in California or Arizona. There would be a slight reduction (within the normal range of variability) in the median water surface elevation between Parker and Imperial dams, although this would not affect land uses. No new construction or

operational changes would occur in this service area. The Proposed Project would not physically divide communities. The slight reduction in median water surface elevation would not conflict with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan. The potential biological impacts of the Proposed Project to the Colorado River geographic area are being addressed in the Lower Colorado River Multi-Species Conservation Program, which is in preparation.

SALTON SEA

The Proposed Project would result in decreased inflows to the Salton Sea and would accelerate the increase in the Sea's salinity. These consequences would not physically divide the local community or otherwise result in a direct change to land use patterns, although this could affect the area's desirability for recreational use, as described in section 3.6. This potential decrease in recreational activities would eventually occur whether or not the Proposed Project were implemented as salinity levels of the Sea would increase independently of implementation of the Proposed Project. Currently submerged land would be exposed sooner and to a greater extent than under Future Baseline conditions.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to land uses along the Colorado River or affect local land use planning efforts. A reduction in the amount of conserved water dedicated to MWD would not change land use patterns nor affect land use planning activities of local planning agencies. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact current land uses or affect local land use planning efforts.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to

existing or future land uses would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact current land uses or effect local land use planning efforts.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Because the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact current land uses or change local land use planning efforts. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to current or future land uses or effect local land use planning efforts.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to land uses along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to current or future land uses or effect local land use planning efforts.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu, no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to existing land uses along the Colorado River or affect local land use planning efforts. No impacts to land use patterns would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to land uses or affect land use planning efforts.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to land uses or land use planning efforts

because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to land uses or land use planning efforts. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the River under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact land uses or local land use planning efforts.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to land uses or land use planning efforts.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to land use, such as increased

farmland fallowing, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.4.3 Mitigation Measures

No mitigation measures are required.

3.4.4 Significant Unavoidable Environmental Changes

No significant unavoidable land use changes would result from the implementation of the Proposed Project.

3.4.5 Significant Irreversible Environmental Changes

No significant irreversible land use changes would result from the implementation of the Proposed Project.

3.5 AGRICULTURAL RESOURCES

3.5.1 Environmental Setting

3.5.1.1 Regulatory Framework

Individual counties and municipalities regulate agricultural land uses primarily through the adoption of land use plans, policies, and agricultural zoning that restrict the location, type, and intensity of land development and use that is allowed. The California Department of Conservation has the primary responsibility for regulation and reporting related to statewide agriculture. Some agricultural land in Southern California is under Williamson Act contracts. Under the Williamson Act (formally referenced as the California Land Conservation Act of 1965), local governments may enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the State via the Open Space Subvention Act of 1971. The minimum term of a Williamson Act contract is 10 years.

3.5.1.2 Regional Issues

Existing Agricultural Resources

Table 3.5-1 presents the amount of agricultural land present in each county served by the four co-lead agencies and the percentage of land in each county that is in agricultural use. The categories in Table 3.5-1 are defined in Table 3.5-2 and are based on the Important Farmland maps for California. These maps are compiled from USDA Natural Resources Conservation Service soil surveys and current land use information.

Table 3.5-1. Agricultural Land in 1998 by County (in acres)

County	*Important Farmland*[1]	*Grazing Land*	*Total Agricultural Land*[2]	*Urban & Built-Up Land*	*Total County Area*	*Agricultural Land as a Percentage of Total Land*
Imperial	554,889	0	554,889	23,952	2,868,426	19.3%
Los Angeles	57,292	218,118	275,410	159,533	2,529,470	10.9%
Orange	18,200	38,517	56,717	269,987	509,460	11.1%
Riverside	501,740	134,597	636,337	240,889	4,673,095	13.6%
San Bernardino	50,927	954,229	1,005,156	234,981	12,867,789	7.8%
San Diego	196,813	142,355	339,168	311,491	2,712,200	12.5%
Ventura	123,235	207,853	331,088	95,522	1,173,973	28.2%

Source: CDC 2000a-g.

Notes: 1. Important Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance.

2. This category includes both Important Farmland and Grazing land.

IMPERIAL COUNTY

In 1998, agricultural land in Imperial County consisted of 554,889 acres of Important Farmland (as defined in Table 3.5-2), or 19.3 percent of the county's total land area. Unlike the other counties listed in Table 3.5-1, none of the agricultural lands in Imperial County were categorized as grazing land in 1998. All agricultural land in Imperial County is also considered Important Farmland. Of the seven counties in Southern California, Imperial provides the largest amount of Important Farmland, and the second largest proportion of agricultural land. In 1997, Imperial County was ranked as 10th in California in terms of agricultural production, with a value of $1,039,928,000 (personal communication, J. Tippett 2001). In 1998, Imperial County was the state's top producer of carrots (producing about 57 percent of the total statewide value), sugar beets (about 38 percent of the statewide value), onions (about 22 percent of the statewide value), wheat (about 19 percent of the total statewide value), alfalfa hay (about 17 percent of the statewide value), and sweet corn (about 17 percent of the statewide value). Imperial County also produces approximately 27 percent of the statewide value of cantaloupes, 22 percent of dates, and 18 percent of watermelons (California Department of Food and Agriculture 1998).

LOS ANGELES COUNTY

In 1998, Los Angeles County contained 275,410 acres of agricultural land, about 10.9 percent of the total land area in the county. Of the seven counties in Southern California, Los Angeles had the second lowest percentage of agricultural land, behind only San Bernardino County. Between 1992 and 1997, the market value of agricultural products sold increased by 19 percent to $237,665,000. Crops accounted for 94 percent of the market value, while livestock made up 6 percent (USDA 1997a). In 1997, Los Angeles County ranked 27th in the state in terms of market value of agricultural products. Los Angeles County's top five crops (by value) were ornamental trees and shrubs, bedding plants, dry onions, peaches, and carrots (California Department of Food and Agriculture 1997a).

ORANGE COUNTY

In 1998, agricultural land in Orange County comprised 56,717 acres, or 11.1 percent of the total land area in the county. Between 1992 and 1997, the market value of agriculture products sold increased 23 percent to $228,881,000, with crops and livestock accounting for 99 percent and 1 percent of the market value, respectively (USDA 1997b). In 1997, Orange County ranked 23rd in the state in terms of market value; its top five crops (by value) were nursery stock/flowers, strawberries, tomatoes, bell and miscellaneous peppers, and avocados (California Department of Food and Agriculture 1997b).

RIVERSIDE COUNTY

In 1998, agricultural land in Riverside County comprised 636,337 acres, or 13.6 percent of the county's total land area. Between 1992 and 1997, the total farmed land increased 20 percent (from 423,602 acres to 509,031 acres). During the same period, the market value of agricultural products sold increased by 24 percent to $1,047,525,000. Crops and livestock accounted for 55 and 45 percent of the market value, respectively (USDA 1997c). In 1997, Riverside County

ranked 9th in the state in terms of market value. Its top five crops were milk, table grapes, eggs, nursery, and hay products (California Department of Food and Agriculture 1997c).

Table 3.5-2. Definitions of Categories Used in Important Farmland Maps

Farmland Category	*Definition*
Prime Farmland	Land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. Prime farmland includes all land that qualifies for rating as Class I or Class II in the NRCS land use capability classifications.
Farmland of Statewide Importance	This land is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Farmland of Statewide Importance must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
Unique Farmland	This is land of lesser quality soils used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Unique farmland is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops on Unique Farmland include oranges, olives, avocados, rice, grapes, and cut flowers. This category does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
Farmland of Local Importance	This is land of importance to the local agricultural economy and is determined by each county's Board of Supervisors and local advisory committees. Examples of this type of land could include dairies, dryland farming, aquaculture, and uncultivated areas with soils qualifying for Prime Farmland and Farmland of Statewide Importance.
Grazing Land	Grazing land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.
Urban and Built-up Land	This is used for residential, industrial, commercial, construction, institutional, and public administrative purposes; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures; and other development purposes.
Other Land	Other land is that which is not included in any of the other mapping categories. The following types of land are generally included: low-density rural development; brush, timber, and other lands not suitable for livestock grazing; government lands not available for agricultural use; roads systems for freeway interchanges; vacant and nonagricultural land larger than 40 acres in size and surrounded on all sides by urban development; confined livestock facilities of 10 or more acres; strip mines and borrow and gravel pits; a variety of other rural land uses.
Water	Water areas with an extent of at least 40 acres.

Source: CDC, undated.
Note: None of these categories include publicly owned lands for which there is an adopted policy preventing agricultural use.

SAN BERNARDINO COUNTY

In 1998, agricultural land in San Bernardino County comprised 1,005,156 acres, or 7.8 percent of the county's total land area. San Bernardino had the largest amount of agricultural land of the seven Southern California counties, but also had the lowest proportion in relation to total county area. Between 1992 and 1997, the market value of agriculture products sold increased by 9 percent to $617,833,000. Crops accounted for 12 percent of the market value, and livestock accounted for 88 percent (USDA 1997d). In 1997, San Bernardino County ranked 14th in the state in terms of market value of agricultural products. Its top five crops included milk, cattle and calves, eggs, hay/alfalfa and greenchop, and nursery stock (California Department of Food and Agriculture 1997d).

SAN DIEGO COUNTY

In 1998, agricultural land in San Diego County comprised 339,168 acres, or 12.5 percent of the county's total land area. Between 1992 and 1997, the market value of agricultural products sold increased by 27 percent to $1,139,276,000 (personal communication, J. Tippett 2001). Crops accounted for 87 percent of the market value, and livestock accounted for 13 percent (USDA 1997e). In 1997, San Diego County ranked 8th in the state in terms of market value of agricultural products. The top five crops were indoor decoratives, bedding and turf plants, avocados, trees and shrubs, and eggs (California Department of Food and Agriculture 1997e).

VENTURA COUNTY

In 1998, agricultural land in Ventura County comprised 331,088 acres, or 28.2 percent of the county's total land area. Of the seven counties in Southern California, Ventura contains the largest proportion of agricultural land. Between 1992 and 1997, the total land farmed in Ventura County increased by 8 percent, from 320,597 acres to 346,279 acres. During the same period, the market value of agricultural products sold increased by 9 percent to $942,267,000 (personal communication, J. Tippett 2001). Crops accounted for 98 percent of the market value and livestock accounted for 2 percent (USDA 1997f). In 1997, Ventura County ranked 11th statewide in terms of market value of agricultural products. Its top five crops were lemons, strawberries, nursery stock, celery, and Valencia oranges (California Department of Food and Agriculture 1997f).

Agricultural Conversion

The loss of agricultural lands by conversion to other uses is a critical concern throughout California. Between 1994 and 1996, 45,641 acres of agricultural lands were converted to nonagricultural uses in Southern California, and the seven-county Southern California region trailed only the San Joaquin Valley in the amount of agricultural land converted to urban uses (CDC 2000a-g). Between 1996 and 1998, 56,306 acres of agricultural land were converted to nonagricultural use (CDC 2000a-g), which represents an 18.9 percent increase over the previous 2-year period. Between 1998 and 2000, an additional 20,000 acres were converted to nonagricultural use (no data are currently available from the CDC for San Diego and Orange counties, and they are not included in this total) (CDC 2001). Table 3.5-3 outlines the net change in agricultural areas between 1996 and 1998 in Southern California. The first two columns of Table 3.5-3 present the net change in acres of agricultural land between 1996 and 1998, by

county, and the percentage change for this period. The third column presents the net change and percentage change in the amount of urban and built-up land by county from 1996 to 1998. The last column presents the cumulative amount of agricultural land committed to nonagricultural use, but not yet physically converted.

Table 3.5-3. Net Change in Agricultural Lands between 1996 and 1998 (in acres)

County	*Change in amount of Agricultural Land*	*Percent Change in Agricultural Land*	*Change in amount of Urban & Built-up Land*	*Percent Change in Urban & Built-up Land*	*Agricultural Land Committed to Non-Agricultural Use in 1998*
Los Angeles	525	0.2%	3,873	2.5%	2,672
Orange	-2,472	-4.2%	7,740	3.0%	1,029
San Bernardino	-2,274	-0.2%	2,376	1.0%	15,716
Riverside	-6,556	-1.0%	8,902	3.8%	28,459
Imperial	-703	-0.1%	454	1.9%	data not available
San Diego	-1,635	-0.5%	4,322	1.4%	8,430
Ventura	-1,001		2,639	2.8%	7,740
Source: CDC 2000a-g.					

Between 1996 and 1998, the amount of Prime Farmland converted to urban or built-up land in Southern California was approximately 5,244 acres (CDC 2000a-g) (1998 numbers are used since more current data are not available for all counties). While Los Angeles County actually increased its Important Farmland base (i.e., the combined amount of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance), the remainder of the counties in the region experienced sharp declines. Riverside County experienced the greatest net loss of agricultural land acreage and Orange County suffered the largest proportional decrease of its agricultural land base.

3.5.1.3 Imperial Irrigation District

The IID service area is located entirely within Imperial County. The Imperial County region is a major agricultural area with one of the lowest agricultural land conversion rates in the state. Of all the Southern California counties affected by this project, Imperial County has the largest acreage of Important Farmland; the total county land area is composed of nearly 20 percent agricultural lands.

3.5.1.4 Coachella Valley Water District

The CVWD service area lies within the Coachella Valley, which is also a major agricultural area located primarily in Riverside County. Although the Coachella Valley is among the top five producers of artichokes, bell peppers, cantaloupes, honeydew melons, sweet corn, and watermelons (California Department of Food and Agriculture 1998), it has also experienced tremendous pressure from urbanization. Urban growth has contributed to Riverside County's having a large amount of agricultural land either converted or committed to nonagricultural use. As shown in Table 3.5-3, 6,556 acres of agricultural land were converted in Riverside County between 1996 and 1998, more than any of the other Southern California counties. In

addition, in 2000, Riverside County had the largest cumulative amount of agricultural land committed to nonagricultural use but not yet physically converted, a total of 28,459 acres.

3.5.1.5 The Metropolitan Water District of Southern California

As indicated in Table 3.5-1, the counties that are served by the MWD contain a substantial amount of agricultural land, although the District serves the largest concentration of urban population in Southern California. The service area includes portions of Los Angeles and Orange counties, southern Ventura County, the western portions of San Bernardino and Riverside counties, and the western portion of San Diego County. This region is among the fastest growing urban areas in the state and has experienced substantial conversion of agricultural lands. Orange County has experienced the largest proportional loss of agricultural land and is among the top in urban and built-up land. Los Angeles County has actually experienced an increase in agricultural lands in production over the past two years.

3.5.1.6 San Diego County Water Authority

The SDCWA service area covers the western third of San Diego County. The county as a whole contains a substantial amount of agricultural land despite urban growth pressures. Approximately 12.5 percent of the county's land is devoted to agricultural uses, and its agricultural land conversion rate was below 1 percent between 1996 and 1998.

3.5.1.7 Other Areas

Colorado River

The historic floodplain of the Colorado River area is located within the easternmost portions of San Bernardino, Riverside, and Imperial counties in California and the westernmost portions of La Paz and Yuma counties in Arizona.

As shown on Table 3.5-1, the three California counties contain approximately 1,107,556 acres of Important Farmlands, or 80.3 percent of the Important Farmlands in the Southern California region. With the exception of the Palo Verde Valley and Fort Yuma Indian Reservation, the majority of these Important Farmlands are located to the west, outside of the Colorado River area.

Table 3.5-4 provides a summary of agricultural lands within the two western Arizona counties.

Table 3.5-4. Western Arizona Agricultural Land in 1997 (in acres)

County	*Total Land in Farms*	*Total Cropland*	*Total Pastureland*	*Total County Area*	*Farmland as a Percentage of Total Land*
La Paz	278,854	121,826[1]	Not available	2,891,520	9.6%
Yuma	237,742	214,774	14,949	3,559,040	6.7%

[1] Estimated acreage; exact acreage not available
Source: Oregon State University 2001a and b.

The amount of land in western Arizona used as farmland has changed substantially during the past ten to 15 years. Within La Paz County, the total farmland acreage increased by approximately 23 percent between 1987 and 1997. However, in Yuma County, farmland acreage decreased by approximately 13 percent

Salton Sea

A portion of the Salton Sea is located in the IID and CVWD service areas. These service areas contain significant agricultural resources, as discussed above. The Salton Sea itself does not contain agricultural resources, but it is affected by drainage from agricultural lands.

3.5.2 Impacts

3.5.2.1 Significance Criteria

The criteria used to determine the significance of impacts on agricultural resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it would

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use; or
- conflict with existing zoning for agricultural use or a Williamson Act contract; or
- involve other changes in the existing environment, which due to their location or nature, could individually or cumulatively result in substantial loss of farmland to non-agricultural use.

3.5.2.2 Methodology

The Proposed Project components were evaluated to identify whether any of the potential changes that would result from implementation of the Proposed Project would result in a loss of Important Farmland to non-agricultural use or conflict with existing zoning for agricultural use or a Williamson Act contract. The exact locations of improvements in the IID and CVWD service areas are not known; therefore, the potential impacts were assessed programmatically based on the general types of areas in which the improvements could occur.

This PEIR analyzes the impacts of utilizing fallowing as the exclusive conservation method in order to assess the worst-case scenario for impacts to agricultural resources. In this analysis, an average per-acre conservation rate of 6 AF per acre fallowed is used, based on the hydrologic model developed for the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). It represents the average annual water use, per acre, within the IID service area, based on the historic cropping patterns over the model's 12-year period of record. If 300 KAFY of water were conserved by fallowing alone, this would result in the fallowing of approximately 50,000 acres of agricultural land.

Potential impacts to agricultural resources in the IID and CVWD service areas would result primarily from construction activities and operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. The extent and nature of ground disturbance and new facilities were considered, along with the potential proximity of new construction to population centers. Information regarding impacts of the All American and Coachella Canal lining projects is derived from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

The baseline conditions used for assessing impacts are dependent on geographic location. Existing conditions at the time the NOP was released are used as the baseline for all areas except the Salton Sea. For the Salton Sea, Future Baseline conditions were used.

3.5.2.3 Summary of Impacts

Imperial Irrigation District

The EIS/EIR prepared for the All American Canal Lining Project (USBR and IID 1994) did not find impacts to agricultural resources from this component of the Proposed Project to be significant.

The Proposed Project involves conservation by IID within the IID service area of up to 300 KAFY of Colorado River water for transfer to SDCWA, CVWD, and/or MWD. Additional conservation by IID may be required for compliance with IID's Priority 3a cap on Colorado River water diversions. IID proposes to use any combination of conservation measures, including on-farm irrigation system improvements, delivery system improvements, and/or fallowing. If conservation measures other than fallowing are used, only small amounts of land would be required to implement the conservation measures, and they would not result in the conversion of Important Farmland to non-agricultural use or conflict with Williamson Act Contract Lands in the Imperial Valley.

If fallowing is used exclusively to conserve the 300 KAFY required for transfer, approximately 50,000 acres of land could be fallowed annually. This represents 11 percent of the total amount of Important Farmland in Imperial County. If fallowing is implemented so as to take farmland out of production on a short-term basis, it would not result in the conversion of Important Farmland to non-agricultural use. Historically, an average of 20,000 acres are fallowed each year in the Imperial Valley, and rotational fallowing involving the short-term removal of land from agricultural production is a common agricultural practice.

However, if fallowing is implemented so as to take farmland out of production on a longer-term or permanent basis, resulting in the conversion of Important Farmland to non-agricultural use, it would be a significant impact to agricultural resources in the Imperial Valley.

Coachella Valley Water District

Implementation of the Proposed Project would not have significant impacts to agricultural resources within the Coachella Valley. The same quantity of water would be available for agricultural purposes, although the source would be primarily Colorado River water rather than a mix of Colorado River water and groundwater. Colorado River water generally has a higher TDS concentration than Coachella Valley groundwater, and would require the application of additional water to some lands irrigated with Colorado River water to leach salts from the soil. The additional water necessary to leach salts would be minimal and water supplies for agricultural uses would remain adequate. Colorado River water contains relatively high concentrations of gypsum, which improves drainage on heavy or clayey soils, as well as relatively high percentages of calcium and magnesium compared to sodium, which is beneficial for infiltration and prevention of sodium build-up.

Using greater volumes of Colorado River water within the CVWD service area would involve the use of the current canal and distribution systems and potential expansion of those systems, including construction of pumping stations and other facilities. Pipelines and pumping stations are common in agricultural areas, and any new pipelines and pumping stations would be located primarily in roadways or on the edges of agricultural fields. Some pipelines may traverse agricultural fields, but this would impact the use of the agricultural area only temporarily and would not affect their designation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The construction of these facilities would not permanently conflict with property use, and therefore would not interfere with the provisions of a Williamson Act contract or be inconsistent with agricultural zoning.

Recharge facilities for direct groundwater recharge also could be constructed. The precise location of these facilities is not known; however, it is expected that they would be located on the edges of the valley in areas not generally used for agriculture. Sites in the vicinity of Dike 4 and the Martinez Canyon alluvial fan are currently under preliminary consideration, and since these are not farmlands, their use would not impact agricultural resources. The construction of recharge facilities could have a significant effect on agricultural resources if they were located in an agricultural areas, however, because they could convert farmland to a non-agricultural use. As specific sites are located, additional environmental review will be conducted that will identify project level impacts to agricultural resources.

The Metropolitan Water District of Southern California

No change to agricultural uses within the MWD service area (which includes Escondido and the Vista Irrigation District) would occur as a result of the Proposed Project because the amount of water available for agricultural use would not change, nor would any aspects of the Project cause the conversion of farmland or otherwise impede the use of agricultural lands. No construction or other physical changes would occur; therefore, the Project would in no way interfere with Williamson Act contracts or conflict with agricultural zoning.

San Diego County Water Authority

Implementation of the Proposed Project would not result in a physical loss of agricultural lands since it involves operational changes to the Colorado River water delivery system with no physical changes within the SDCWA service area. The water being transferred to SDCWA

replaces Colorado River water previously purchased from MWD. No change to agricultural uses within the SDCWA service area would occur as a result of the Proposed Project because the amount of water available for agricultural use would not change, nor would any aspects of the Project cause the conversion of farmland or otherwise impede the use of agricultural lands. No construction or other physical changes would occur; therefore, the Project would in no way interfere with Williamson Act contracts or conflict with agricultural zoning.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not result in any changes in water supply to or otherwise affect any agricultural land immediately adjacent to the Colorado River in either California or Arizona. It would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use or conflict with Williamson Act contract lands immediately adjacent to the Colorado River. Any changes in River elevation resulting from implementation of components of the Proposed Project would be minor and within current fluctuations and would not affect agricultural land. Therefore, no significant impact to agricultural resources would occur.

SALTON SEA

The Salton Sea itself does not contain agricultural resources; however, if the Sea's elevation were lower, this would reduce the risk of dikes that protect prime farmland from breaking and would also prevent salt spray onto the fields behind the dikes.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to agricultural resources along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in a conversion of farmland to non-agricultural uses or cause any changes to the physical environment that would result in a loss of farmland. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that could impact agricultural resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to agricultural resources along the Colorado River would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact agricultural resources.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause the conversion of farmland or otherwise impact agricultural resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause a conversion of agricultural resources or significant impact agricultural resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions that could potentially impact agricultural resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would otherwise cause the conversion of farmland to non-farmland uses or would cause significant impacts to agricultural resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to agricultural resources along the Colorado River. No impacts to farmland or conversion to non-agricultural uses would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of

SWP entitlements under this Project component would be accomplished through existing facilities, and not result in physical changes to environmental conditions that would cause a significant impact to agricultural resources or result in conversion of farmland to non-agricultural uses.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts agricultural resources since it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result in changes to the physical environment that would cause the conversion of farmland to non-agricultural uses or significantly impact agricultural resources. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact agricultural resources or cause the conversion of farmland to non-agricultural uses.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to agricultural resources or cause the conversion of farmland to non-agricultural uses.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and

CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to agriculture, such as increased farmland fallowing, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.5.3 Mitigation Measures

Potential impacts to agricultural uses in the CVWD service area from constructing any proposed recharge basins or other facilities constructed as a part of the Proposed Project would be reduced to a less than significant level by implementing the following measure:

- Recharge basins in the CVWD service area would not be located on land that is designated as Important Farmland, or subject to a Williamson Act contract.

The only way to avoid or reduce the impact associated with the conversion of Important Farmland in the IID service area, as a result of fallowing as a conservation measure, is to utilize non-fallowing conservation measures or to utilize short-term fallowing which does not result in conversion of Important Farmland to non-agricultural use; however, exclusive use of short-term fallowing may not be feasible for generating conserved water and use of agricultural land on a long-term basis may be required.

3.5.4 Significant Unavoidable Adverse Impacts

To the extent that conversion of Important Farmland to non-agricultural use cannot be avoided or mitigated, the conversion would be a significant unavoidable impact to agricultural resources in the Imperial Valley.

3.5.5 Significant Irreversible Environmental Changes

To the extent conversion of Important Farmland to non-agricultural use cannot be avoided or mitigated, the conversion would be a significant irreversible change, at least for the duration of the QSA quantification period.

3.6 RECREATIONAL RESOURCES

3.6.1 Environmental Setting

3.6.1.1 Regulatory Framework

Public recreational resources are subject to the regulations of either federal, state, or local agencies depending on the agency that has jurisdiction over the resource. For example, State Recreation Areas (SRAs) are regulated by the State of California, and National Wildlife Refuges are under the jurisdiction of the federal government.

3.6.1.2 Imperial Irrigation District

Imperial County is a popular recreational area for both water- and desert-based activities. Opportunities for recreation occur along the All American Canal and in the surrounding area, primarily on BLM lands. BLM-managed lands include the Imperial Sand Dunes Recreation Area, a 40-mile-long dune system. These dunes are managed for different uses: a portion consists of a popular off-highway vehicle (OHV) recreation area, and another portion contains two campgrounds. Other areas offer opportunities for solitude and a chance to view picturesque scenery and rare plants and animals. The North Algodones Dunes Wilderness and Wildlife Viewing Area is another popular recreational site. Activities in this area include hunting, hiking, and nature viewing. Primitive camping is available. The area also contains historic mine districts, and other trails and natural areas. The Imperial Sand Hill and Algodones Dunes are adjacent to the All American Canal and contain a heavily used camping area. The OHV area is a major regional attraction. Sand dunes line the spoil bank along the north side of the existing canal. The sand road along the spoil bank is used by OHVs for travel around the south end of these dunes and by the BLM for patrol and emergency purposes. Three RV camping parks are located near the Pilot Knob area, and five more are located near El Centro. The Imperial Wildlife Management Area (WMA) is composed of the Wister unit, which is along the southern end of the Salton Sea, and the Finney-Ramer unit, which is further south of the Salton Sea, near the Alamo River. These areas are used for hunting, fishing, bird watching, and other passive recreational activities.

Fishing is permitted in IID canals, including the All American Canal, and IID provides public access for fishing at three of its reservoirs. Swimming is prohibited in the canals. Water contact sports also are restricted near the mouth of the New River, which flows into the Salton Sea, because its water is considered a health hazard by Imperial County due to contamination from agricultural drains, wastewater treatment facilities, and unregulated discharge from Mexico.

3.6.1.3 Coachella Valley Water District

The CVWD service area is located in a region that contains a wide array of recreational opportunities associated with water, mountain, and desert-based activities. In addition, the service area is part of the regional Southern California desert recreation and long-term visitation area. Many of the lands used for recreational purposes within the CVWD service area are under the jurisdiction of the BLM. These lands include the Coachella Valley Preserve, a system of sand dunes comprising a 20,000-acre sanctuary that is home to sensitive wildlife species and palm oases. Wildlife viewing is among the key attractions of this preserve. The Coachella

Valley Preserve is also a prime location for wildlife observation, study, and photography. Hiking and horseback riding are permitted along specific trails. There are approximately 100 golf courses in the Coachella Valley, although not all are located within the service area boundaries.

Some of the area along the Coachella Canal is bordered by sand dunes (the Sand Hills) and contains several private RV parks. Most of the canal is posted against trespassing by the CVWD because of the risk of drowning, but the canal attracts fishermen who use the canal illegally. The concrete lining has escape ridges, and a public fishery is being established in this reach of the canal. Another important fishery is Lake Cahuilla, the terminal reservoir of the Coachella Canal. This 120-acre lake provides a public fishery managed by the Riverside County Parks Department and is stocked in part by the California Department of Fish and Game. The Lake Cahuilla Recreation Area is a popular campground with fishing, picnic grounds, hiking, and horseback riding.

3.6.1.4 The Metropolitan Water District of Southern California

The MWD service area covers portions of Ventura, Los Angeles, Orange, San Bernardino, San Diego, and Riverside counties, which include large developed and undeveloped areas containing a wide variety of urban and natural recreational amenities. Large expanses of undeveloped land offer recreational opportunities such as camping, picnicking, hunting, boating, and fishing. Nature trails and fire roads traverse many of the more remote locations and are used by OHVs, mountain bike enthusiasts, equestrians, and hikers. Popular areas include Boney Mountain State Wilderness Area, South Mountain, Oak Ridge, and Point Mugu State Park (Ventura County); Los Padres National Forest and Santa Monica Mountains National Recreation Area (Los Angeles County); Caspers Wilderness Park, Laguna Coast Wilderness Park, and portions of the Cleveland National Forest (Orange County); Chino Hills State Park (Orange County and San Bernardino County); and Maze Stone County Park, Lake Perris State Recreational Area, and portions of the San Bernardino National Forest (Riverside County). Regional, community, and neighborhood parks offer everything from mountain biking, equestrian activities, and hiking, to camping, boating and fishing. Many facilities include sports fields and courts, nature centers, picnic areas, lakes, and streams.

3.6.1.5 San Diego County Water Authority

Much of the SDCWA service area is located within urbanized areas that contain a wide variety of recreational amenities. Nature trails and fire roads traverse many locations, including the Santa Margarita Mountains and Merriam Mountains, and are used by OHVs, mountain bike enthusiasts, equestrians, and hikers. Recreational opportunities such as camping and picnicking are available in areas such as the Agua Tibia Wilderness Area. Fishing and boating are offered at several inland locations such as Miramar Reservoir, Lake Ramona, Lake Wohlford, and Lake Hodges. Regional, community, and neighborhood parks offer everything from mountain biking, equestrian activities, and hiking, to camping, boating and fishing. Many facilities include sports fields and courts, nature centers, picnic areas, lakes, and streams.

Batiquitos Lagoon, Buena Vista Lagoon, and several bays including San Diego and Mission bays, offer opportunities for observing birds and other wildlife. Many of the state beaches have

fire rings, tide pools, and volleyball courts and are used for swimming, surfing, fishing, boating, and beach walking.

3.6.1.6 Other Areas

Colorado River

The Colorado River is used for a variety of recreational purposes, as are a number of lakes formed by dams on the River. Common activities include camping, fishing, boating, kayaking, hunting, and water-skiing. There are over 90 miles of navigable water between Blythe and Imperial Dam. Lake Havasu, formed by Parker Dam, contains a number of coves and inlets, and is a popular spot for fishing. A multi-agency fishery enhancement program is underway to create artificial habitat to increase the game fish population, and additional shore access is being developed for fishermen. The waters of the lake also are used for water-skiing, speed-boating, jet-skiing, sailing, and canoeing. Camping and swimming also occur along the lake's shoreline. A number of campgrounds and marinas line the River and some offer boating and fishing facilities, picnic grounds, and swimming lagoons; other campgrounds are largely undeveloped. The campgrounds include the Picacho SRA, which is bordered by 8 miles of the River about 24 miles north of the U.S.-Mexico boundary. The Cibola National Wildlife Refuge is located about 15 miles south of Blythe. The largest concentration of Canada geese and sandhill cranes on the lower Colorado River winter at the refuge. Visitors to the refuge engage in hiking, wildlife observation, photography, canoeing, hunting, and fishing.

Salton Sea

Many recreational opportunities are available in the Salton Sea area, although many previously popular activities such as swimming, water-skiing, boat racing, and personal watercraft racing have declined considerably or no longer are present due to water quality concerns and a lack of land-based facilities. Recreational uses near the northern shore of the Salton Sea include hunting at private duck ponds located near the Coachella Valley Stormwater Channel and offshore fishing and boating.

On the northeastern shore, Salton Sea frontage is almost entirely owned by the State of California and operated by the State Parks Department as the Salton Sea State Recreational Area. The park was built about 45 years ago when water levels were lower. During the late 1970s, water levels increased and flooded between ¼ and ½ of the park. The campgrounds, harbor, and associated facilities subsequently were reestablished outside of the flooded area. Recreational uses within this area include camping, RV camping, power boating, sailing, windsurfing, shore fishing, boat fishing, and sunbathing. Boat launching and mooring facilities are available at the five campgrounds in the area. Facilities associated with the North Shore Yacht Club and Marina, also located on the northeastern shore, are currently unused, and other private recreational facilities are in need of repair and/or non-operational. The rise in the Salton Sea's water level has created problems at some facilities, particularly with paving, picnic tables, and landscaped areas (USBR and SSA 2000).

The southern shore of the Salton Sea contains such areas as the Imperial County Wildlife Area-Wister Unit and the Sonny Bono Salton Sea National Wildlife Refuge. The types of recreational uses that occur in this area are strongly tied to the presence of wildlife and include hunting,

fishing from the shore and boats, boating, and wildlife viewing. The western shore of the Salton Sea contains recreational rental housing, RV camping, shore fishing, boating (four boat ramps are present), sunbathing, hiking, and bird watching. A number of closed and/or dilapidated resorts and restaurants are present in this area (USBR and SSA 2000).

3.6.2 Impacts

3.6.2.1 Significance Criteria

The following criteria used to determine the significance of an impact related to recreation are based on the model initial study checklist in Appendix G of the State CEQA Guidelines and modified to address the potential for impacts to other recreational uses. The Proposed Project would result in a significant impact if it would:

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facility would occur or be accelerated; or
- result in the construction or expansion of recreational facilities that may result in adverse environmental impacts not discussed as part of the Project; or
- cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities; or
- substantially decrease opportunities for sport fishing, bird watching, or waterfowl hunting.

3.6.2.2 Methodology

Proposed Project components were evaluated to determine the extent to which they would impact existing recreational resources. The analysis considered whether these actions would diminish the quality of or preclude a recreational opportunity and drew on the findings of the water and biological resources analyses. Potential impacts to recreational resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.6.2.3 Summary of Impacts

Imperial Irrigation District

As noted in the EIS/EIR for the All American Canal Lining Project (USBR and IID 1994), construction of a canal parallel to the existing All American Canal would temporarily disrupt camping that occurs in the area, primarily on the south side of I-8. This impact would be less than significant due both to its temporary nature and the fact that camping opportunities are available elsewhere in the area. Construction in the Pilot Knob area would not affect seasonal RV camping. Construction within the Sand Hills would restrict the use of the spoil bank road on the north side of the canal for travel around the dunes abutting the canal. The road could be blocked for up to 12 months; after construction the road would be available for travel. Use of the area around the canal by OHVs could present a hazard during construction, which would be a potentially significant but mitigable impact.

The existing canal would be maintained as an emergency canal and would not be available for recreational use. As noted in the canal lining EIS/EIR, hazards to OHVs associated with the existing canal would be avoided by taking steps necessary to prohibit and discourage use within the channel (USBR and IID 1994) and would be less than significant.

Construction of a parallel canal would adversely affect recreational fishing by reducing the habitat for gamefish. Lining also could reduce downstream numbers of gamefish by reducing in-canal reproduction. These impacts would be significant but mitigable.

The Proposed Project would not cause a population increase in the IID service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). The proposed water conservation measures, including fallowing, would be located in remote farm areas well removed from recreational areas used by the public and therefore would not impact recreational resources. Agricultural drains, which could be lined under the Project, are not used for public recreation because they are on privately owned farmland. The proposed water transfers would not change water levels within the Imperial Valley irrigation delivery canals; therefore, impacts to fish and recreational fishing would be minimal.

The concentration of pesticides, herbicides, and other nutrients in the New and Alamo rivers would be increased by the reduction in drainage water from IID (see section 3.1); while these rivers are recognized by the Imperial County General Plan as potential recreational resources, their use is not encouraged because this would jeopardize public health and safety. Therefore, this would not constitute a significant impact. Conservation of water through canal lining would impact the amount of available aquatic habitat for fish, and specifically would reduce habitat for several cover-oriented fish species, such as largemouth bass, green sunfish, long-ear sunfish, and flathead catfish, that are important to sport fishing. Because canal lining would be limited to certain sections of the canals only and because recreational anglers would be able to fish in other areas (such as the Imperial WMA), the impact to recreational fishing would be less than significant. Additionally, mitigation measures identified in section 3.2, Biological Resources, would reduce the impact.

Coachella Valley Water District

Construction activities associated with lining the Coachella Canal were evaluated in the EIS/EIR prepared for that project. These activities may temporarily disrupt some recreational uses of the area. Construction could block access to a recreational trail on BLM lands, the Bradshaw Trail, which would be a significant impact if access is not maintained. Other minor, adverse impacts would include the temporary closure of access on top of siphons, which provide a local means of crossing the canal and a temporary increase in local traffic caused by construction forces and materials delivery trucks.

Additionally, construction would require the use of some areas that have convenient access to paved county roads and are used by the public for camping or day use. Seasonal RV campers would be exposed to construction traffic but would not be constrained by construction. Once completed, the canal lining would have no effect on access or general recreational opportunities in the area.

As discussed in section 3.12, Public Services, Utilities, and Transportation, a traffic control plan has been incorporated as a project feature of the Coachella Canal lining project (USBR and CVWD 2001) and would minimize impacts to recreational visitors. The plan would include signs at public access points to inform the public of temporary closures to public access, construction hazards, and alternative access points.

Without mitigation, lining the canal would result in a reduction in the amount of fish available to anglers. Fishing is prohibited in this canal; however, it does take place. The impact to recreation was not considered significant. The mitigation for the fishery that is required by P.L. 100-675, in which Congress authorized the canal lining project, would maintain fish populations at approximately the same level. These measures are delineated in the EIS/EIR for the Coachella Canal Lining Project and summarized below in section 3.6.3. The EIS/EIR notes that following the completion of the canal lining project legal fishing may be established between siphons 7 and 14 and siphons 15 and 32 if associated liability issues can be resolved. It is anticipated that angler pressure in the lined portion of the canal would remain at about the current level.

The Proposed Project would not cause a population increase in the CVWD service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts).

Flows to the Coachella Valley Stormwater Channel would increase as a result of implementation of the Proposed Project. Unauthorized swimming currently occurs here (the channel does not meet bacterial water quality standards for swimming) and fishing takes place in the lower channel where flows are higher. The increase in flows would have no significant effect on the use of the channel for swimming in terms of water quality. With respect to fishing, fish in the higher reaches may move further upstream with higher flows in the drains.

No change to the level of Lake Cahuilla water levels or water quality would result from the Proposed Project. Thus, there would be no impact on fish and fishing or any other recreational activities in the lake.

Under the Proposed Project, golf courses could be watered with canal water instead of groundwater. Canal water has higher total dissolved salts content, which may require additional watering of bentgrass greens to flush salts out of their root zone, or consideration of separate piping for greens irrigation. The impact on area golf courses would be less than significant since few of them still have bentgrass greens.

Construction of pumping stations, pipelines, and recharge basins would be unlikely to affect recreational resources since they would be located in agricultural or remote areas, such as the vicinity of Dike 4 and Martinez Canyon. Such construction would be evaluated in future site-specific environmental documents once specific sites are identified.

The Metropolitan Water District of Southern California

The Proposed Project would not cause a population increase in the MWD service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.

San Diego County Water Authority

The Proposed Project would not cause a population increase in the SDCWA service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.

Other Areas

COLORADO RIVER

No significant recreational impacts to the Colorado River area (either in California or Arizona) would result from the Proposed Project. Implementation of the Proposed Project would not affect water quality perceptibly, nor would it significantly affect river flows. The water surface elevation of the River would change slightly, but the change would be within the normal range of variability. Because the change in water surface elevation is within the historic range of fluctuation, no changes to recreational facilities, such as docks or launch ramps, would occur. Power boating, jet skiing, kayaking, and other water-oriented activities would continue unimpeded. No significant changes in the water surface elevation of the lakes that are fed by the River would occur, and the Proposed Project would not significantly affect wildlife, fish, or any recreational activities that are dependent upon these resources, including sport fishing.

SALTON SEA

Implementing the Proposed Project would result in a decrease in inflow to the Salton Sea, which would substantially reduce its water surface elevation, thus exposing currently submerged land. As described in Chapter 3.0, the decrease would occur more rapidly and to a greater extent than would occur under Future Baseline conditions. The decreased surface area of the Salton Sea would reduce the area that could be used for water-based recreational activities such as fishing and boating. This decrease is not significant given the size of the area that would remain. The newly exposed shoreline would be located primarily in the southern portion of the Salton Sea. When water levels within the Salton Sea SRA drop to 230 feet below mean sea level, it would be necessary to relocate facilities such as Varner Harbor and campgrounds that are now located near the water (personal communication, S. Horvitz 2000). It also would be necessary to re-establish existing roads and trails that lead to the water, particularly in areas such as Mecca Beach, Sneaker Beach, and Old Camp. Decreasing water levels would expose footings and other remnants of the campgrounds that were covered when the water elevation increased during the late 1970s. Other public docks/launch facilities also may have to be relocated. The impact to developed recreational facilities from decreased water levels is considered significant.

As discussed in Chapter 3.0, reduced inflow resulting from the Proposed Project would accelerate the rate at which salinity is increasing in the Salton Sea. As described in section 3.2, Biological Resources, increased salinity would hasten the decrease in the number of fish that live in the Salton Sea, adversely affecting sport fishing opportunities. This would be a significant impact. The accelerated decrease in fish populations would result in an accelerated decrease in the food supply for fish-eating birds at the Salton Sea. Avian habitat and hunting opportunities provided by managed wetlands in the vicinity of the sea (including the Imperial County Wildlife Area-Wister Unit and the Sonny Bono Salton Sea National Wildlife Refuge) would not be directly impacted by loss of habitat because the wetlands and waterfowl management areas are hydraulically separate from the Salton Sea and are managed independently (IID and USBR 2002). These areas will continue to provide opportunities for bird watching and waterfowl hunting.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to recreational opportunities along the Colorado River. Recreational uses such as boating and sports fishing will not be decreased or degraded due to implementation of this Project component. A reduction in the amount

of conserved water dedicated to MWD would not adversely impact recreational opportunities within MWD's service area. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact or impair existing recreational opportunities.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to recreational opportunities along the Colorado River would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would decrease or degrade existing recreational facilities.

E. CVWD/IID/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact existing recreational facilities or that would degrade or diminish recreational opportunities. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to recreational resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions that would impact recreational opportunities such as boating and sports fishing would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to recreational facilities or diminish or degrade recreational opportunities.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial

dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to recreational facilities or opportunities along the Colorado River. No impacts to recreational facilities would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to recreational facilities or recreational opportunities.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to existing recreational facilities because it does not change the amount of water diverted, conveyed, or used and no changes to recreational opportunities would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to boating, fishing, or other recreational activities. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact recreational facilities or opportunities.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would significantly impact recreational activities such as boating and sports fishing along the Colorado River.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to recreation would relate to decreased flow in the New and Alamo rivers and decreased inflow to the Salton Sea. In the New and Alamo rivers decreased flow would adversely affect water quality, decreasing these rivers suitability for fishing and swimming. Decreased flow to the Salton Sea would accelerate salinity, decrease the Sea's surface area, and decrease quality of the sport-fishery. However, these decreased inflows to the New and Alamo rivers and Salton Sea due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.6.3 Mitigation Measures

The EIS/EIR for the All American Canal Lining Project (USBR and IID 1994) identified mitigation measures to maintain sport fishing opportunities. The primary mitigation measure that was proposed consisted of placing artificial reefs within the lined portion of the canal. Alternative measures included conducting a channel catfish stocking program or developing a recreational fishery resource in one or more regulating reservoirs in IID's distribution system. These measures were determined to reduce impacts to a less-than-significant level.

To minimize public inconvenience during construction of the All American Canal Lining Project and to ensure public safety, the following measure was included in the EIS/EIR for that project and was determined to reduce impacts to a less-than-significant level.

- An interim recreation management plan would be developed jointly with BLM. The plan would include temporary closure of acreage needed for construction activities, signs at public access points, literature (handouts) informing visitors about the program and safety hazards, and modifications of public access to compensate for construction activities and to provide safe public access to observe construction at selected locations. The plan would address the patrol and surveillance requirements of the Immigration and Naturalization Service's Border Patrol.

To mitigate the impact to canal fisheries resulting from lining the Coachella Canal, the following measures, defined in the EIS/EIR for the lining project (USBR and CVWD 2001), will be

implemented. These measures are to mitigate impact to the fisheries; no significant recreational impact associated with fishing was identified:

- To mitigate short-term construction impacts to canal fisheries, once construction is completed, channel catfish shall be stocked (one time only) at rates of up to 105 pounds per mile.

- To mitigate permanent impacts to the canal fishery, 82, 16 x 15-foot artificial reefs shall be installed and maintained in the newly lined portions of the canal. CVWD shall determine the location of the reefs in consultation with the relevant resource agencies. If the artificial reefs do not function as expected, the canal shall be stocked with channel catfish at a rate that would maintain the fish population at pre-Project levels or an alternative method of supporting the fish population will be identified by Reclamation and CVWD.

The following measure would mitigate the potential impact from temporary obstruction of the Bradshaw Trail as a result of the Coachella Canal lining project to a less-than-significant level.

- OHV access along the Bradshaw Trail will be maintained during construction (for example, by posting signs directing visitors to alternate locations where they may cross the Coachella Canal when siphon 24 is blocked by construction activity).

If the decrease in the water surface elevation of the Salton Sea results in the exposure of public docks, launch ramps, or other public structures as a result of the Proposed Project, thus precluding their intended use, then the following measure could be implemented. This measure would reduce the impact to a less-than-significant level.

- Funding would be provided for the relocation of public docks, launch ramps, or other public structures in proportion to the water elevation decrease that is attributable to the Proposed Project. The relocation of these facilities may be temporary and ongoing until the Sea reaches its minimum and stable elevation, at which point permanent facilities would be provided.

The following measure could be implemented to reduce the potential impact from the exposure of footings and other remnants of campgrounds due to the accelerated decline in water surface elevation of the Salton Sea as a result of the Proposed Project.

- Footings and other remnants of campgrounds that are exposed due to the accelerated decline in water surface elevation of the Salton Sea would be removed.

Alternatively, implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea water surface elevation. This potentially feasible measure would reduce the impacts to recreational facilities, such as newly exposed docks, launch ramps, and campground remnants, to a less-than-significant level. Mitigation Strategy 2 also would mitigate impacts to sport fishing to a less-than-significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.6.4 Significant Unavoidable Adverse Impacts

The mitigation measures identified above would reduce impacts of the All American and Coachella Canal lining projects to a less-than-significant level. As noted above, the implementation of Mitigation Strategy 2 would reduce all recreational impacts from the decline in water surface elevation at the Salton Sea to a less-than-significant level.

3.6.5 Significant Irreversible Environmental Changes

The impacts to sport fishing at the Salton Sea would represent a potentially significant irreversible change should Mitigation Strategy 2 not be implemented.

3.7 AIR QUALITY

3.7.1 Environmental Setting

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). One aspect of significance is a pollutant's concentration in comparison to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards, established by the EPA, are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS generally are defined as the maximum acceptable ground-level concentrations that may not be exceeded more than once per year except for annual standards, which may never be exceeded. State standards, established by the California Air Resources Board (ARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as restrictive as the NAAQS and include pollutants for which national standards do not exist.

The main pollutants of concern within the Project region include ozone (O_3), volatile organic compounds (VOCs), nitrogen oxides (NO_x), and particulate matter less than 10 microns in diameter (PM_{10}). Large portions of the region affected by the Proposed Project presently do not attain the national and/or California ambient air quality standards for O_3 and PM_{10}. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3 formation.

3.7.1.1 Regulatory Framework

Air quality regulations were first promulgated with the Federal Clean Air Act of 1969 (CAA). This act established the NAAQS and delegated the enforcement of air pollution control regulations to the states. In California, the ARB is responsible for enforcing air pollution regulations. The ARB has in turn delegated the responsibility of regulating stationary emission sources to local air agencies. In areas that exceed the NAAQS, the CAA requires preparation of a State Implementation Plan (SIP), detailing how the state will attain the standards within mandated time frames. The Clean Air Act Amendments of 1990 (1990 CAA) revised the attainment planning process. The 1990 CAA identifies new emission reduction goals and compliance dates based upon the severity of the ambient air quality standard violation within a region.

The following five air pollution agencies, whose geographic jurisdictions are shown in Figure 3.7-1, regulate air quality within the broad Project region:

1. Imperial County Air Pollution Control District (ICAPCD), which includes all of Imperial County.

2. South Coast Air Quality Management District (SCAQMD), including the non-desert portions of Los Angeles and San Bernardino Counties, all but the eastern portion of Riverside County, and all of Orange County.

Figure 3.7-1. Locations of California Regional Air Agencies that Encompass the QSA Project Region

3. Mojave Desert Air Quality Management District (MDAQMD), which includes the northern portion of San Bernardino County and the eastern portion of Riverside County.

4. San Diego County Air Pollution Control District (SDCAPCD), which includes all of San Diego County.

5. Ventura County Air Pollution Control District (VCAPCD), which includes the County of Ventura.

These regional air agencies have developed air quality attainment plans designed to reduce emissions to a level that will bring their jurisdictions into attainment of the ambient air quality standards. Plans intended to attain the NAAQS are incorporated into the California SIP. Each air agency has also developed rules to regulate stationary sources of air pollution within their jurisdictions.

3.7.1.2 Existing Air Quality

Implementation of the Proposed Project would potentially affect the Southern California region between the lower Colorado River and the Pacific Ocean, which includes five separate air basins (see Figure 3.7-2).

Identifying the ROI for air quality requires knowledge of the types of pollutants being emitted, emission rates of pollutant sources, and meteorological conditions. The ROI for inert pollutants (generally pollutants other than O_3 and its precursors) is generally limited to a few miles downwind from a source. The ROI for O_3 can extend much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly the reactive portion of VOCs and NO_x. In the presence of solar radiation, the maximum effect of VOCs and NO_x emissions on O_3 levels usually occurs several hours after they are emitted and many miles from the source.

Ozone concentrations are highest during the warmer months and coincide with the season of maximum insolation. Inert pollutant concentrations tend to be the greatest during periods of light winds and surface-based temperature inversions. These conditions limit atmospheric dispersion. However, in the case of PM_{10} impacts from fugitive dust episodes, maximum dust impacts within the Project region often occur during high wind events and in proximity to manmade ground disturbing activities.

The EPA designates all areas of the U.S. as having air quality better (attainment) or worse (nonattainment) than the NAAQS. The criteria for nonattainment designation varies by pollutant: (1) an area is in nonattainment for O_3 or 24-hour PM_{10} if its NAAQS has been exceeded more than three discontinuous times in 3 years and (2) an area is in nonattainment for any other pollutant if its NAAQS has been exceeded more than once per year. Former nonattainment areas that have achieved attainment of the NAAQS are designated as maintenance areas. In regard to the NAAQS for O_3, the portions of the Project region that do not attain this standard include Los Angeles, Orange, San Diego, and Imperial counties

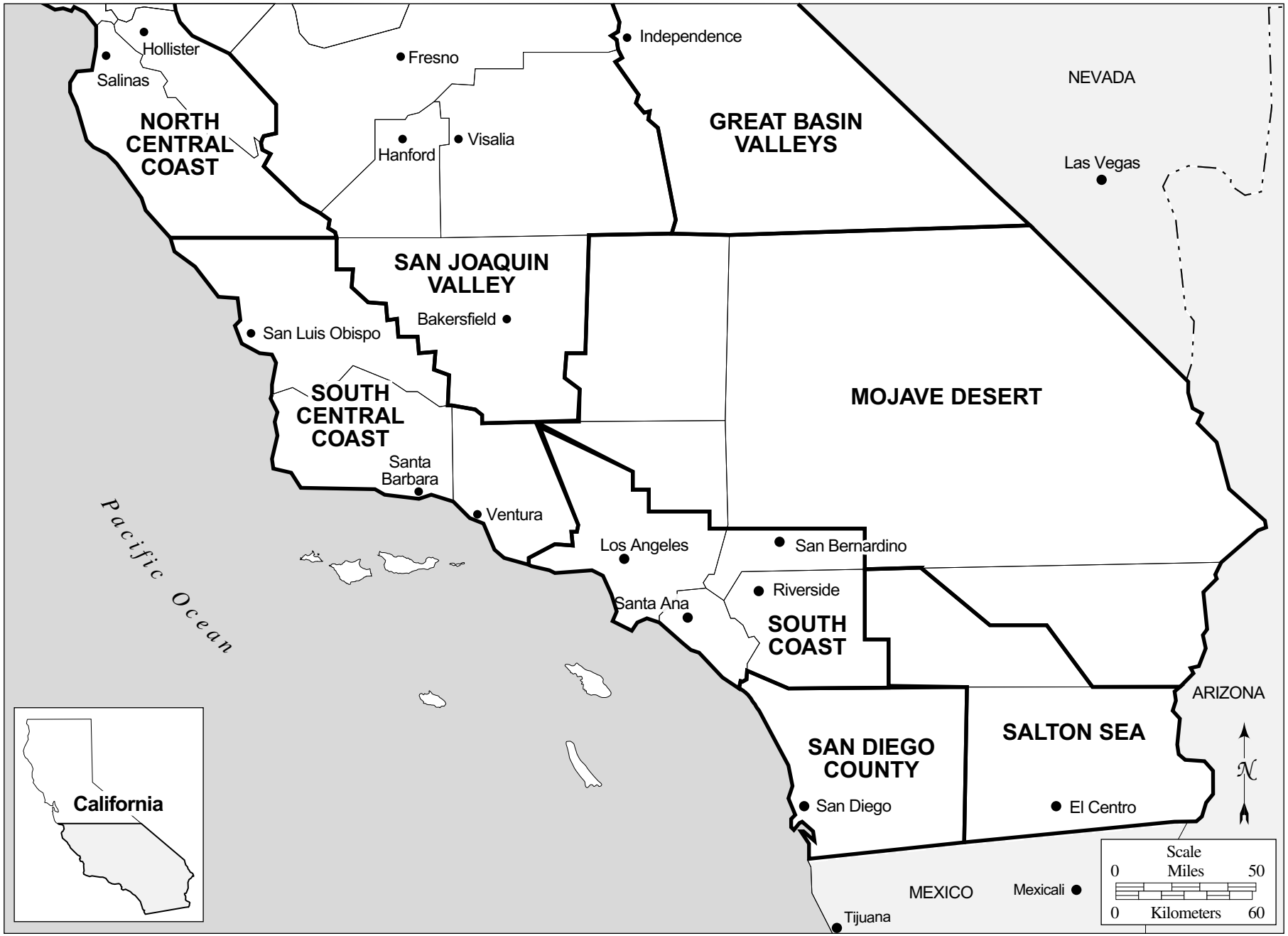


Figure 3.7-2. Air Basins that Encompass the QSA Project Region

and the southwestern portions of San Bernardino and Riverside counties. The portions of the Project region that do not attain the NAAQS for PM_{10} include Los Angeles, Orange, and San Bernardino counties, the southwestern half of Riverside County, and the southwestern two-thirds of Imperial County. The South Coast Air Basin (SCAB) (the non-desert portions of Los Angeles and San Bernardino counties, the western portion of Riverside County, and all of Orange County) also does not attain the NAAQS for carbon monoxide (CO) and the western portion of San Diego County has also been redesignated as a maintenance area for this pollutant.

The ARB also designates areas of California as being either in attainment or nonattainment of the CAAQS. An area is in nonattainment if a CAAQS has been exceeded more than once in three years. In regard to the CAAQS, the entire Project region within California presently does not attain the O_3 and PM_{10} standards. Additionally, Los Angeles County and the greater El Centro area in Imperial County do not attain the CO standard.

In Arizona, both counties are currently in attainment for each of the NAAQS with the exception of southwestern Yuma County, south of Imperial Dam, which is in a moderate nonattainment status for PM_{10}.

In September 1997, the EPA promulgated 8-hour O_3 and 24-hour and annual $PM_{2.5}$ national standards (particulate matter less than 2.5 microns in diameter). However, due to a lawsuit in May 1999, the U.S. District Court rescinded these standards and EPA's authority to enforce them. Subsequent to an appeal of this decision by the EPA, the U.S. Supreme Court in February 2001 upheld these standards. As a result, this action initiates a new planning process to monitor and evaluate emission control measures for these pollutants. The EPA is moving forward to develop policies to implement these standards.

3.7.1.3 Climate and Meteorology

The effects of the Pacific Ocean and the Coastal Mountain ranges produce two distinct climate zones within the region. West of the Coastal Ranges, the climate is classified as Mediterranean, characterized by mild summers and winters. This region experiences higher humidity and precipitation than other parts of the Project region, due to its proximity to the Pacific Ocean. East of the Coastal Ranges, within the Mojave and Lower Colorado River deserts, the climate is classified as arid continental, with hot summers, low humidity, and large diurnal variations in temperature. The aridity of this region is due to a combination of factors, including (1) a semi-permanent high pressure system that produces atmospheric subsidence, (2) a cool ocean to the west that provides limited amounts of moisture, and (3) the rain shadow effects of the Coast Ranges, which blocks the flow of moisture into the region from the Pacific Ocean. This arid condition produces low soil moisture, which is responsible for one of the main air pollution problems in the region, fugitive dust (PM_{10}). The interior climate is characterized by more extreme temperatures compared to coastal locations.

The annual average precipitation within the region varies from a low of 3 inches in the Imperial and Coachella valleys to over 40 inches in the higher coastal ranges to 10 to 15 inches along the coast of Southern California. Although most of the precipitation in the region is produced by winter storms from the North Pacific, summer rainfall from tropical air masses occasionally

occurs. However, most of this activity occurs in the Coastal Ranges and desert regions to the east. Summer precipitation produces a large percentage of the annual precipitation totals for the southeast desert portion of the Project region.

3.7.2 Impacts

3.7.2.1 Significance Criteria

The criteria used to define the significance of an air quality impact are based on the model Initial Study checklist contained in Appendix G of the State CEQA Guidelines. An impact would be significant if proposed air pollutant emissions:

- substantially conflict with the implementation of an applicable air quality plan; or
- violate any air quality standard or contribute substantially to an existing or projected air quality violation; or
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors); or
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

The SCAQMD and MDAQMD have also developed emission thresholds to assess the significance of air quality impacts for CEQA purposes. The majority of these thresholds range from daily to annual pollutant emission limits whose values depend on (1) whether a Proposed Project is a construction and operational activity and (2) the severity of the air quality levels within each jurisdiction. These thresholds often represent levels that define a potentially significant air quality impact for the first three criteria mentioned above.

3.7.2.2 Methodology

Potential air quality impacts from the Proposed Project are evaluated qualitatively in this PEIR. Except as noted within this section, specific actions associated with implementation of the Proposed Project components will be evaluated in future project-level environmental documents.

Potential impacts to air quality in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.7.2.3 Summary of Impacts

Imperial Irrigation District

CONSTRUCTION EMISSIONS

Impacts from lining the All American Canal were evaluated in the EIS/EIR for that project and found to be not significant since fugitive dust from construction activities, which was the principal impact, would be controlled by the application of water onto disturbed areas (USBR and IID 1994).

Air quality impacts due to the construction of on-farm water conservation measures and water delivery system improvements would result from combustive emissions due to the use of fossil fuel-fired construction equipment and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The impact of combustive emissions would be less than significant, as most emission sources would be mobile and intermittent in nature and their resulting pollutant impacts would not be large enough in a localized area to cause an exceedance of an ambient air quality standard. Fugitive dust emissions could be significant from activities that disturb large amounts of soil. However, implementation of fugitive dust control measures outlined in section 3.7.3 of this PEIR would ensure that PM_{10} emissions from proposed construction activities would be reduced to less than significant levels.

OPERATIONS EMISSIONS

Air quality impacts due to the operation of on-farm water conservation measures and water delivery system improvements would result primarily from the periodic maintenance of these systems. Maintenance activities would produce combustive emissions from worker commuter vehicles and mobile and quasi-stationary equipment, such as pumps and generators, and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The minor amounts of emissions that would result from these activities would cause less than significant air quality impacts.

Fallowing could be used to reduce water usage in the IID service area. Fallowing would produce certain beneficial air quality impacts since the reduction in equipment usage associated with this measure would lessen combustive emissions in the fallowed areas. Fugitive dust emissions from ground disturbing activities would not occur under this scenario; however, there is a potential for significant but mitigable fugitive dust emissions from the fallowed land.

With the exception of fugitive dust emissions from fallowing, neither construction nor operation of the Proposed Project components within the IID service area would (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable national or state ambient air quality standard, (3) or create objectionable odors affecting a substantial number of people.

Coachella Valley Water District

CONSTRUCTION EMISSIONS

The air quality analysis provided in the EIS/EIR for the Coachella Canal Lining Project (USBR and CVWD 2001) determined that PM_{10} emissions (due to fugitive dust) would constitute a significant impact even after mitigation. However, this impact would only last for the duration of construction activities.

Development of other specific components of the Proposed Project (such as pipelines, pumping stations, and recharge basins) would generate air pollutant emissions (NO_x and PM_{10}) from construction equipment, earth moving activities, construction workers' commutes, and materials deliveries. These activities would cause temporary impacts to local air quality and would be significant if they exceeded air pollutant thresholds established by the SCAQMD within the SCAB Project region. If mitigated construction emissions exceeded air pollutant thresholds established by the SCAQMD within the SCAB project region, these actions would therefore not comply with significance threshold (2) above. However, due to their short-term nature, construction activities would not interfere with attainment of the national and state ambient air quality standards over the long term.

OPERATIONS EMISSIONS

Operation of facilities associated with implementation of the Proposed Project within the CVWD service area would have minimal impacts to air quality. Although some pumping of Colorado River water would be required, it would be less than the amount needed to pump groundwater replaced by the Proposed Project. Since some of the power required for pumping likely would be provided by fossil fuel-fired electrical generating facilities within and outside the ROI, air pollutant emissions from these facilities would slightly decrease, which would be a beneficial impact.

Operation of the Proposed Project components would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

The Metropolitan Water District of Southern California

No construction or substantial changes in operations would occur within the MWD service area. As a result, implementation of the Proposed Project would not result in potentially significant air quality impacts within the MWD service area. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

San Diego County Water Authority

No construction or substantial changes in operations would occur within the SDCWA service area. As a result, implementation of the Proposed Project would not result in potentially significant air quality impacts within the SDCWA service area. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would reduce Colorado River flows and the water surface elevation between Parker and Imperial dams. Over the long-term, this would intermittently expose land in California and Arizona that is currently submerged along this reach of the Colorado River. However, this change would be within the range of historic fluctuations of the river and would not increase the amount of land that would be exposed and subject to increased fugitive dust emissions. This impact would be less than significant. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

SALTON SEA

FUGITIVE DUST FROM EXPOSED SHORELINES

As described in section 3.0, under Future Baseline conditions the Salton Sea is expected to decline substantially from its current elevation. As part of the Proposed Project, IID proposes to implement water conservation measures that would reduce inflows to the Salton Sea. As a result, the water surface elevation of the Salton Sea would decline at a faster rate and to a greater extent under the Proposed Project than under the Future Baseline. The soils along the Salton Sea shoreline are predominantly silty clay in texture and consequently have a moderate potential for wind-blown dust. Once exposed, most of these soils would dry with a mineral crust, which would minimize the ability of winds to generate dust (PM_{10}) emissions from the underlying soils. However, the potential exists for the crust to break down with time and to produce wind blown PM_{10} emissions. The greatest potential for PM_{10} emissions from the exposed shoreline would occur in areas of human disturbances, such as vehicle activities, or from subsequent wind erosion from these areas. Therefore, the level of dust emissions from the Proposed Project would be proportional to the amount of human disturbance that would occur on these exposed soils. Although the new shoreline created by the Proposed Project would only marginally increase the total land area within the ROI that presently generates fugitive dust emissions, fugitive dust emissions from these areas are conservatively considered to be significant due to the PM_{10} nonattainment status of the region.

Odorous Emissions

At the present, odors are emitted from the Salton Sea as a result of algae blooms and flora and fauna die-offs, particularly during the warmer months of the year. These odors affect the people in the vicinity of the Salton Sea and they will continue to do so in the future. Odors emitted from the Salton Sea are most likely primarily associated with the effects of eutrophication, which occurs as a result of nutrient inflows from agricultural drainage. In this process, algae production is limited by the availability of phosphorus. When the algae respire, dissolved oxygen is consumed from the Sea. Dissolved oxygen deficits are thought to be responsible for fish die-offs, which contribute to odor problems at the Salton Sea. Decomposition and sulfate reduction processes are also likely contributors to odors. Implementation of TMDLs proposed for the New and Alamo rivers would reduce loading of phosphates in the Salton Sea, which would be expected to reduce odor occurrences.

Given the complexity of the interrelationship of phosphate inputs, water quantity, and water quality, it is not possible to quantify the effect the Proposed Project would have on odorous emissions in the Salton Sea. However, compared to the existing conditions and projected continuation of eutrophication conditions at the Salton Sea, the effects of the Project on odors would be less than significant.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create substantial pollutants or create objectionable odors or cause the violation of any air quality standard or conflict with any applicable air quality plan. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the generation of pollutants or odors or that result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate air emissions or odors or cause the violation of any air quality standard or air quality plan.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no

changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to air quality would occur. The exchange of water with SDCWA would occur through existing infrastructure and would not require construction activities that would generate air emissions or odors, or cause the violation of any air quality standard or applicable air quality plan.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate air emissions or odors, or cause the violation of any air quality standard or applicable air quality plan. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to air quality along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan. No impacts to air quality would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would the generation of pollutants or

odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to air quality since it does not change the amount of water diverted, conveyed or used and would not result in any activity that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to air quality. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY.

With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. Potential impacts to air quality, such as additional fugitive dust from farmland fallowing and dust from acceleration of Salton Sea bank exposure, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.7.3 Mitigation Measures

3.7.3.1 Construction Impacts

Construction activities could exceed NO_x and PM_{10} emission thresholds within the SCAB portion of the CVWD service area or contribute to an exceedance of an ambient PM_{10} standard within the CVWD or IID Project regions. If proposed construction activities within the SCAB exceed a SCAQMD NO_x emission threshold, one or more of the following measures could be implemented to reduce NO_x emissions from construction equipment (this list does not preclude the use of additional mitigation measures):

1. Retard injection timing by two degrees on diesel-powered equipment. This measure would reduce NO_x emissions by about 15 percent from these sources. Retarding injection timing by more then two degrees would further reduce NO_x emissions. However, this level of control would adversely decrease fuel efficiency.

2. Properly tune and maintain all construction equipment.

3. Use low-NO_x engines, alternative fuels, electrification, and other advanced technologies, whenever feasible.

The following measures could be implemented as standard operating practices to minimize combustive particulate matter ($PM_{10}/PM_{2.5}$) and fugitive dust (PM_{10}) emissions (this list does not preclude the use of additional mitigation measures):

1. Minimize the use of diesel-powered equipment where feasible.

2. Use alternative diesel fuels in construction equipment where feasible.

3. Use particulate traps on diesel-powered equipment.

4. Properly tune and maintain all construction equipment.

5. Apply water to areas where vehicles and equipment are involved in ground-disturbing

activities.

6. Pave dirt roads, keep them wet, or apply non-toxic soil stabilizers, such as salts or detergents.
7. Increase water applications or reduce ground-disturbing activities with increasing wind speeds.
8. Minimize the amount of disturbed area and limit vehicle speeds onsite.
9. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents or water them to keep moist.
10. Cover trucks that haul soils or fine aggregate materials.
11. Designate personnel to monitor dust control program activities to ensure that they are effective in minimizing fugitive dust emissions.
12. Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways.
13. Sweep streets near the construction area at the end of the day if visible soil material is present.
14. Per SCAQMD Rule 403, for large construction sites (greater than 100 acres of disturbed area or daily earth-moving or throughput volume of 7,700 cubic meters) or medium operations (50 to 100 acres of disturbed area or daily earth-moving or throughput volume of 3,850 – 7,700 cubic meters) under a contingency notification, an approved fugitive dust emissions control plan must be prepared.
15. For applicable construction areas (such as pipeline alignments), establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover will be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting.

3.7.3.2 Operational Impacts

One or more of the following BMPs could be implemented to reduce fugitive dust emissions related to fallowing to a less than significant level. This list does not preclude the use of additional measures as appropriate.

- Implement conservation cropping sequences and wind erosion protection measures as outlined by the USDA Natural Resources Conservation Service, such as:
  - Plan ahead to start with plenty of vegetative residue and maintain as much residue on fallowed fields as possible. Residue is more effective for wind erosion protection if left standing.
  - If residues are not adequate, small grain can be seeded to take advantage of winter rains and lightly irrigated as needed to get adequate growth.
  - Avoid any tillage, if possible.

  - Avoid any traffic when fields are dry to avoid pulverization.
- Apply soil stabilization chemicals to fallowed fields.
- Re-apply drain or other unused water to allow protective vegetation to be established.
- Reuse irrigation return flows to irrigate windbreaks across blocks of land including many fields to reduce emissions from fallowed, farmed, and other lands within the block. Windbreak species, management, and layout would be optimized to achieve the largest feasible dust emissions reduction per unit water available for their irrigation. Windbreak corridors would provide ancillary aesthetic and habitat benefits.

Implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid fugitive dust impacts associated with the decline in Salton Sea water surface elevation since additional water would be conserved by IID and would be allowed to flow to the Salton Sea. This potentially feasible measure would reduce impacts to air quality to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3. As the IID Water Conservation and Transfer Project becomes more defined, additional mitigation measures to address air quality impacts may be identified.

3.7.4 Significant Unavoidable Adverse Impacts

Temporary significant and unavoidable impacts would result from construction of the Coachella Canal lining project. As noted above, the implementation of Mitigation Strategy 2 would reduce the impact from increased fugitive dust emissions at the Salton Sea to a less-than-significant level. If this strategy were not adopted as mitigation for biological impacts, increased fugitive dust emissions would be considered a significant and unavoidable impact.

3.7.5 Significant Irreversible Environmental Changes

The increase in wind-blown dust from newly exposed shoreline along the Salton Sea would be a significant irreversible change to air quality should Mitigation Strategy 2 not be implemented.

3.8 CULTURAL RESOURCES

3.8.1 Environmental Setting

3.8.1.1 Regulatory Framework

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events, or sites of traditional/cultural importance.

Section 15064.5 (State CEQA Guidelines) provides that a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an historical resource. Historical resources are defined in State CEQA Guidelines section 15064.5 as any of the following:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 California Code of Regulations [CCR], section 4850 et seq.).

(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, section 4852), including the following:

(A) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) is associated with the lives of persons important in our past;

(C) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) has yielded, or may be likely to yield, information important in prehistory or history.

Federal actions may be required for subsequent specific actions associated with the Proposed Project. If so, federal laws, regulations, and guidelines regarding cultural resources may be applicable, including but not limited to the National Historic Preservation Act of 1966 (NHPA) (16 USC 470f, as amended) and its implementing regulations, the American Indian Religious Freedom Act (AIRFA), and the Native American Graves Protection and Repatriation Act (NAGPRA).

3.8.1.2 Regional Issues

Human beings have been living within the regions of Southern California affected by the implementation of the Proposed Project for over 10,000 years. The analysis of cultural resources, including both prehistoric and historic sites, can provide valuable information on the cultural heritage of both local and regional populations. Prehistoric sites range from small lithic scatters left behind by early stone-tool makers to the remains of large village sites found along the coast. Historic resources include small adobe homes as well as large historic districts encompassing numerous architectural structures and acres of land.

In general, urban areas are often located adjacent to natural resources such as springs or estuaries that had also attracted Native American settlement. Therefore, urban development is often located in areas of high prehistoric archaeological site sensitivity. Although historic and modern development within highly urbanized areas have caused extensive impacts to prehistoric resources, buried archaeological sites with portions that are relatively unaffected by previous development have been commonly encountered during urban construction. Urbanized areas also have a higher likelihood of containing historic architectural resources than rural or non-developed areas.

Agricultural land has been less impacted by historic and modern development and, therefore, has a higher likelihood of containing relatively intact cultural resources despite the ground disturbances associated with plowing and other agricultural activities. In addition, coastal areas, including those within San Diego, Orange, Los Angeles, and Ventura counties, have a high probability of containing Native American archaeological sites because many Native American communities congregated along the coast to take advantage of the rich marine resources.

Paleontologic resources are the recognizable remains of once-living, non-human organisms. Identified as fossils, these resources represent a record of the history of life on the planet dating as far back as approximately 4 billion years ago. Paleontologic resources can include shells, bones, leaves, trails, and other fossilized floral or faunal materials. These resources provide valuable information on evolution, climatology, and taxonomy and can provide information for measuring time in earth history as well as for understanding ancient environments and geographies.

3.8.1.3 Imperial Irrigation District

The IID service area was traditionally inhabited by the Digueño and Cahuilla groups (Figure 3.8-1). There is often great fluidity between ethnographic territories; therefore, there is often uncertainty in demarcating exact boundary lines between neighboring groups. The approximate boundary lines given in Figure 3.8-1 are based on the *Handbook of North American*

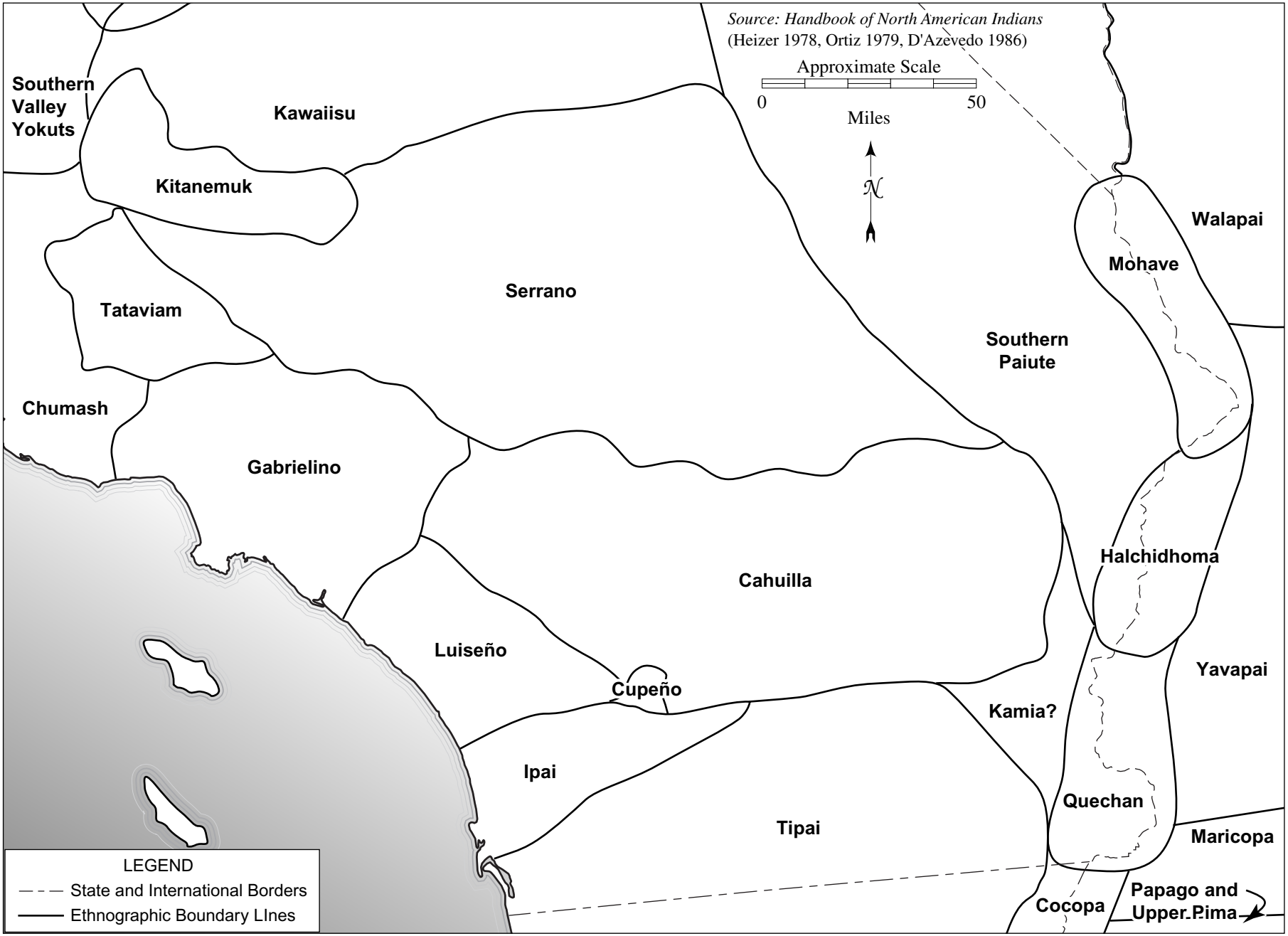


Figure 3.8-1. Approximate Boundary Lines of the Ethnographic Groups of Southern California at the Time of European Contact

Indians (Heizer 1978, Ortiz 1979, D'Azevedo 1986). The district boundary also encompasses agricultural lands with scattered suburban and rural development, which could contain historic architectural resources. The district area may contain fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Digueño (Ipai/Tipai/Kumeyaay). The Ipai, Tipai, and Kumeyaay are three groups subsumed under the name Digueño because they are linguistically and culturally similar to each other. The Digueño territory covers most of the extreme southern part of California, from the mouth of the San Luis Rey River in the north, to the Todos Santos Bay near Ensenada, Mexico, in the south, and to the Sand Hills bordering the Imperial Valley in the east (Luomala 1978). They speak a Yuman language similar to the Colorado River groups such as the Mohave, Halchidhoma, and Quechan. The Digueño used various types of wild plants and supplemented their diet with small game, some large game, and fish (Luomala 1978). During the early years of Spanish Missionization, the Digueño violently resisted Mission control and several attacks on the San Diego Mission ended with fatalities (Luomala 1978). Despite strong resistance, the Mission had 1,405 Native American neophytes living within the Mission system by 1779 (Luomala 1978).

Cahuilla and Serrano. The Cahuilla territory was located near the geographic center of Southern California. It was bounded to the north by the San Bernardino Mountains, to the south by Borrego Springs and the Chocolate Mountains, to the east by the Colorado Desert, and the west by the San Jacinto Plain and the eastern slopes of the Palomar Mountains (Bean 1978). The Serrano territory encompassed the San Bernardino Mountains east of Cajon Pass and continued north to Victorville, east to Twentynine Palms, and south to Yucaipa Valley (Bean and Smith 1978a). Both groups used a wide range of wild resources, such as acorns and piñon nuts, deer, sheep, rabbits, fish, and quail, among others. They also had similar settlement patterns, with higher elevation villages situated in well-watered canyons or on fans near streams and springs and lower elevation villages located near natural springs (Moratto 1984). The Cahuilla had well-developed trade networks with neighboring Serrano, Luiseño, and Diegueño groups (Bean and Saubel 1963).

3.8.1.4 Coachella Valley Water District

The CVWD service area lies within land traditionally occupied by the Digueño and Cahuilla (see section 3.8.1.3) (Figure 3.8-1). The Salt Creek area in particular has been identified as a sacred ground for shamanistic ritual by the ethnographic Cahuilla (USBR and CVWD 2001). The district boundary also encompasses urbanized areas that could contain historic architectural resources. This district area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.1.5 The Metropolitan Water District of Southern California

The MWD service area was traditionally inhabited by the Ventureño Chumash, Gabrielino, Cahuilla (see section 3.8.1.3), Luiseño/Juaneño, and possibly the Tataviam and Serrano (see section 3.8.1.3) (Figure 3.8-1). The district boundary also encompasses urbanized areas, which could contain historic architectural resources. This district area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Ventureño Chumash. The Chumash occupied a large, ecologically diverse region stretching from San Luis Obispo to Malibu Canyon on the coast, west as far as the San Joaquin Valley, and the Channel Islands (Glassow 1991). Within this territory, the historic Chumash were divided into seven groups. Each group occupied a different territory, had its own adaptation, and played a different role in the overall economic system. Ventureño Chumash territory was mountainous with the exception of the coastal areas of the Oxnard Plain between Ventura and Point Mugu. The northern portion of their historic territory included the headwaters of the Ventura and Santa Clara rivers, and their easternmost settlement was along Malibu Creek (Grant 1978). The Chumash economic system was complex, involved widespread formalized trading networks, and was closely tied to kinship, political, and religious systems (Blackburn 1975). Shell bead currency was used throughout Southern California and it appears that the Chumash were the primary makers of this standardized money (Blackburn 1975).

Gabrielino. Gabrielino territory covered most of present-day Los Angeles and Orange counties, from Aliso Creek in the south to Topanga Creek in the north as well as all of the Los Angeles Basin (Bean and Smith 1978b). Settlements were situated near water courses and consisted of both sedentary (year-round) villages and smaller short-term campsites. The geographic territory of the Gabrielino contains different types of environmental zones (e.g., interior mountains, prairie, coast), which provided a wide range of resources. The Gabrielino collected acorns, yucca, and piñon nut, and hunted various types of small mammals, deer, fish, and shellfish. Houses were normally domed structures thatched with tule, fern, or carrizo (Bean and Smith 1978b).

Luiseño/Juaneño. The Shoshonean inhabitants of northern San Diego County and southwestern Riverside County were called Luiseños by Franciscan friars, who named the San Luis Rey River and established the San Luis Rey Mission in the heart of Luiseño territory. Luiseño territory encompassed an area roughly from Agua Hedionda Creek north to Aliso Creek on the coast, and inland to Santiago Peak and Palomar Mountain (Bean and Shipek 1978). Less is known about the Juaneño, whose name derives from an association with the Mission San Juan Capistrano. The territory ascribed to them by Kroeber extended from Aliso Creek on the north to the area between San Onofre and Las Pulgas drainages on the south, with the Pacific Ocean forming the western boundary and the crest of the Santa Ana Mountains forming the boundary on the east (Kroeber 1925). Acorns were an important food source to the Luiseño and Juaneño groups, but they also utilized various seeds, greens, bulbs, roots, and fruits. The Luiseño hunted large and small terrestrial game, including black-tailed deer, pronghorn, jackrabbits, various birds, grasshoppers, and rodents.

Tataviam. The Tataviam occupied the area just south of Castaic Lake to the vicinity of Newhall. Their area spread westward to Piru on the Santa Clara River and eastward to the southwestern edge of the Antelope Valley. Their settlements ranged in size from 10-15 people to villages of approximately 200 people (King and Blackburn 1978). The total population was probably less than 1,000. Larger villages were located along creeks and what is now Elizabeth Lake. Like other interior Native American groups, rock art and ritual was highly developed; trade was central to their economy. The Tataviam subsisted on similar foods to their Gabrielino neighbors, except that yucca was relied upon more heavily as a major staple (King and Blackburn 1978).

3.8.1.6 San Diego County Water Authority

The SDCWA service area was traditionally occupied by the Luiseño/Juaneño (see section 3.8.1.5), Digueño (see section 3.8.1.3), and possibly the Cahuilla (see section 3.8.1.3) (Figure 3.8-1). The service area also encompasses urban uses that could contain historic architectural resources. This service area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.1.7 Other Areas

Colorado River

The region of influence includes the reach of the Colorado River in California (San Bernardino, Riverside, and Imperial counties) and Arizona (La Paz and Yuma counties) primarily between Parker and Imperial dams. This portion of the Colorado River lies within areas historically occupied by the Mohave, Halchidhoma, Quechan, and Southern Paiute (Chemehuevi) (Figure 3.8-1). The majority of the Colorado River region is undeveloped, but does include scattered suburban and rural development, which could contain historic architectural resources. It may also contain fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Mohave, Halchidhoma, and Quechan. The Mohave, Halchidhoma, and Quechan or Yuma were lower Colorado River agriculturists who spoke languages from the Yuman language family (Moratto 1984). The Mohave is the northernmost and largest of the three groups. The Quechan is the southernmost, and the Halchidhoma occupied the land between the Mohave and Quechan (see Figure 3.8-1). The Kamia from the neighboring Colorado Desert later joined them during historic times, and the Chemehuevi (see below) actually displaced the Halchidhoma during the early historic period (Moratto 1984). Maize was the primary agricultural crop, which was supplemented by collecting wild plants, fishing, and hunting. A typical Colorado River settlement consisted of a scattering of houses up and down the riverbank (Moratto 1984). The lower Colorado River groups were organized militarily and traveled great distances to fight, visit, or trade (Moratto 1984). The Mohave and Quechan often united to fight the Halchidoma or other western Arizona groups.

Southern Pauite (Chemehuevi). The Chemehuevi are one of 16 identified Southern Paiute groups whose main territory was west of the Colorado River, extending from Blythe to just north of Needles and then from the California border westward halfway to Twentynine Palms. Although the Chemehuevi were neighbors of the Serrano and Cahuilla (see section 3.8.1.3), they were more aligned linguistically and culturally with the Great Basin groups (e.g., Western Shoshone, Ute, Kawaiisu). The Chemehuevi shared the Great Basin pattern of living in nonsedentary small bands that used a wide range of resources and traveled over great distances (Moratto 1984). During historic times, the Chemehuevi displaced the Halchidhoma along the Colorado River (with the help of the Mohave) and practiced some agricultural pursuits (Kroeber 1925).

Salton Sea

The Salton Sea lies within territory traditionally utilized by the Cahuilla and the Digueño (see section 3.8.1.3), although neighboring groups (i.e., Cupeño, Mohave, Quechan, Serrano) may also have used this land at some point (Figure 3.8-1). The majority of the Salton Sea region is occupied by agricultural lands with scattered suburban and rural development, which could contain historic architectural resources. It also contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.2 Impacts

3.8.2.1 Significance Criteria

State CEQA Guidelines section 15064.5 provides that a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an "historical resource" or a "unique archaeological resource" as defined or referenced in State CEQA Guidelines section 15064.5[b, c]. Such changes include "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

An impact on cultural resources is considered significant, therefore, if it adversely affects a resource that is listed in or eligible for listing in the California Register of Historical Resources or is otherwise considered a unique or important archaeological resource under CEQA. In general, a project may have an adverse effect on a cultural resource if it would:

- cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines section 15064.5; or
- cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines section 15064.5; or
- directly or indirectly destroy a unique paleontologic resource or site or unique geologic feature; or
- disturb any human remains, including those interred outside of formal cemeteries.

3.8.2.2 Methodology

Impacts to cultural resources were evaluated on a region-by-region basis to identify whether any of the potential changes that would result from implementation of the Proposed Project would result in a significant impact to archaeological, paleontologic, or architectural resources. With the exception of the All American and Coachella Canal lining projects, the exact locations of improvements in the IID and CVWD service areas are not known; therefore, the potential impacts were assessed programmatically based on the general types of areas in which the improvements could occur. Potential impacts to cultural resources in the IID and CVWD service areas would result from construction activities and were assessed by comparing Project-induced changes to the Existing Baseline. Potential impacts to the Salton Sea and Colorado River areas would result from changes in water elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. Impacts associated with the All American and Coachella Canal lining projects are

based on the EIS/EIRs prepared for those projects (USBR and IID 1994, USBR and CVWD 2001). No impacts would occur in the MWD and SDCWA service areas since no construction or other physical or operational changes would take place.

3.8.2.3 Summary of Impacts

Both structural and non-structural components of the Proposed Project could affect significant prehistoric, historic, and paleontologic resources. Structural components, especially those involving construction-related activities and ground disturbance, could impact an archaeological, architectural, or paleontologic site. Some non-structural components, such as reducing drainage flows, have the potential to impact significant cultural resources. For example, reduced drainage flows would lower the water level of the Salton Sea, exposing previously submerged cultural resources. Newly exposed cultural resources may be susceptible to site erosion and looting.

Imperial Irrigation District

The Proposed Project includes construction of various water conservation measures, such as building a lined canal parallel to the existing All American Canal, installing flow metering equipment, automating control gates and building lateral interceptors, regulating reservoirs, fallowing, and implementing extensive on-farm water conservation measures. These types of construction-related water conservation measures may involve ground disturbance and could impact an archaeological or paleontologic site or human remains. Most ground disturbance would take place in previously disturbed areas and, therefore, impacts to cultural resources would be unlikely. However, ground-disturbing activities still have the potential to impact a significant archaeological or paleontologic resource or human remains, particularly if those activities occur in previously undisturbed areas. Potentially significant impacts could also result if implementation of Project components would require demolition or relocation of a significant historic architectural resource. Fallowing would not involve any physical changes that have the potential to impact cultural resources.

Coachella Valley Water District

As described in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001), lining the Coachella Canal would involve ground disturbance that could impact an archaeological or paleontologic site. The Coachella Canal has not been officially recognized as a historical property, but because of its age and importance to the cultural history of the region, it is presumed to meet the criteria for listing on the National Register of Historic Places and the California Register of Historical Resources (USBR and CVWD 2001). Any physical alteration of the Canal would be a potentially significant impact.

Construction of other Proposed Project components, such as pumping stations, recharge basins, and the expansion of the current distribution system would involve ground disturbance. Ground disturbance associated with pipelines and pumping stations likely would take place in previously disturbed areas, and impacts to cultural resources therefore would be unlikely. However, ground-disturbing activities in such areas still would have the potential to impact buried archaeological or paleontologic resources or human remains. Preliminary recharge basin locations are being considered that could be located in undisturbed areas such as the vicinity of

Dike 4 and the Martinez Canyon alluvial fan. Ground disturbance from construction in such locations could impact archaeological or paleontologic resources or human remains. Potentially significant impacts could also result if implementation of Project components would require demolition or relocation of a significant historic architectural resource.

The Metropolitan Water District of Southern California

Implementation of the Proposed Project would not require the construction of new MWD facilities or the modification of existing MWD facilities and, therefore, impacts to archaeological, architectural, or paleontologic resources or human remains would not occur because no new ground-disturbing activities or construction would be required within the MWD service area.

San Diego County Water Authority

Implementation of the Proposed Project would not require the construction of new SDCWA facilities or the modification of existing SDCWA facilities and, therefore, impacts to archaeological, architectural, or paleontologic resources or human remains would not occur because no new ground-disturbing activities or construction would be required within the SDCWA service area.

Other Areas

COLORADO RIVER

The implementation of the Proposed Project would decrease the flow of the Colorado River between Parker and Imperial dams, but the resulting reduction in median water surface elevation is within historic fluctuations. The reduction in water flow to backwaters would result in a slight reduction in median water surface area to some lakes, but these slight reductions are within historical ranges. Although reducing the surface water area of a river or lake may expose previously submerged cultural resources on both the California and Arizona sides of the River, the changes in water surface area to the River or backwaters from the implementation of the Proposed Project would be insignificant in comparison to the daily and seasonal fluctuations that are currently occurring. Impacts to cultural resources, including archaeological, architectural, and paleontologic resources, would therefore be less than significant.

SALTON SEA

Implementation of the Proposed Project would result in a reduction of the current and projected surface area of the Salton Sea. Under the Proposed Project, the Sea level would decrease more rapidly and to a greater extent than under the Future Baseline (refer to section 3.1 for additional discussion) over the quantification period. This may expose previously submerged cultural resources, which would leave those resources susceptible to site erosion and looting. If reduction of the surface area of the Salton Sea exposed a previously submerged significant archaeological or paleontologic resource, then it could be a significant adverse impact to cultural resources.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts cultural or paleontologic resources along the Colorado River or cause a substantial change to historic resources. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would impact any archaeological or paleontologic resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact archaeological or paleontologic resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to cultural resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would result to changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would result in changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to cultural resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to cultural resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to archaeological, historic or paleontologic resources. No impacts to cultural resources would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to archaeological, historic or paleontologic resources.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to cultural resources since it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would cause significant impacts to archaeological, historic, or paleontologic resources. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use

within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact cultural resources.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause a significant impact to archaeological, historic, or paleontologic resources.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. Because this additional conservation/shortage management would not involve ground disturbance, no impacts to cultural resources are anticipated.

3.8.3 Mitigation Measures

Mitigation measures for potential impacts to cultural resources were identified for both the All American and Coachella Canal lining projects. Mitigation measures included in the All American Canal Lining EIS/EIR include:

- Prior to construction, class III surveys would be conducted in the Pilot Knob area and along the entire length of the canal to be lined to determine the locations of cultural resources. Surveys also would be conducted at gravel quarries not previously surveyed.

- If a site cannot be avoided, mitigation would include professionally recovering, documenting, and preserving the cultural resources as appropriate. Surveys and

recovery activities would be coordinated with the California State Historic Preservation Officer (SHPO) and the tribe with whom project coordination is in progress. To fulfill the requirements of the NHPA, Reclamation will enter into an agreement with the California SHPO, Native American tribes, BLM, other interested persons, and the Advisory Council on Historic Preservation. A Native American observer will be given the opportunity to participate in archaeological surveys in the Pilot Knob ACEC.

- Steps would be taken as part of an Interim Recreation Management Plan to deter the public from sensitive areas. Incidental contractor activity at the construction site would be restricted to a predetermined area. Each onsite construction contract would include provisions requiring the contractor to report cultural resources located during the construction activities and to cease construction activities in the immediate area of the located resources until the site is inspected by professional cultural resources personnel. In the event that cultural resources are discovered during construction, work would be suspended until evaluation and mitigation are complete.

The following environmental commitments and mitigation measures were included in the Coachella Canal Lining Project EIS/EIR:

- All cultural resource activities will be conducted in accordance with 36 CFR 800 and in consultation with the California SHPO, BLM for public domain land, and as appropriate, the Federal Advisory Council on Historic Preservation.

- Should any burial sites be encountered during construction, they will be treated pursuant to the procedures outlined in the Native American Graves Protection and Repatriation Act.

- Prior to construction, a detailed construction plan will be developed. To minimize impacts, existing roads and staging areas will be used wherever possible. New borrow areas (other than the canal-bank spoil piles) and access roads will require a Class III survey unless the compliance process was completed within the past 5 years. All areas potentially affected, as well as areas to be disturbed for new habitat planting, will also have Class III surveys.

- Avoidance will be utilized to the extent possible.

- Continuation of consultations with the Cahuilla Indian community and other area Native American tribal organizations should serve to recognize their interests and develop appropriate solutions to any issues. If impacts occur, mitigation would consist of professional recovery of cultural resources or development, where possible, of means to avoid impacts.

- Appropriate documentation about the Coachella Canal will be prepared that is equivalent to a Historic American Engineering Record.

Construction of other components of the Proposed Project within the CVWD and IID project regions could affect prehistoric, historic, and paleontologic resources. Depending on the nature of the cultural resource, the impact, and the ability to modify project design to avoid or

minimize the impact, impacts on cultural resources could be potentially significant. The following measures could be implemented as appropriate to mitigate impacts to cultural resources (note this list does not preclude the use of additional measures):

Archaeological Resources

- Conduct archaeological and historical surface surveys during site-specific CEQA review to identify any cultural resources that may be affected. Areas that may contain buried archaeological resources also would be identified.

- Modify project design, when feasible, to avoid significant cultural resources.

- Develop and implement a pre-construction Phase II Testing and Evaluation Plan for all unavoidable potentially significant archaeological sites that would be directly impacted by the implementation of the Proposed Project to evaluate the significance of the resource in terms of applicable criteria.

- Develop and implement a pre-construction Phase III Data Recovery Plan for all significant archaeological sites that would be directly impacted by the implementation of the Proposed Project if the sites cannot be avoided through project re-design.

- Develop a Cultural Resources Construction Monitoring Plan prior to construction if ground disturbance would occur within any areas of potential archaeological sensitivity.

- In the event of an unanticipated cultural resource discovery during construction, construction would be re-directed to other areas until the discovery has been documented by a qualified archaeologist and its potential significance evaluated in terms of applicable criteria. Resources considered significant would be avoided or subject to a data recovery program as described above.

- If human remains are discovered, the County Coroner would be contacted.

Architectural Resources

- If a significant resource is not avoidable or incorporated into the Proposed Project design, then recordation would be conducted in accordance with applicable standards through large-format black-and-white archival photographs, building descriptions, and archival research to establish their regional context.

Paleontologic Resources

- Conduct an appropriate literature review and paleontologic field survey as part of site-specific CEQA review to identify potential impacts to sedimentary formation units that may contain significant fossil remains.

- Construction monitoring by a qualified paleontologist would be recommended for project locations within paleontologically sensitive sediments. A Paleontologic Monitoring Plan would be prepared prior to ground disturbance in sensitive areas.

- In the event of an unanticipated discovery during construction, construction would be re-directed to other areas until the discovery has been investigated by a qualified paleontologist.

- All paleontologic resources recovered would be appropriately described, processed, and curated in an appropriate institution.

Newly Exposed Cultural Resources of the Salton Sea

The following measure would mitigate impacts associated with the potential exposure of significant archaeological or paleontological resources of the Salton Sea as a result of declining water levels.

- The decline in Salton Sea elevation would result from water conservation measures implemented in the IID service area. Therefore, IID could conduct a series of archaeological/paleontologic surveys at regular intervals (once every 3 years) to check the freshly exposed lands for the presence/absence of archaeological or paleontologic sites. Discovered sites would be properly recorded with the appropriate California Historic Resource Information System (CHRIS) office. Future ground-disturbing projects would be subject to CEQA analysis (or in the case of tribal lands, would be subject to federal oversight by the Bureau of Indian Affairs following Section 106 compliance pathways). Sites recorded with CHRIS offices would be evaluated for their integrity and significance and appropriate avoidance measures and/or measures to reduce physical harm would be developed. Data recovery excavations to mitigate for loss of archaeological data resulting from unavoidable impacts would be conducted as needed. Monitoring of construction by qualified archaeologists would take place as appropriate. Tribal permission would be obtained before entry onto tribal lands.

Alternatively, implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea elevation. This measure would reduce impacts to cultural resources to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.8.4 Significant Unavoidable Adverse Impacts

The mitigation measures defined above would reduce the potential for significant adverse impact on cultural resources to a less than significant level. No significant unavoidable adverse impacts have been identified.

3.8.5 Significant Irreversible Environmental Changes

With implementation of the mitigation measures identified above, no significant, irreversible environmental changes associated with cultural resources would occur.

3.9 NOISE

3.9.1 Environmental Setting

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. Several noise measurement scales are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level, or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 3.9-1. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Because the sensitivity to noise increases during the evening and at night—excessive noise interferes with the ability to sleep—24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5-dB penalty added to evening (7:00 P.M. to 10:00 P.M.) and a 10-dB addition to nocturnal (10:00 P.M. to 7:00 A.M.) noise levels. The Day/Night Average Sound Level (L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

3.9.1.1 Regulatory Framework

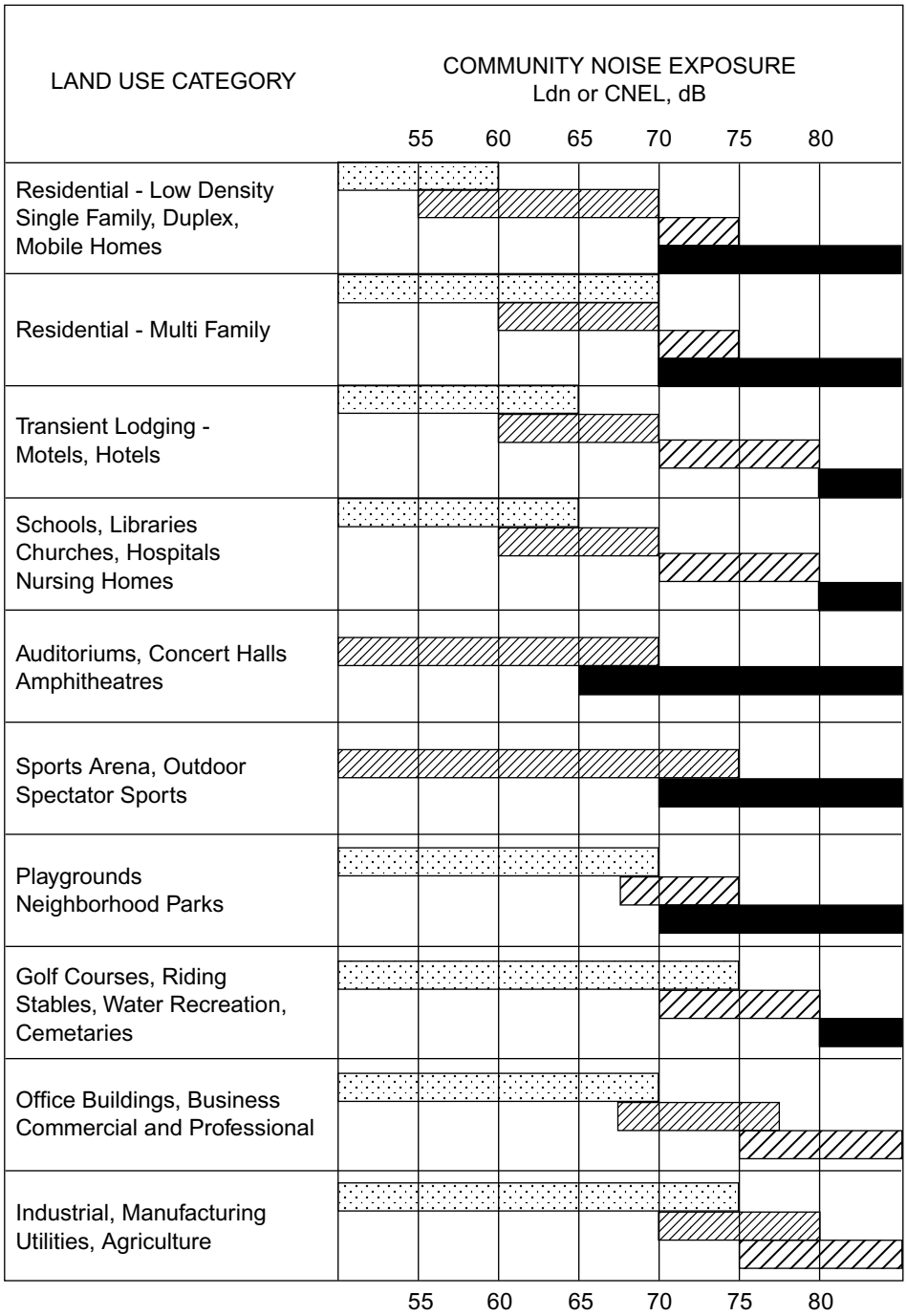
State of California

The State of California has not adopted any quantitative noise regulations that are applicable to the Proposed Project, although the Department of Health Services, Environmental Health Division has established guidelines regarding land use compatibility. These guidelines are shown in Figure 3.9-1. Noise levels for single-family residential land uses are "normally acceptable" up to 60 dB L_{dn} or CNEL assuming that buildings are of normal conventional construction. Noise levels are "conditionally acceptable" for single-family residential projects up to 70 dB L_{dn} or CNEL assuming that a detailed noise analysis is conducted and noise insulation features are included in the design of the project. Above 70 dB L_{dn} or CNEL, noise levels are "normally unacceptable" or "clearly unacceptable." New construction is generally

Table 3.9-1. Typical Sound Levels Measured in the Environment and Industry

At a Given Distance From Noise Source	*A-Weighted Sound Level in Decibels*	*Noise Environments*	*Subjective Impression*
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen with Garbage Disposal Running	
Vacuum Cleaner (10')	70		Moderately Loud
		Data Processing Center	
	60		
		Department Store	
Light Traffic (100')	50		
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

Source: U.S. Department of Housing and Urban Development. 1985



NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the asumption that any buildings involved are of normal conventional construction, without any special noise insulation requirement.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise reduction features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Source: California Department of Health, Office of Noise Control, Guidelines for the Preparation and Content of Noise Elements of The General Plan, February 1976

Figure 3.9-1. California Department of Health Services Noise and Land Use Compatibility Guidelines

discouraged under "normally unacceptable" community noise exposure and should only proceed if a detailed noise analysis is conducted and noise insulation features are included in the design of the project. New construction or development should generally not be undertaken when community noise exposure falls into the "clearly unacceptable" category.

Local Jurisdictions

Local jurisdictions also have noise regulations that govern stationary noise sources. Typically, these are included in noise ordinances, although policies that limit public exposure to noise may be included in the general or community plans of individual cities or counties. Local noise regulations may be more stringent than the guidelines identified by the Department of Health Services. Many jurisdictions also have specific provisions addressing construction noise impacts that often limit the hours and days of construction and may establish noise thresholds that may not be exceeded at specific locations, such as the property line of the site that is under construction.

The only activities that would generate noise as a result of the Proposed Project would occur within Riverside and Imperial counties. The following discussion addresses noise standards of these two counties. Individual cities within Riverside County have their own noise ordinances, as do cities within Imperial County.

RIVERSIDE COUNTY

Riverside County has no noise ordinance in place at the present. Instead, the County evaluates compatibility of noise producers and receptors based on land use categories and has developed a land use compatibility chart with respect to community noise levels. The Riverside County Code does not provide construction noise limits; however, it does restrict construction activities within one-quarter mile of an occupied residence(s) to the hours of 6 A.M. to 6 P.M. during the months of June through September, and between 7 A.M. to 6 P.M. during the other months. Exceptions can be developed with the consent of a County building official. According to the Riverside County Department of Industrial Hygiene, stationary source noise that would occur during operation, as projected to any portion of any surrounding property containing an occupied residential structure, must not exceed the following worst-case noise levels: 45 dBA 10-minute L_{eq} between 10 P.M. and 7 A.M. (nighttime standard) and 65 dBA 10-minute L_{eq} between 7 A.M. and 10 P.M. (daytime standard).

IMPERIAL COUNTY

The Noise Element of the Imperial County General Plan contains standards for construction noise. Impacts from construction are defined as construction noise from a single piece of construction equipment or a combination of equipment that exceeds 75 dBA L_{eq} when averaged over an 8-hour period and measured at the nearest sensitive receptor (e.g., residences, schools, hospitals, parks, office buildings, and certain non-human species, including riparian bird species).

The Imperial County General Plan Noise Element includes Property Line Noise Limits that apply to noise generation from one property to an adjacent property. If a noise-sensitive receptor is not present on the adjacent property, an exception to the standards may be

appropriate. Depending on the time of day, the applicable 1-hour average sound level may not exceed 45 to 50 dB in residential zones, 50 to 55 dB in multi-residential zones, 55 to 60 dB in commercial zones, 70 dB in light industrial/industrial park zones any time, or 75 dB in general industrial zones (including agricultural operations).

Imperial County defines Noise Impact Zones as areas that may be exposed to noise greater than 60 dB CNEL or 75 dB L_{eq} (averaged over 1 hour). Any property within ¼ mile of existing farmland that is in an agricultural zone is included in the definition of a Noise Impact Zone. The purpose of such a zone is to define areas and properties where an acoustical analysis of a Proposed Project is required to demonstrate project compliance with land use compatibility requirements and other applicable environmental noise standards.

The noise/land use compatibility guidelines for agricultural land use specified in the Noise Element of the Imperial County General Plan indicate that specified land uses are normally acceptable when the CNEL is less than 70 dB. New construction or development is conditionally acceptable when the CNEL ranges from 70 to 75 dB. It is normally unacceptable when the CNEL ranges from 75 to 80 dB, and clearly unacceptable when the CNEL is over 80 dB.

According to the Noise Element, if future noise levels from a project are within the "normally acceptable" noise level guideline, but result in an increase of 5 dB CNEL or greater, the project would have a potentially significant impact and mitigation measures must be considered. If the future noise level after the project is completed is greater than the "normally acceptable" noise level, a noise increase of 3 dB CNEL or greater should be considered a potentially significant noise impact, and mitigation measures must be considered.

In recognition of the role of agriculture in Imperial County, the County has adopted a "Right to Farm" ordinance (Division 2, Title 6 of the Codified Ordinances of the County of Imperial). This ordinance requires a disclosure to land owners near agricultural land operations or areas zoned for agricultural purposes. The disclosure advises persons that discomfort and inconvenience from machinery resulting from conforming and accepted agricultural operations are a normal and necessary aspect of living in the agricultural areas of the county.

3.9.1.2 Regional Issues

Regional issues include increased noise from vehicular and air traffic, as well as from increased industrial development located in proximity to expanding residential areas. Noise-sensitive receptors that could be affected by this increased noise include residential areas, facilities such as schools and hospitals, and certain types of recreational uses where a quiet setting is considered to be an integral part of the recreational experience.

3.9.1.3 Imperial Irrigation District

Much of the district is in agricultural use or open space, although some urban development is present and concentrated primarily between the southeastern side of the Salton Sea and the Mexican border and along Interstate 8. The main noise sources are from agricultural uses, vehicular traffic (particularly along Interstate 8) and aircraft from the Naval Air Facility located

just west of El Centro. Aircraft noise also dominates the noise environment in the vicinity of the National Parachute Test Range, which is just south of the Salton Sea.

3.9.1.4 Coachella Valley Water District

The predominant noise source is vehicular traffic, which is concentrated along Interstate 10 and major roadways connecting communities such as Cathedral City and Indio. Other sources of noise include aircraft overflights and rail traffic. The CVWD service area also contains undeveloped desert and mountains, which have low ambient noise levels. Agricultural equipment also generates noise in localized areas.

3.9.1.5 The Metropolitan Water District of Southern California

The area served by the MWD is largely urbanized, although portions of undeveloped land remain and agricultural uses are present in some areas. Primary noise sources are vehicular and air traffic and other urban uses, such as industrial and commercial activities.

3.9.1.6 San Diego County Water Authority

The area served by the SDCWA is largely urbanized, although portions of undeveloped land remain and agricultural uses are present in some areas. Primary noise sources are vehicular and air traffic and other urban uses, such as industrial and commercial activities.

3.9.1.7 Other Areas

Colorado River

The Colorado River traverses a sparsely developed area. The primary noise sources along many parts of the River are natural (e.g., from wind and water) or related to recreational activities such as camping, boating, and fishing. Traffic noise also contributes to the noise environment along some reaches of the River, particularly in the immediate vicinity of Interstates 10 and 40 and along the portion of State Highway 95 that parallels the River north of Blythe. Aircraft flying over the area also create noise. Noise-sensitive receptors include residential uses in the communities that border the River and the Imperial, Cibola, and Havasu national wildlife refuges.

Salton Sea

The primary sources of noise in the Salton Sea area include vehicular traffic on State Routes 86 and 111, which border the Salton Sea on the north, east, and west; rail traffic along the Union Pacific Railway, which is located near the eastern shore; and agricultural equipment from operations located to the south and north. Noise also results from recreational use associated with developed areas within the Salton Sea State Recreation Area, including boating and other active recreational use of this area. Existing noise sources along the south shore of the Salton Sea include State Route 86 and State Route 111, which are located further from the shoreline than along the rest of the Salton Sea's perimeter, agricultural operations, and geothermal hydroelectric facilities on the southwest shore.

3.9.2 Impacts

3.9.2.1 Significance Criteria

The criteria used to determine the significance of noise impacts are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it would

- expose persons to or generate noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies; or
- expose persons to or generate excessive ground-borne vibration or ground-borne noise levels; or
- cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or
- for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

3.9.2.2 Methodology

The Proposed Project components were evaluated, and it was determined that noise would result only from construction activities and resulting operational changes in the IID and CVWD service areas. Information developed by the EPA was used to assess the amount of noise that would be generated by these activities. The potential for noise-sensitive receptors to be located near Project-induced noise was considered in determining impact significance, which is based on the above-listed significance criteria. The Existing Baseline was used in assessing noise impacts. Information regarding impacts of the All American and Coachella Canal lining projects is summarized from on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.9.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to noise from construction or operation of this component of the Proposed Project.

The Proposed Project includes construction of water conservation measures, such as tailwater return systems lateral interceptors, reservoirs, seepage interceptors, and conveyance lining, in addition to construction of a canal parallel to the All American Canal. Construction of these

components would create short-term, noise impacts from the use of equipment such as backhoes, trenchers, compactors, concrete mix trucks, dozers, end loaders, excavators, loaders, scrapers, slipform pavers, and trucks. The estimated noise from typical construction activities is shown in Table 3.9-2 where the noise identified for "Public Works Roads & Highways, Sewers, and Trenches" would be most comparable to that generated by the Project. These types of equipment typically generate noise in excess of 80 dBA at 50 feet from the source (EPA 1971). The components would generally be implemented in rural, unpopulated areas, well away from noise sensitive receptors. However, should noise-sensitive receptors, including riparian birds, be exposed to noise in excess of 75 dBA L_{eq} when averaged over an 8-hour period, which would exceed the Imperial County construction noise standards, the impact would be significant, but mitigable.

Table 3.9-2. Noise Levels by Construction Phases

TYPICAL RANGES OF ENERGY EQUIVALENT NOISE LEVELS AT 50 FEET, LEQ IN dBA, AT CONSTRUCTION SITES								
	Domestic Housing		*Office Building, Hotel, Hospital, School, Public Works*		*Industrial Parking Garage, Religious, Amusement, Recreation, Store, Service Station*		*Public Works Roads, Highways, Sewers, Trenches*	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	74	89	74	84	84

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.

Source: EPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Operation of certain water conservation measures, such as tailwater return systems, drip irrigation, lateral interceptor systems, and mid-lateral reservoirs, would require the operation of pumps that could generate long-term noise in excess of 70 dBA at 50 feet. Table 3.9-3 describes noise emissions from the types of pumps that could be used within the IID service area. Depending on the location of these pumps in relation to noise-sensitive receptors, noise from the pumps could exceed the Normally Acceptable noise/land use compatibility guideline of 70 dBA and the operational standards of the Imperial County General Plan, which would be a significant but mitigable impact.

The types of construction/operation activities that would occur are fairly commonplace and would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. The Proposed Project would not generate noise impacts affecting people working or living near airports or private airstrips. Fallowing would not cause noise or vibration impacts.

Table 3.9-3. Typical Noise Emissions for Electric Pumps

Conservation Measure	*Type of Pump*	*Sound Level at 50 ft. (dBA)*	*Duration of Operation*
Tailwater Return System	Nondiesel, truck-mounted	77	Intermittent
Drip Irrigation	25-50 horsepower (hp)	69-72	Intermittent, running approximately 40% of the time
Lateral Interceptor System	Max 500 hp	78	Intermittent, running approximately 50% of the time
Mid-Lateral Reservoirs	25 hp	Up to 69	If necessary, running approximately 30% of the time
Seepage Interceptors	25-50 hp	69-72	Continuous

* Pump size is an estimate. Actual size of pump would depend on exact system built for the different conservation measures.

Source: IID and USBR 2002.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to noise from construction or operation of this component of the Proposed Project.

The Proposed Project includes potential construction of facilities such as pipelines, pumping stations, and recharge basins. Construction would create short-term, noise impacts from the use of equipment such as backhoes, trenchers, compactors, concrete mix trucks, dozers, end loaders, excavators, loaders, scrapers, slipform pavers, and trucks. The estimated noise from typical construction activities is shown in Table 3.9-2 where the noise identified for "Public Works Roads & Highways, Sewers, and Trenches" would be most comparable to that generated by the Project. These types of equipment typically generate noise in excess of 80 dBA at 50 feet from the source (EPA 1971). Two sites that are currently under preliminary consideration for the recharge basins, near Dike 4 and Martinez Canyon, are located in remote areas, well removed from noise sensitive receptors, and other facilities are expected to be similarly located in rural, sparsely populated areas. Should they be constructed in proximity to noise sensitive receptors, however, impacts could be significant but mitigable.

Operations-related noise would be generated by pumping stations and routine maintenance activities. Although pumps likely would be located in rural, sparsely populated areas and generally would be equipped with electric motors, if they were located in proximity to noise sensitive receptors, impacts could be significant but mitigable. Routine maintenance activities would not cause significant noise impacts.

The types of construction/operation activities that would occur are fairly commonplace and would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. The Proposed Project would not generate noise impacts affecting people working or living near airports or private airstrips.

The Metropolitan Water District of Southern California

The Proposed Project would not generate noise in the MWD service area since no construction or operational changes would occur. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

San Diego County Water Authority

The Proposed Project would not generate noise in the SDCWA service area since no construction or operational changes would occur. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

Other Areas

COLORADO RIVER

The only changes to the Colorado River area would be associated with different water levels, flow rates, etc. No noise would be generated from Proposed Project components in this area either in California or Arizona. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

SALTON SEA

The only changes to the Salton Sea area would be associated with reduced inflow. No activities that generate noise would occur as a result of implementing the Proposed Project. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would generate excessive noise or vibrations or substantially increase ambient noise levels. A reduction in the amount of conserved water dedicated to MWD would not result in an activity that would generate noise or vibrations or expose persons to excessive noise levels. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate noise or vibrations or substantially increase ambient noise levels.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts from generation of noise and vibrations or exposure of persons to excessive noise levels would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would generate noise or vibrations or substantially increase ambient noise levels.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather that CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate noise or vibrations or substantially increase ambient noise levels. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of noise and vibrations or that would result in an activity that would expose persons to excessive noise levels.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to acoustic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical

environment that would cause the generation of noise and vibrations or that would result in an activity that would expose persons to excessive noise levels.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels. No impacts to ambient noise levels or sensitive noise receptors would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and thus would not result in physical changes to environmental conditions that would generate noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to ambient noise levels since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to ambient noise levels. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to noise, such as increased pumping and increased operation of tailwater return systems, related to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.9.3 Mitigation Measures

When construction in the IID and CVWD service areas occurs sufficiently close to noise-sensitive receptors so that noise from construction activities exceeds local regulatory standards or causes a substantial increase in ambient noise levels, one or more of the following measures could be implemented. This list does not preclude the use of additional mitigation measures if appropriate.

- Use hydraulically or electrically powered impact tools when possible. If the use of pneumatically powered tools is unavoidable, use an exhaust muffler on the compressed air exhaust.
- Install manufacturer's standard noise control devices, such as mufflers, on construction equipment.
- Locate stationary equipment as far as possible from noise-sensitive receptors.
- Notify nearby property users whenever extremely noise work might occur.

- Use stockpiles as noise barriers when feasible.
- Keep idling of construction equipment to a minimum (no more than 30 minutes) when not in use.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- As appropriate, modify noise enclosures with acoustical louvers, baffle walls, and/or acoustical panels.
- Limit construction activities to non-mating, non-nesting seasons of noise-sensitive species.

The following measures could be implemented to mitigate operational noise impacts from pumps in the IID and CVWD service areas:

- Pumps would be located at sufficient distances from sensitive receptors to ensure that noise levels at the receptor do not exceed local noise standards. If there is no flexibility in their placement, the pumps would not be located at sufficient distances from sensitive receptors, and barriers or enclosures would be constructed to ensure adherence to local standards.

3.9.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts associated with noise would occur.

3.9.5 Significant Irreversible Environmental Changes

No significant irreversible changes to the noise environment would occur.

3.10 AESTHETICS

Visual resources consist of the natural and manmade features that give a particular environment its aesthetic qualities. These features may be natural appearing or modified by human activities. Together, they form the overall impression of an area, referred to as its *landscape character*. Landforms, water surfaces, vegetation, and manmade features are treated as characteristic of an area if they are inherent to the formation, structure, and function of the landscape. Landscape character is evaluated to assess whether a Proposed Project would appear compatible with the existing setting or would contrast noticeably with the setting and appear out of place.

Visual resources also have a social setting, which includes public values, goals, awareness, and concern regarding visual quality. Social setting is addressed as *visual sensitivity*, or the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource. Visual sensitivity is key in assessing how important an effect on the visual resource would be and whether it represents a significant impact. Recreational uses are generally considered to have high visual sensitivity, as are views from scenic routes or corridors.

3.10.1 Environmental Setting

The region of influence of the Proposed Project includes much of Southern California, an area that has a diverse array of visual environments, ranging in character from urban centers to agricultural lands to natural woodlands to desert areas. The variety of features within the Southern California region is a result of the mixture of climates, topography, and flora and fauna found in the natural environment. Natural features include parks and open space, mountain and desert wilderness areas, beaches, and natural and artificial water bodies.

3.10.1.1 Regulatory Framework

Adopted plans and policies of local jurisdictions provide the primary regulatory guidance regarding the maintenance of aesthetic resources in the Project area, although federal and state agencies also adopt plans that determine allowable changes to visual resources within their jurisdictions. The areas considered to have the greatest visual sensitivity are typically along scenic highways and wilderness or other natural areas. The primary areas of concern generally are associated with changes to prominent topographic features, changes in the character of an area with high visual sensitivity, removal of vegetation, or blockage of public views of a visually sensitive landscape.

3.10.1.2 Regional Issues

The visual resources of the area vary according to the type of land use, the amount of open space, and the existence of prominent topographic features such as mountains and ridgelines or other unique features. Visual resources within the seven-county area as a whole include intensively urbanized areas within metropolitan Los Angeles, Orange, and San Diego counties, along with major agricultural areas within the Coachella Valley of Riverside County and the Imperial Valley of Imperial County. Less developed and open-space areas occur on the

hillsides and in the mountains of all counties and in the deserts of Riverside, San Bernardino, San Diego, and Imperial counties.

The designated state scenic highways in the area are a portion of SR-2 in Los Angeles County; a portion of SR-38 in San Bernardino County; a portion of SR-91 in Orange County; portions of SR-76, SR-78, SR-125, and SR-163 in San Diego County; portions of SR-62 in Riverside and San Bernardino counties, SR-243 in Riverside County; and SR-74 in Riverside and Orange counties. In addition to state designations, counties have their own scenic highway designations, which are intended to preserve and enhance existing scenic resources.

The region of influence includes a large number of state parks and national forests. These include, but are not limited to, the Cleveland National Forest in San Diego and Riverside counties; the San Bernardino National Forest in San Bernardino County; the Angeles National Forest and Santa Monica Mountains National Recreation Area in Los Angeles County; and the Salton Sea State Recreation Area in Imperial and Riverside counties, Imperial Sand Dunes Recreation Area in Imperial County, and Anza-Borrego Desert State Park in San Diego and Imperial counties.

3.10.1.3 Imperial Irrigation District

The IID service area is located in Imperial County. Visual resources of the IID service area include large agricultural areas in the Imperial Valley, a portion of the Salton Sea, mountains, deserts, and some urban areas. The area along the All American Canal is generally undeveloped.

3.10.1.4 Coachella Valley Water District

CVWD is located primarily in Riverside County, but also includes portions of Imperial and San Diego counties. Visual resources of the CVWD service area include agricultural areas in the Coachella Valley, sparsely developed desert areas, portions of the Salton Sea, mountains, and some urban areas. The area along the section of the Coachella Canal that would be lined is generally undeveloped.

3.10.1.5 The Metropolitan Water District of Southern California

MWD serves portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. This large region has diverse visual resources, including heavily urbanized areas, mountains, agricultural areas, deserts, and the Pacific Ocean.

3.10.1.6 San Diego County Water Authority

SDCWA's service area is located entirely in San Diego County. The SDCWA service area is characterized by a variety of visual resources, including intensively urbanized areas, mountains, agricultural areas, deserts, and the Pacific Ocean.

3.10.1.7 Other Areas

Colorado River

The Colorado River borders the eastern portion of Riverside, San Bernardino, and Imperial counties and the state of Arizona. Visual features of this area include the River itself, which is a visually sensitive resource, along with Lake Havasu, Parker Dam, and Imperial Dam. Other features adjacent to the River that contribute to the overall landscape character include large agricultural areas, deserts, mountains, and some urban development.

Salton Sea

The Salton Sea is located in the lowest portion of the desert valley in Imperial and Riverside counties. The Salton Sea is 35 miles long and 15 miles wide and is considered a visually sensitive resource. The surrounding area has a mixed visual character. The elements that define the visual environment include a largely undeveloped wildlife refuge and marshlands, a State Recreation Area developed with campgrounds and boating facilities, agricultural operations, and geothermal hydroelectric facilities. Other dominant natural features include the mountains, sand dunes, and desert.

3.10.2 Impacts

3.10.2.1 Significance Criteria

The criteria used to determine the significance of impacts to visual resources are based on the model initial study checklist contained in Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant environmental impact if it would do any of the following:

- have a substantial adverse effect on a scenic vista; or
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.10.2.2 Methodology

Each Project component was evaluated with regard to its potential to create visual impacts resulting from changes in scenic vistas, changes or damage to scenic resources, or degrading the visual character of a site. Potential impacts to aesthetic resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water elevation and are based on the hydrologic

modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Impacts from potential light sources were also considered, but it was determined that no project components would require substantial lighting. Odors are addressed in section 3.7, Air Quality. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.10.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project.

Other water conservation measures would be located in irrigated parts of the service area and would be visually compatible with the surrounding agricultural uses. If conservation for transfer were to be achieved through fallowing, up to about 50,000 acres of farmland could be affected either temporarily or permanently. Currently, many farms are fallowed for at least part of the year, so this would not represent a notable visual change.

The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of any sites and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project.

Implementation of the Proposed Project would involve the construction of recharge basins, pumping stations, and some pipelines in the CVWD service area. The pipelines likely would be buried along existing roadways or would be located on the edges of agricultural fields, and thus would not change the area's visual qualities. Pumping stations also would likely be located in agricultural areas, where they are a common use. Should these facilities be located in a visually sensitive area, however, impacts could be significant but mitigable.

The recharge basins, which typically have low earthen berms, would be located in undeveloped areas, such as the vicinity of Martinez Canyon and Dike 4. The Lower Coachella Valley already has numerous storage basins for agricultural irrigation. The new facilities would be visually compatible with existing uses of the area and would not be highly visible to the public. These components of the Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts would not be significant.

The Metropolitan Water District of Southern California

Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur. The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

San Diego County Water Authority

Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur. The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not result in significant visual changes to the Colorado River and adjacent areas in California and Arizona. No construction activities associated with the Proposed Project would occur in the area. Although the Proposed Project would result in a slight decrease in the median water surface elevation, the decrease would be within the River's normal range of fluctuation and would not produce a perceptible change to its visual qualities.

SALTON SEA

Implementation of the Proposed Project would result in a gradual decline in the water level of the Salton Sea, as described in Chapter 3.0. The decline would occur more rapidly and to a greater extent than would occur under Future Baseline conditions. This drop in the water surface elevation would expose more land area around the Sea. Currently submerged lands in the southern part of the Salton Sea would be particularly affected. In particular, views from public areas at Salton Sea Beach, Red Hill, Marina County Park, Bombay Beach, and Sneaker Beach would include increased dry land and decreased open water. The exposed area would look like the existing beach; however, views of the water, considered a scenic vista, would be possible only from a much greater distance from the developed public viewing facilities at these locations. The change would be very gradual and the visual impact would not be perceptible except over a long period, but ultimately, the impact would be significant.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require

such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would substantially damage scenic resources or the visual character along the Colorado River or create new sources of light and glare. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the degradation of aesthetic resources or result in an activity that would substantially damage scenic resources. Diversion and conveyance of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would substantially damage scenic resources or create new sources of light and glare.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to aesthetic resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would substantially damage scenic resources or create new sources of light and glare.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would substantially damage scenic resources or create new sources of light . The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause any significant impact to aesthetic resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to aesthetic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase

the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would substantially damage scenic resources or the existing visual character or create new sources of light and glare.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause damage to scenic resources or the existing visual character or create new sources of light and glare. No impacts to aesthetic resources would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would impact aesthetic resources by damaging scenic resources or creating new sources of light or glare.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to aesthetic resources since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause damage to scenic resources or the existing visual character or create new sources of light and glare.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to aesthetic resources. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause damage to scenic resources or the existing visual character or create new sources of light and glare.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause damage to scenic resources or the existing visual character or create new sources of light or glare or that would result in an activity that would result in significant impacts to aesthetic resources.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term and is not anticipated to involve activities that could have aesthetic impacts such as ground disturbance or construction activities. No additional impacts to aesthetics, beyond those of the Proposed Project, are anticipated.

3.10.3 Mitigation Measures

The following measure would reduce the potential impacts from the construction of pipelines and pump stations in the CVWD service area to a less than significant level:

- To the extent feasible, pipelines and pump stations would be located in agricultural areas. As appropriate, pipelines would be buried along existing roadways or located on the edges of agricultural fields. To the extent feasible, pumping stations would be small, low structures painted in pale earth tones to blend with the native soils.

The following measures could be implemented to mitigate the impact to visual resources of the Salton Sea to a less than significant level. If so, they would be implemented on an on-going basis as the Sea recedes until the full extent of the Project impact has been reached.

- Recreational facilities that would become further removed from the waters of the Salton Sea would be relocated to an appropriate site adjacent to the Salton Sea and access will be extended to the new shoreline so as to provide quality public viewing opportunities of the Salton Sea and its shoreline.

- Interpretive facilities and materials would be developed and made available to the public at recreation areas and along public roadways. Interpretive displays may include historic photographs of the Salton Sea landscape and information about water conservation measures, including their effects on Salton Sea water levels.

Implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea elevation. This potentially feasible measure also would reduce aesthetic impacts to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.10.4 Significant Unavoidable Environmental Changes

No unavoidable long-term changes to aesthetic resources would result from implementation of the Proposed Project.

3.10.5 Significant Irreversible Environmental Changes

No significant irreversible changes to aesthetic resources would result from implementation of the Proposed Project.

3.11 HAZARDS AND HAZARDOUS MATERIALS

3.11.1 Environmental Setting

3.11.1.1 Regulatory Framework

Types of Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Chemical and physical properties cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity. These properties are defined in CCR, Title 22, §§66261.20-66261.24. Within typical construction sites, materials that could be considered hazardous include fuels, motor oil, grease, various lubricants, solvents, soldering equipment, and glues. Also, excavation may expose buried hazardous materials resulting from prior use of the proposed site or adjacent property.

A "hazardous waste" is any hazardous material that is discarded, abandoned, or recycled. The criteria that render a material hazardous also make a waste hazardous (California Health and Safety Code, §25117).

Hazardous Materials Management

Federal and state laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. The Federal Emergency Planning and Community Right-to-Know Act of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.

Storage of hazardous materials in underground tanks is regulated by the SWRCB, which has overall responsibility for implementing all regulations set forth in Title 23 of the CCR. State standards cover installation and monitoring of new tanks, monitoring of existing tanks, and corrective actions for removed tanks. State underground storage tank regulations, including permitting for all hazardous materials storage, are enforced by local fire departments.

Hazardous Materials Transport

The U.S. Department of Transportation (DOT) regulates hazardous materials transportation between states. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads.

Hazardous Waste Management

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the federal Resource

Conservation and Recovery Act (RCRA) and the state Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

Laws Regulating Hazardous Materials and Wastes

The EPA regulates the management of hazardous materials and wastes. The primary federal hazardous materials and waste laws are contained in RCRA; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Toxic Substances Control Act (TSCA). These laws apply to hazardous waste management, soil and groundwater contamination, and the controlled use of particular chemicals. In California, EPA has delegated most of its regulatory responsibilities to the state. TSCA allows EPA to ban (or phase out) the use of chemicals that may present unreasonable risks to public health or the environment.

The state agencies most involved in enforcing public health and safety laws and regulations include the Cal-EPA DTSC, the California Occupational Safety and Health Administration (Cal-OSHA), SWRCB, the local RWQCBs, the local air quality management districts, and the California Integrated Waste Management Board.

In California, Cal-OSHA assumes primary responsibility for enforcing worker safety regulations such as the federal Hazard Communication Program regulations. Cal-OSHA regulations are found in CCR Title 8. Although Cal-OSHA regulations have incorporated federal OSHA standards, Cal-OSHA regulations are generally more stringent than those of the federal government.

3.11.1.2 Regional Issues

A wide variety of potential safety hazards are present throughout the region affected by implementation of the Proposed Project. Industries, military installations, and other entities, use many types of hazardous materials ranging from fuels and solvents to radioactive materials. Numerous fuels, chemicals, and other hazardous materials are also transported via roadways and railways.

A substantial portion of the area affected by the Proposed Project is used for agricultural purposes (refer to section 3.5, Agricultural Resources, for additional detail). Above-ground petroleum storage tanks and pesticide storage facilities are present in many locations and increase the risk of human exposure to potentially hazardous substances. Additionally, storage tanks may leak petroleum products into the soil, where they could migrate to water supplies. Pesticides and fertilizers used for agricultural operations may accumulate in the soil and may over time contaminate surface water and groundwater supplies.

Another potential hazard is the risk of disease transmitted by vectors. Mosquitoes are the primary insect disease vector of concern in the Project area. They are not only annoying pests, but some are known carriers of human and animal diseases. In the Project area, the only significant diseases associated with mosquitoes are western equine encephalomyelitis and Saint Louis encephalitis. These are not common diseases, however. For example, no cases of mosquito-borne diseases in the human population have been reported in Imperial and Riverside counties (USBR and SSA 2000) and very few encephalitis cases of mosquito origin

have occurred in San Diego County (USFWS and San Dieguito River Park Joint Powers Authority 2000). Many local jurisdictions implement mosquito abatement programs to reduce their populations.

Certain risks are associated with the use of rivers and lakes in general, such as boating accidents and drowning. Other risks include exposure to contaminants present in some water bodies. For example, the New River, which leads into the Salton Sea, is known to be highly polluted due to runoff from agricultural operations and the influx of untreated wastes from Mexico. Warning signs along the New River have been posted by Imperial County advising people to avoid contact with the river, primarily due to the high fecal coliform concentrations found in the water. The Regional Water Quality Control Board, Colorado River Basin Region, plans to develop a TMDL for the New River by 2005. Municipal wastewater discharged into the Alamo River, which flows into the Salton Sea, has contributed to high fecal coliform concentrations in this water, although background levels are substantially higher than the concentrations in the treatment plant effluent. Water containing fecal coliform bacteria also may contain other bacteria and viruses, some of which may be human pathogens. Tuberculosis bacteria, for example, have been found in the New River, which is a health risk to persons exposed to its waters.

3.11.2 Impacts

3.11.2.1 Significance Criteria

The criteria used to determine the significance of an impact are based on the model initial study checklist in Appendix G of the State CEQA Guidelines, modified as appropriate to address impacts specific to the implementation of the proposed action, such as drowning and vehicular accidents. The Proposed Project would result in significant impacts if it would do any of the following:

- create a significant hazard to the public or the environment through the routine transport, storage, use, or disposal of hazardous materials; or

- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or

- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school; or

- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5, and as a result could create a significant hazard to the public or the environment; or

- be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area; or

- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- result in exposure of the public to significant new hazardous situations; or
- create sufficient mosquito habitat to pose a threat to public health.

3.11.2.2 Methodology

Impacts were evaluated by identifying the change in the potential for hazards that would result from each Project component and comparing this change to the above significance criteria. Potential impacts associated with hazards and hazardous material in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.11.2.3 Summary of Impacts

Imperial Irrigation District

The EIS/EIR for the All American Canal Lining Project determined that the flow velocity would be increased as a result of the lining due to the reduction in canal cross section. This increase in velocity would vary according to the season, the canal flow rates, and the extent to which water is ponded behind the existing check gates. Under typical conditions, the maximum velocity would increase from 3.5 ft/sec to 6.5 ft/sec, which could tend to increase the difficulty of human escape from the canal. Public safety impacts would be avoided by constructing slipform ridges on the sideslopes of the canal while the concrete is being installed in order to provide reliable handholds and footholds. Field testing would be conducted to confirm the effectiveness of the ridges. If field testing indicates that the ridges are not completely effective, safety ladders would be added to the canal design in addition to the ridges. Using this method of lining the canal would benefit public safety, for it would greatly improve the potential for escaping from the canal. The improvement of the maintenance roads along the canals would tend to promote higher-speed travel by off-road vehicles, which could increase the accident rate. This in itself is not considered a significant impact because the design features of the roads would not be unsafe. No other impacts associated with hazards or hazardous materials were identified.

During construction of other conservation measures, heavy equipment and vehicles would be present in the Project area. All contractors would be required to adhere to mandatory federal Occupational Safety and Health Administration regulations. Most of this equipment requires a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Lubricant and hydraulic fluid changes and replenishment would be required less frequently. Typically, service trucks would deliver these types of fluids onsite and perform the necessary fuel and oil transfers. The risk of small fuel or oil spills is considered likely but would have a negligible impact on public health. Any spills would be cleaned up in accordance with permit conditions.

The fuel tanks on board some of this equipment can contain fuel volumes ranging from 100 to 500 gallons. Accidental ignition could result in a fire, which, depending on the location, could spread. All such equipment is required to have fire suppression equipment on board or at the work site. Emergency fire services are located nearby. The associated risk of a vehicle fire is considered unlikely with a negligible to minor potential impact on public health.

During off working hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area that would not pose a safety hazard. Impacts to public health and safety resulting from heavy equipment operations and fueling would be less than significant.

The project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if such activities coincide with construction in evacuation or other emergency routes. This would be a potentially significant but mitigable impact.

The amount of land in agricultural production would not increase as a result of implementing the Proposed Project, and may decrease if fallowing is implemented; therefore, the use of pesticides or other hazardous materials would not increase.

As noted in section 3.1, the reduction in drainage water from IID's service area resulting from conservation measures implemented under the Proposed Project would cause an increase in concentration, although not total load, of various soluble constituents in the New and Alamo rivers. As noted above, these rivers are already polluted, and this would not constitute a significant new hazardous situation.

No tall or inhabited structures would be constructed as part of the Proposed Project. Therefore, Project components would not affect or be affected by proximity to an airport. The Proposed Project would be subject to existing codes and regulations regarding the routine transport, storage, use, or disposal of hazardous materials and would not create a significant hazard to the public or environment. The proposed improvements would be located in agricultural areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant but mitigable. No pools of standing water or other forms of mosquito habitat would be created.

Coachella Valley Water District

The EIS/EIR for the Coachella Canal Lining Project determined that the flow velocity would be increased as a result of the lining due to the reduction in canal cross section. Impacts of canal lining would be as described above for the All American Canal, although the water velocity would be somewhat different. Under typical conditions, the maximum velocity would increase from 2.0 ft/sec to 2.9 ft/sec, which, as described for the All American Canal, could tend to increase the difficulty of human escape from the canal. The same construction methods to avoid safety impacts would be used as described for the All American Canal lining project.

The construction and operation of other Project-related facilities such as water pipelines, pumping stations, and recharge basins would not have significant safety impacts. Standard safety precautions would be taken during construction. The pumping stations would be totally enclosed and would have electric motors; therefore, they would not require the use of flammable fuels. The recharge basins would be located in remote areas, such as the vicinity of Dike 4 or Martinez Canyon, and would not affect public safety. The Project could cause an increase in water levels and flows in agricultural drains and the Coachella Valley Storm Channel. This would not result in an increase in mosquitoes, however, since they breed in standing water. However, mosquito habitat could be created in the new recharge basins, which would be a potentially significant impact. No public health impacts from increased use of Colorado River water would occur since the water that would be used for domestic (potable) uses would be treated at water treatment plants in accordance with state and federal requirements.

During construction, heavy equipment and vehicles would be present in the Project area. All contractors would be required to adhere to mandatory federal Occupational Safety and Health Administration regulations. Most of this equipment requires a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Lubricant and hydraulic fluid changes and replenishment would be required less frequently. Typically, service trucks would deliver these types of fluids onsite and perform the necessary fuel and oil transfers. The risk of small fuel or oil spills is considered likely but would have a negligible impact on public health. Any spills would be cleaned up in accordance with permit conditions.

The fuel tanks on board some of this equipment can contain fuel volumes ranging from 100 to 500 gallons. Accidental ignition could result in a fire, which, depending on the location, could spread. All such equipment is required to have fire suppression equipment on board or at the work site. Emergency fire services are located nearby. The associated risk of a vehicle fire is considered unlikely with a negligible to minor potential impact on public health.

During off work hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area that would not pose a safety hazard. Impacts to public health and safety resulting from heavy equipment operations and fueling would be less than significant.

The project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if such activities coincide with construction in evacuation or other emergency routes. This would be a potentially significant but mitigable impact.

No tall or inhabited structures would be constructed as part of the Proposed Project. Therefore, Project components would not affect or be affected by proximity to an airport. The Proposed Project would be subject to existing codes and regulations regarding the routine transport, storage, use, or disposal of hazardous materials and would therefore not create a significant hazard to the public or environment. The proposed facilities would likely be located in agricultural or remote areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant but mitigable.

The Metropolitan Water District of Southern California

No aspects of the Proposed Project would cause safety impacts in the MWD service area since no construction or operational changes would occur. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health. No impacts associated with airports would occur.

San Diego County Water Authority

No aspects of the Proposed Project would cause safety impacts in the SDCWA service area since no construction or operational changes would occur. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health. No impacts associated with airports would occur.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not affect public safety or result in significant impacts associated with hazards and hazardous materials along the river either in California or Arizona. The median water surface elevation would decrease only minimally (a matter of several inches, which is within the normal range of variability), and water flow, river surface area, and water quality would be virtually the same as under current conditions. No additional sandbars would be exposed. No construction or other changes would occur that would in any way affect public safety. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The public would not be exposed to new hazardous situations, and mosquito habitat would not be created. No impacts associated with airports would occur.

SALTON SEA

The Proposed Project would accelerate the decline in the Sea's water surface elevation, which would expose additional shoreline (refer to section 3.0 for additional detail). The amount of bottom sediment that would be exposed would be relatively small, however, which would limit the potential for public exposure to significant new hazardous conditions. The impact would be less than significant. The receding shoreline would likely reduce the amount of brackish marsh, which would reduce the area's mosquito population.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant hazard to the public from hazardous. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the generation of or of hazardous materials or that would result in an activity that would create a significant hazard to the public. Diversion and of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate or use hazardous materials or create a significant hazard to the public.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts related to hazardous materials would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would generate or use hazardous materials or create a significant hazard to the public.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate hazardous materials or create a significant hazard to the public. The

use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation hazardous materials or odors or that would result in an activity that would create a significant hazard to the public.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to from increase public hazards or hazardous materials along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public. No impacts from increased public hazards or hazardous materials would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts due to increase public hazards since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact from hazards. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term and is not anticipated to involve activities that present hazards or hazardous materials, such as additional ground disturbance or

construction activity. No additional impacts related to hazards and hazardous materials, beyond those of the Proposed Project, are anticipated.

3.11.3 Mitigation Measures

The following measure could be implemented to reduce potential temporary impacts to the implementation of an adopted emergency response plan or emergency evacuation plan to a less than significant level.

- Once specific sites are selected, it would be determined whether construction would occur in a location that could interfere with the implementation of an emergency response plan or emergency evacuation plan. If so, the duration and location of construction and contacts for responsible parties would be given to providers of emergency services well before construction.

The following measures would be implemented to mitigate potential impacts from locating facilities on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites to a less than significant level.

- If warranted, records searches will be conducted through California Environmental Protection Agency (Cal EPA), Long Beach Office and through a database search firm such as VISTA Info.

- The results of the search and any mitigation required if proposed construction encounters contaminated soils will be considered in the subsequent environmental documents prepared for the facilities. If required, mitigation measures may include but are not limited to relocating the facility to avoid the contamination or removal of contaminated soils.

The following measure could be implemented to reduce the potential for mosquitoes to breed in any CVWD recharge basins to a less than significant level, if the basins are constructed as part of the Proposed Project.

- The design of the recharge basins would incorporate design and operation parameters that discourage mosquitoes and the establishment of their habitat. Measures may include the following:
  - creating basins that are larger than 1 acre to allow wind action on the water surface, which disrupts egg-laying;
  - designing bank slopes as steep as allowable given local soil stability conditions;
  - keeping the bank slopes free of vegetation that creates habitat and reduces wave action; and
  - allowing recharge basins to dry out during the year, if operationally feasible, which would eliminate mosquito and other insect larvae.

3.11.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse hazards and hazardous materials impacts would result from implementation of the Proposed Project.

3.11.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes would occur.

3.12 PUBLIC SERVICES, UTILITIES, AND TRANSPORTATION

3.12.1 Environmental Setting

Public services and utilities addressed in this PEIR include the systems, facilities, and services that are provided by cities, counties, and public and private agencies to maintain the public health and general welfare. These systems, facilities, and services include the following:

- Fire and police protection.
- Public education services and facilities.
- Potable water supply, treatment and distribution.
- Wastewater collection, treatment and disposal.
- Power generation and distribution.
- Transportation facilities including highways, public transportation and airports.

3.12.1.1 Regulatory Framework

The areas affected by the Proposed Project are part of SCAG and SANDAG. Public services and utilities within the seven-county area are provided by counties and cities special agencies, and large private utilities such as the Southern California Edison Company, The Gas Company, and San Diego Gas and Electric Company. The public agencies are controlled by local governing bodies, and the private utilities are under the regulation of the California Public Utilities Commission. SCAG and SANDAG have each prepared a regional transportation plan to address transportation problems in Southern California.

Utilities and public services are regulated primarily by public agencies or utility companies. These regulations are generally based on local policies included in general plans or building codes or ordinances or resolutions that establish growth-managing or growth-control standards. Traffic thresholds and roadway design standards are established by the agency with jurisdiction over a particular roadway. Reclamation is the federal agency authorized to generate electric power at the federally owned facilities on the lower Colorado River. The Western Area Power Administration is the federal agency authorized to market this power to contractors. Specific agencies with jurisdiction over public services, utilities, and transportation in the area affected by the Proposed Project are discussed below.

The Federal Energy Regulatory Commission is an independent regulatory agency within the Department of Energy that performs a variety of functions, including regulating the transmission and wholesale sales of electricity in interstate commerce; licensing and inspecting private, municipal and state hydroelectric projects; and overseeing environmental matters related to natural gas, oil, electricity and hydroelectric projects.

3.12.1.2 Imperial Irrigation District

Public Services

Police services within the IID service area are provided by the Imperial County Sheriff's Department and by local municipalities, including the cities of Brawley, El Centro, and Calexico. The California Highway Patrol (CHP) also provides law enforcement support on major roadways. Fire protection is provided by the County of Imperial, California Department of Forestry, and by local municipalities. Several local school districts serve the communities of Niland, Calipatra, Westmorland, Brawley, Imperial, Holtville, El Centro, Heber, and Calexico.

Public Utilities

Irrigation water is provided by IID. Domestic water is provided by IID and local municipalities and water districts. Wastewater treatment is provided by municipal systems or via individual systems.

IID operates its own power generation and transmission facilities, providing power to more than 90,000 customers in Imperial County and parts of Riverside and San Diego counties. IID operates eight hydroelectric generation plants, one generating station, and eight gas turbines. There are five drop structures in the All American Canal, where the water "falls" through the structure to a lower level canal. These are ideal for capturing hydroelectric power, and IID has installed hydroelectric plants at four of these drop structures. Electrical power generated within the IID system is sold to district customers and to others via the regional power grid. Total generation within the IID system in 1998 was 1.026 million megawatt-hours (IID 1999). Currently, IID has 72.4 megawatts (MW) of installed hydropower plants within the canal (USBR undated, IID 1999). IID generates 352 MW of power; approximately 49 MW of which is hydroelectric (IID 1994). The average hydroelectric power generated by IID (1980 to 1999) was 226,592 kilowatt-hours (kWh) (approximately 227 MWh [megawatt-hours]) (IID 2000).

Transportation Infrastructure

The primary highways in the service area are Interstate 10 and Highways 78/111. The larger municipalities provide limited public transportation, and there is a regional airport in Imperial, California.

3.12.1.3 Coachella Valley Water District

Public Services

The County of Riverside and various municipalities provide police protection within the CVWD service area. The CHP also provides law enforcement support on major roadways. Fire protection within the CVWD service area is provided by the County of Riverside, California Department of Forestry, and the various municipalities in the area. Several local school districts serve the communities of Desert Hot Springs, Cathedral City, Rancho Mirage, Indian Wells, Bermuda Dunes, Palm Desert, Indio, La Quinta, Coachella, Thermal, Mecca, and Oasis.

Public Utilities

Irrigation water is provided by CVWD to portions of the district eligible to receive irrigation service. Within the CVWD service area, domestic water is provided by CVWD, the City of Indio, the City of Coachella, and Myoma Dunes Water Company. Wastewater treatment is provided by CVWD, the City of Coachella, and Valley Sanitary District. Electrical service is provided by IID and Southern California Edison.

Transportation Infrastructure

Major highways within CVWD boundaries are Interstate 10, State Highway 74, State Highway 111, Highway 86, and Highway 195. Local roadways outside the cities are typically 2-lane, paved, and located on section (1 square mile) or half-section lines. Some local municipalities provide public transportation, and a main line of the Southern Pacific Railroad is also within district boundaries. A regional airport is located in Palm Springs, which is just west of the service area, and the Thermal and Bermuda Dunes airports also are located in the Coachella Valley. The Coachella Valley Association of Governments (CVAG), a subregion of SCAG, and Riverside County Transportation Commission are currently planning improvements to the transportation network to accommodate future growth.

3.12.1.4 The Metropolitan Water District of Southern California

Public Services

Fire and police protection and public schools are provided by a wide range of city and county municipalities within the MWD service area. CHP also ensures safety and assists the public that utilizes the highway transportation system. It also aids local governments during emergencies when requested.

Public Utilities

Water service is provided by a wide variety of local agencies and municipalities, and MWD serves as the major water wholesaler for the area. Wastewater treatment is provided by a number of municipalities and agencies. Electricity is provided by Southern California Edison, the Los Angeles Department of Water and Power, and other municipalities and public utilities.

Transportation Infrastructure

The MWD service area has an extensive network of roadways, freeways, public transit, and air service provided by federal, state, county, and city agencies. Overall planning and coordination is conducted at several levels, including the California Department of Transportation, SCAG, and local transportation authorities. SCAG's Regional Transportation Plan guides the development of future transportation improvements.

3.12.1.5 San Diego County Water Authority

Public Services

Public services, including fire and police protection, are provided by the CHP, County of San Diego, municipalities, and a variety of local districts. A number of school districts also serve the area.

Public Utilities

SDCWA, a member agency of MWD, is the water wholesaler for the area. A number of municipalities and local districts provide wastewater treatment. Electricity is provided primarily by San Diego Gas and Electric.

Transportation Infrastructure

As described for the MWD service area, a substantial transportation infrastructure is provided by federal, state, county, and city agencies. Overall planning and coordination is conducted at several levels, including the California Department of Transportation, SANDAG, and local transportation authorities. SANDAG's 2020 Regional Transportation Plan guides the development of future transportation improvements.

3.12.1.6 Other Areas

Colorado River

PUBLIC SERVICES

Public services, including fire, police, schools, and similar services, are provided by a series of state and local agencies and districts. The CHP (in California) and the Department of Public Safety (in Arizona) have the primary authority for the major roadways in the area with support from the county sheriff departments and local police departments. Fire protection is provided by the California Department of Forestry as well as county and special district fire departments. Schools are provided by the local districts within the area.

PUBLIC UTILITIES

Domestic water service is provided by municipalities and special districts; most water is from groundwater, which is defined as Colorado River water. Wastewater service is provided by local municipalities as well as local treatment companies. Electricity is provided primarily by Southern California Edison in California and by Arizona Public Service in Arizona.

Releases from dams and flow through canals are used to generate hydroelectric power. Dams on the Colorado River are a few of many sources of power for the Western Area Power Administration grid. Power from this grid is delivered to nearby contractors and can be supplied to any of 15 western states. The rated capacity of Parker and Headgate Rock dams, which are the only two dams in California whose hydropower production could be affected by implementation of the Proposed Project, are 108 MW and 19.5 MW, respectively. (Power is also produced at Davis and Hoover dams, which are north of Parker Dam on the Arizona-Nevada

border.) Between Calendar Year (CY) 1987 and CY 2000, the average net energy generated annually at Parker Dam was 498,666 MWh. During CY 1996 and CY 1997, the average net energy generated annually for Headgate powerplant was 87,165 MWh. CY 1996 and CY 1997 were the only years available with complete data for Headgate (USBR 2002). In comparison, the total rated capacity of all hydroelectric facilities in the 17 western states that are operated by Reclamation is 14,693 MW (USBR and CVWD 2000). (This total does not include Headgate Rock Dam, which is operated by the Bureau of Indian Affairs on behalf of the Colorado River Indian Tribes.)

TRANSPORTATION INFRASTRUCTURE

Major highways on the California side of the River include Interstate 10 and Interstate 8, which are the major east-west routes, and United States Highway (U.S.) 95 and U.S. 78, which are the primary north-south routes. On the Arizona side of the River, major roads include U.S. 95, Interstate 10, and Interstate 8. A substantial network of local roads serves the agricultural areas.

Salton Sea

PUBLIC SERVICES

Public services in the vicinity of the Salton Sea are provided by state and local agencies in addition to local communities. Fire service is provided by the California Department of Forestry, Riverside and Imperial counties, and by local volunteer departments. Police services are provided by the CHP, local county sheriff's departments, and the California Department of Parks and Recreation. Schools are provided by the local districts.

PUBLIC UTILITIES

Water service within CVWD boundaries is provided by CVWD. Water service outside of CVWD boundaries is provided by local water service districts or by individual landowners. Wastewater treatment and disposal is generally provided by local treatment firms. Electricity is primarily provided by IID.

TRANSPORTATION INFRASTRUCTURE

Access to the area is provided by State Routes (SRs) 78 and SR-86, and SR-111, which are located on the western and eastern shores of the Salton Sea, respectively.

3.12.2 Impacts

3.12.2.1 Significance Criteria

The criteria used to determine the significance of an impact related to public services, utilities, and transportation are based on the initial study checklist in Appendix G of the State CEQA Guidelines.

Public Services

The Project would result in a significant impact to public services if it would do the following:

- result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or

- result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services including but not limited to, fire protection, police protection, schools, and parks.

Utilities

The Project would result in a significant impact to utilities if it would do the following:

- exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; or

- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

- have insufficient water supplies available to serve the project from existing entitlements and resources or require new or expanded entitlements; or

- result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or

- be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or

- not comply with federal, state, and local statutes and regulations related to solid waste; or

- substantially reduce a hydroelectric facility's contractual ability to produce power (by reducing the amount of flow through the respective dam's powerplant).

Transportation

The Project would result in a significant impact to transportation if it would do the following:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections); or
- exceed either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; or
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- result in inadequate emergency access; or
- result in inadequate parking capacity; or
- conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks).

3.12.2.2 Methodology

The Proposed Project components were analyzed to determine whether they could impact the facilities described in section 3.12.2.1 (e.g., would they produce wastewater or affect stormwater drainage facilities). The potential for population increases or construction or operational changes to affect the demand for utilities or public services also was considered. Potential impacts to hydropower would result from decreased flow in the lower Colorado River and All American Canal, and the analysis is based on that performed by Reclamation for the Implementation Agreement EIS (USBR 2002). The impact analysis is consistent with the hydrology analysis in section 3.1, which relies on a Future Baseline. With the exception of hydropower impacts, impacts in the IID and CVWD service areas were assessed by comparing Project-induced changes to the Existing Baseline. No impacts to the MWD or SDCWA service areas or Salton Sea geographic area would occur since no construction or other physical or operational changes would take place, nor would the population increase. Impacts of the All American and Coachella Canal lining projects are based on the EIS/EIRs for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.12.2.3 Summary of Impacts

Imperial Irrigation District

PUBLIC SERVICES/UTILITIES

The All American Canal Lining Project EIS/EIR identified no significant impacts to public services or utilities from construction or operation of this component of the Proposed Project.

The other water conservation measures implemented in the IID service area would not cause a change in population or otherwise impact public services. The Proposed Project would result in

changes to the water delivery system to farms, but would not change the potable water supply or distribution system. On-farm irrigation management would not create a substantial demand for electricity. On-farm conservation measures and water delivery system-based conservation measures would require only small amounts of electricity (e.g., for operating sprinklers, pumps, and gates) and would not require the expansion of power systems. The Project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities.

The flow to the All American Canal would be decreased by up to 353 KAF, which would reduce the average annual amount of power generated at Drop Nos. 1, 2, 3, 4, 5, and East Highline by approximately 11 percent. Implementation of the Proposed Project would not cause average power production to be less than the minimum amount of power generation over the last 15 years. This is not considered a substantial reduction in the facility's ability to produce power; therefore, the impact would not be significant.

On-farm conservation, water delivery, and on-farm irrigation management measures would not increase solid waste production.

TRANSPORTATION

Traffic associated with the construction of water conservation measures, including the parallel canal adjacent to the All American Canal, would occur in rural, sparsely developed areas. Construction vehicles primarily would use county roads, farm access roads, and existing service roads. The minimal amount of short-term traffic that would be generated would not significantly impact traffic conditions. Construction would take place in rural, undeveloped areas away from schools or providers of emergency services and thus would not restrict emergency access to and from these facilities; nor would the limited amount of construction restrict emergency access to other areas.

Minimal maintenance of on-farm conservation measures and water delivery systems would be required and would be indistinguishable from routine farm activities. Maintenance would occur over short periods of time, using on-site equipment. The existing roadways are not heavily traveled since this area is not densely populated, and the number of trips that would be required (probably fewer than 15 per day) would not significantly impact the local transportation system.

Parking capacity would not be affected by either construction or operations of any Project-related facilities given the limited amount of vehicular traffic that would be required and the fact that most, if not all, activities would be in a sparsely populated area. Project implementation would have no conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Fallowing would not generate traffic or affect public services or utilities.

Coachella Valley Water District

PUBLIC SERVICES/UTILITIES

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to public services or utilities from construction or operation of this component of the Proposed Project.

The construction and operational changes that would be implemented in the CVWD service area as a result of other components of the Proposed Project would not cause a change in population. The Proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or result in the need for new or physically altered governmental facilities.

Construction and operation of Project elements would not require or result in the construction of new water or wastewater treatment facilities or expansion of those existing facilities since the Proposed Project components would be proposed for the purpose of water distribution and recharge. Regarding the adequacy of water supplies available to serve the Project from existing entitlements and resources, the aspects of the Project that would directly affect the CVWD are intended to alleviate an existing groundwater overdraft condition and thus benefit the water supply in this area. The Proposed Project itself would not create a demand for water.

Prior to pipeline installation, existing buried utilities in the area would be identified. As necessary, CVWD would coordinate with the agencies responsible for these utilities to avoid impacts during pipeline construction. The proposed pipelines and pumping stations would not affect existing drainage. Recharge basins may require storm flow management facilities; this determination will be made once specific sites are identified.

The demand for utility service within CVWD would not change substantially under Project implementation; however, higher groundwater levels would decrease the amount of electricity used for pumping, which would be a beneficial impact.

No significant impacts associated with solid waste disposal would occur. Soil excavated during recharge basin construction would be used onsite, and only incidental amounts of solid waste would result from the construction of pipelines and pumping stations. There is adequate landfill capacity for disposal of any materials generated from construction and operation.

TRANSPORTATION

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to transportation from construction or operation of this component of the Proposed Project.

The specific locations of facilities such as pipelines, pumping stations, and recharge basins are not known at this time, although sites near Dike 4 and Martinez Canyon are under preliminary consideration as locations for the recharge basins. Pipelines likely would be constructed in road shoulders; pumping stations likely would be in agricultural field corners or desert areas; and recharge basins likely would be constructed on undeveloped land. Temporary disruption of present traffic patterns and increases in traffic hazards, or availability of parking on local roadways could occur during construction of these facilities. Temporary (less than two weeks)

changes in level of service (LOS) may occur if heavily traveled intersections were adjacent to pipeline construction. However, the majority of roadways in the Valley, particularly in the Lower Valley, are classified as LOS "A" (free-flowing traffic), with very low average daily traffic. Given the existing favorable conditions and the short duration of construction, impacts would not be significant unless construction occurred in the immediate vicinity of heavily traveled roadways and intersections.

Pipeline construction could affect parking capacity near the construction sites for a few days in developed areas of the Lower Valley; this would not be a significant impact given the brief duration of the construction period. The construction and operation of the pipelines, pumping stations, and recharge basins would not conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Any pipelines, pumping stations, and recharge basins that may be constructed would likely be located in rural or undeveloped areas, such as the vicinity of Dike 4 and Martinez Canyon, away from schools or providers of emergency services. However, if construction occurred near such facilities, it could restrict emergency access, which would be a significant but mitigable impact.

Operation of the proposed facilities would result in minor increases in vehicle trips related to routine maintenance. No long-term effects of Project operations on patterns of circulation or waterborne or rail traffic would occur.

As noted in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2002), a traffic control plan is incorporated as a project feature, which would avoid significant transportation impacts from construction of this project. No significant long-term impacts would therefore occur.

The Metropolitan Water District of Southern California

No significant impacts associated with public services, utilities, or transportation would occur in the MWD service area. The proposed water transfers would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be needed. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water; rather, it would maintain the reliability of the service area's water supply. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Proposed Project. No impacts associated with hydropower would occur in this service area. No traffic-related impacts would result from implementation of the Proposed Project since no new facilities would be constructed, nor would population increase as a result of the Proposed Project.

San Diego County Water Authority

No significant impacts associated with public services, utilities, or transportation would occur in the SDCWA service area. The proposed water transfers would not require the provision of new or physically altered governmental facilities or result in the need for new or physically

altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water; rather, it would maintain the reliability of the service area's water supply. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No impacts associated with hydropower would occur in this service area. No traffic-related impacts would result from implementation of the Proposed Project since no new facilities would be constructed, nor would population increase as a result of the Project.

Other Areas

COLORADO RIVER

Over the life of the Proposed Project, the estimated reduction in average energy production at Parker Dam would be less than 5 percent as a result of the Proposed Project. The maximum reduction during this period is estimated to be less than 6 percent. The estimated reduction in average energy production at Headgate Dam would be slightly more than 5 percent. The maximum reduction during this period is estimated to be slightly over 6 percent (USBR 2002). This is not considered a substantial reduction in these facilities' ability to produce power, and the impact would not be significant.

The Project would not cause construction, population changes, or any other actions that would affect public services, utilities, or transportation systems near the Colorado River, either in California or Arizona. The Proposed Project would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No traffic-related impacts would result from implementation of the Proposed Project in this geographic area since no new facilities would be constructed, nor would population increase as a result of the Project.

SALTON SEA

Because impacts to this area would only involve change in water levels of the Salton Sea, impacts to public utilities, public services, and transportation systems would not occur. The Proposed Project would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No traffic-related impacts would result from implementation of the Proposed Project in this geographic area since no new facilities would be constructed, nor would population increase as a result of the Project.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would impact any existing public utility or create an need for new or increased utilities or public services. A reduction in the amount of conserved water dedicated to MWD would not result in insufficient water supplies to meet existing and projected demands or result in any physical change that would cause the need for new or expanded utilities or public services. Diversion and of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would significantly impact public services or utilities.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to public services or utilities would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would cause the need for new or expanded utilities or public services.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would cause the need for new or expanded utilities or public services. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the need for new or expanded public services or utilities or that would result in an activity that would create a need for significant public services or utilities.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to public services or utilities would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the need for expanded or new public facilities or utilities.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the need for new or expanded public services or utilities or that would result in an activity that would create a significant to public services and utilities. No impacts to public services or utilities would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the need for new or expanded public services and utilities.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts that would cause the need for increased public services or utilities.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would require new or expanded public utilities or alter existing governmental facilities or services. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this

component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would create the need for new or expanded utilities or impact current levels of public services.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would cause the need for new or expanded utilities or alter existing public service facilities or levels of service.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to public services, such as increased electrical use for pumping and increased operation of tailwater return systems, related to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.12.3 Mitigation Measures

The following mitigation measure could be implemented to reduce the potential impact from construction in the vicinity of schools or emergency services facilities in the CVWD service area:

- Nearby schools and emergency service providers would be notified of construction prior to its onset, and a traffic control plan would be developed to ensure that access and emergency response are possible at all times.

The potential for transportation impacts will be evaluated more specifically in project-level environmental documents once proposed sites have been identified. Although not expected, if a significant transportation impact is identified near high-volume roadways and intersections in

the CVWD service area, one or more of the following measures could be implemented to reduce impacts to a less-than-significant level (note that this list does not preclude the use of additional measures):

- To mitigate temporary traffic disruption and ensure public safety, traffic control plans would be prepared for construction sites in or near higher traffic volume roadways. The plans could be provided to and approved by, as applicable, Caltrans, the individual City departments, the County of Riverside, and local providers of emergency services.
- High-volume intersections would be avoided if possible.

3.12.4 Significant Unavoidable Environmental Changes

No significant unavoidable environmental changes to public services, utilities, or transportation would result from implementation of the Proposed Project.

3.12.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to public services, utilities, or transportation would result from implementation of the Proposed Project.

3.13 POPULATION, HOUSING, AND EMPLOYMENT

3.13.1 Environmental Setting

This section provides current and projected demographic data for the study area, which includes much of Southern California. The geographic areas served by IID, CVWD, MWD, and SDCWA include all or parts of the following counties: Imperial, Los Angeles, Orange, Riverside, San Diego, San Bernardino, and Ventura. These counties participate in regional planning under the auspices of either of two agencies with regional planning responsibilities: SCAG and SANDAG. A number of subregional agencies are members of SCAG, including the Coachella Valley Association of Governments, Imperial Valley Association of Governments, and the Western Riverside Council of Governments.

3.13.1.1 Regional Characteristics

Population

Southern California historically has been one of the fastest growing areas in the state. However, in the decade of the 1990s, the population of the seven-county region comprised of member counties of the SCAG and SANDAG grew at a slightly slower rate than the state as a whole. The population of the seven-county region grew at 1.21 percent annually compared with 1.3 percent for the state. The most rapid growth took place in Riverside County that experienced an average annual rate of 2.82 percent between 1990 and 2000 followed by Imperial County (2.68 percent). Los Angeles County experienced the slowest rate of growth (0.72 percent annually). The population of the region increased by over 2,190,000 persons over the ten-year period while its share of total state population remained almost constant at 57 percent. The Southern California region contributed 53 percent of the statewide population growth in the decade (see Table 3.13-1).

Population change is attributable to the combined effect of three components of change: natural increase (difference between births and deaths); migration to and from other states; and immigration from foreign countries. The contribution made by each component of change can vary significantly over time. For California over the period 1990 to 1999 it is estimated by the California Department of Finance that the population increased by 3.282 million persons. Of this total increase, 3.076 million (almost 94 percent) was attributable to natural increase. The remainder of the increase was the result of a net migration into the state of just over 206,000 persons. The figure of 206,000 persons, however, resulted from the arrival of 2.205 million immigrants from other countries and the departure of 1.999 million persons to other states in the nation. During the 1990s, only the period 1998 to 1999 showed net positive domestic migration, i.e., more people came to California from other states than left. In all other periods of the decade, California experienced net domestic out-migration that reached a peak in 1993 to 1994 with a net loss of over 485,000 persons. Immigration was positive in all years with an average of about 245,000 persons annually and variation between 201,000 and 288,000 persons.

Over the period 1990 through 1999 in the seven counties of Southern California, 1.508 million persons immigrated to the region, 1.832 million out-migrated to other states in the nation, and there were 2.025 million births that resulted in a population increase of 1.701 million persons.

Table 3.13-1. Population Projections by County

County	*1990*	*2000 (a)*	*Average annual % Change (1990-2000)*	*Numeric Change (1990-2000)*	*2010 (b)*	*2020 (b)*	*Average annual % Change (2000-2020)*	*Numeric Change (2000-2020)*
California	29,760,021	33,871,648	1.30%	4,111,627	40,262,400	45,821,900	1.52%	11,950,252
Imperial	109,303	142,361	2.68%	33,058	217,500	294,200	3.70%	151,839
Los Angeles	8,863,164	9,519,338	0.72%	656,174	10,605,200	11,584,800	0.99%	2,065,462
Orange	2,410,556	2,846,289	1.68%	435,733	3,266,700	3,541,700	1.10%	695,411
Riverside	1,170,413	1,545,387	2.82%	374,974	2,159,700	2,817,600	3.05%	1,272,213
San Bernardino	1,418,380	1,709,434	1.88%	291,054	2,231,600	2,800,900	2.50%	1,091,466
San Diego	2,498,016	2,813,833	1.20%	315,817	3,388,400	3,863,500	1.60%	1,049,667
Ventura	669,016	753,197	1.19%	84,181	877,400	1,007,200	1.46%	254,003
Seven-County Region	17,138,848	19,329,839	1.21%	2,190,991	22,746,500	25,909,900	1.48%	6,580,061
Percent of State	57.59%	57.07%		53.29%	56.50%	56.54%		55.06%

Source: (a) 2000 Census; (b) California DOF, June, 2001

Net domestic out-migration occurred in all years but was most pronounced in the years 1993 through 1995 when about 350,000 persons left the region annually for other states. Over the period 1990 through 1999 all counties, with the exception of Riverside County, experienced negative net domestic migration. Riverside County saw positive net domestic migration in each year. Immigration varied from a high of 203,000 persons in 1993 to a low of 130,000 persons in 1996 (see Table 3.13-2).

Table 3.13-2. Southern California Counties, Components of Population Change (1990-1999)

Year	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
1990					17,672,800
1991	261,696	-111,280	159,284	309,700	17,982,500
1992	262,390	-198,423	200,633	264,600	18,247,100
1993	245,130	-341,399	203,469	107,200	18,354,300
1994	235,647	-357,155	198,408	76,900	18,431,200
1995	222,609	-345,708	167,499	44,400	18,475,600
1996	211,530	-250,600	130,170	91,100	18,566,700
1997	202,603	-107,319	153,916	249,200	18,815,900
1998	192,021	-114,741	146,320	223,600	19,039,500
1999	191,441	-5,693	148,752	334,500	19,374,000
Sum	**2,025,067**	**-1,832,318**	**1,508,451**	**1,701,200**	
Average	**225,007**	**-203,591**	**167,606**	**189,022**	
Aggregate Change	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
Imperial	16,633	-5,249	18,716	30,100	
Los Angeles	1,067,288	-1,655,671	997,483	409,100	
Orange	305,602	-124,813	199,511	380,300	
Riverside	122,929	144,923	53,448	321,300	
San Bernardino	184,458	-561	58,403	242,300	
San Diego	257,949	-154,772	144,923	248,100	
Ventura	70,208	-36,175	35,967	70,000	
Region	**2,025,067**	**-1,832,318**	**1,508,451**	**1,701,200**	
Average Annual Change	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
Imperial	1,848	-583	2,080	3,344	
Los Angeles	118,588	-183,963	110,831	45,456	
Orange	33,956	-13,868	22,168	42,256	
Riverside	13,659	16,103	5,939	35,700	
San Bernardino	20,495	-62	6,489	26,922	
San Diego	28,661	-17,197	16,103	27,567	
Ventura	7,801	-4,019	3,996	7,778	
Region	**225,007**	**-203,591**	**167,606**	**189,022**	

Over the period 2000 through 2020 the population of the Southern California region is projected to increase by over 6.5 million persons. Such an increase would account for 55 percent of the total statewide projected population increase. The projections, prepared by the California Department of Finance forecast population increases in excess of 1 million persons each in

Riverside, San Bernardino, and San Diego counties and over 2 million persons in Los Angeles County (see Table 3.13-3).

While the populations of the Arizona counties are small compared to those in the California and Nevada counties, their growth rates in all cases exceed those of the California counties. La Paz County experienced a 10-year growth rate of 3.6 percent (1990 to 2000), while Yuma County had a 4.12 percent growth rate during the same period. Between 2000 and 2020, La Paz County is projected to have an average annual population growth rate of 1.96 percent. Over the same period, Yuma County is projected to have a 1.36 percent change in population per year.

Table 3.13-3. Population Projections by County, 2010 and 2020

County	*2000*	*2010*	*2020*	*Numeric Change 2000-2020*	*Average Annual Percent Change (2000-2020)*
Imperial	142,361	217,500	294,200	151,839	3.70%
Los Angeles	9,519,338	10,605,200	11,584,800	2,065,462	0.99%
Orange	2,846,289	3,266,700	3,541,700	695,411	1.10%
Riverside	1,545,387	2,159,700	2,817,600	1,272,213	3.05%
San Bernardino	1,709,434	2,231,600	2,800,900	1,091,466	2.50%
San Diego	2,813,833	3,388,400	3,863,500	1,049,667	1.60%
Ventura	753,197	877,400	1,007,200	254,003	1.46%
Seven-County Region	19,329,839	22,746,500	25,909,900	6,580,061	1.48%

Housing

Table 3.13-4 presents information describing the number of housing units in each of the counties in the study area for the years 1990 and 2000. Both the magnitude and rate of increase mirror the changes previously described for population. The size of the housing stock increased most rapidly in Riverside and Imperial counties. However, the largest number of units were added to the housing stock in Los Angeles County.

Table 3.13-4. Housing Units by County, 1990 and 2000

County	*1990*	*2000*	*Numeric Change (1990-2000)*	*Average Annual Percent Change (1990-2000)*
Imperial	36,559	43,891	7,332	1.84%
Los Angeles	3,163,343	3,270,909	107,566	0.33%
Orange	875,072	969,484	94,412	1.03%
Riverside	483,847	584,674	100,827	1.91%
San Bernardino	542,332	601,369	59,037	1.04%
San Diego	946,240	1,040,149	93,909	0.95%
Ventura	228,478	251,712	23,234	0.97%
Seven-County Region	6,273,881	6,760,188	486,307	0.75%
Source: U.S. Department of Commerce, Census Bureau, Census of Population and Housing, 2001.				

The rate at which housing units were added to the existing stock on a year-by-year basis can be seen from the information presented in Table 3.13-5. For the counties of California, new residential units authorized by building permits continued to grow throughout the late 1990s. However, as the region emerged from the recession of the early 1990s, the total number of

permits issued in 1999 was almost 70 percent below the high point of the 1980s (SCAG 1999). As housing prices have increased in the employment centers in Los Angeles, Orange, and San Diego counties, many workers have been excluded from home ownership and have opted for lower cost housing located on the urban fringe of Riverside and San Bernardino counties.

Virtually all counties in the study area experienced a sharp decline in residential construction activity in the first half of the 1990s. Building activity gradually increased after mid-decade and by 1999 had surpassed the 1990 level in the cases of Orange, San Diego, and Ventura counties. Construction activity in all other counties of the study area lagged behind their respective 1990 levels.

During a recent 10-year period in Arizona (1990 to 1999), La Paz County experienced an average annual change in housing units of 4.04 percent. In Yuma County, the average annual change was 4.77 percent.

Table 3.13-5. Regional and County Residential Building Permits, 1990-1999

County	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*Annual Average*
Imperial	1,087	837	1,001	627	834	492	352	342	433	339	634
Los Angeles	25,125	15,914	11,965	7,432	7,754	7,763	7,731	9,829	11,226	14,050	11,879
Orange	11,983	6,555	5,821	6,344	12,640	8,193	10,173	12,251	9,704	12,239	9,590
Riverside	15,362	9,283	8,220	7,247	8,015	6,806	7,540	9,747	12,527	14,154	9,893
San Bernardino	13,250	6,809	7,251	5,778	4,809	3,892	4,822	5,448	6,127	6,767	6,495
San Diego	15,732	7,891	6,071	5,750	6,943	6,633	6,848	11,139	11,891	16,295	9,519
Ventura	2,620	2,194	1,720	1,372	2,456	2,142	2,321	2,329	3,298	4,418	2,487
7-County Region	85,159	49,483	42,049	34,577	43,451	35,921	39,787	51,085	55,206	68,262	50,498

Employment

Employment is one of the major indicators of a region's economic health. Total employment in the seven-county region over the period 1990 through 2000 increased by about 906,000 jobs from 7.149 million to 8.055 million jobs at an average annual rate of 1.20 percent. Relative job growth, as measured by average annual change, was most pronounced in Riverside (3.79 percent), San Bernardino (2.66 percent) and San Diego (2.19 percent) counties. The largest numeric increases in employment occurred in Orange County (27 percent of the region-wide increase) followed by San Diego County (26 percent of the region-wide increase) (see Table 3.13-6).

At the regional level in 2000, industries in the service sector of the economy contribute the largest share (31.58 percent) of non-farm employment followed by retail trade (16.70 percent), government (14.74 percent), and manufacturing (14.37 percent). Of the seven counties comprising the region, Imperial County deviates most significantly from this industrial sector

profile. In the case of Imperial County in 2000, the government sector contributed 31.12 percent of non-farm employment. Farm employment contributed 22.69 percent of total employment.

Unemployment in Southern California has recently been at an all-time low. Since the recession in the early 1990s, the economy has diversified. As manufacturing jobs have been lost, new jobs have been created in information technology, entertainment, services, and apparel and fashion design (SANDAG 1998).

Between 1990 and 1999, La Paz County, Arizona experienced an average annual change in employment of 2.5 percent. Yuma County had an average annual change of 3.1 percent.

Table 3.13-6. Regional and County Employment, 1991 and 2000

County	*1991*	*2000*	*Numeric Change (1991-2000)*	*Average Annual Percent Change (1991-2000)*
Imperial	44,600	49,800	5,200	1.11%
Los Angeles	3,992,600	4,091,900	99,300	0.25%
Orange	1,150,800	1,398,600	247,800	1.97%
Riverside	322,700	468,000	145,300	3.79%
San Bernardino	418,800	544,400	125,600	2.66%
San Diego	973,000	1,208,300	235,300	2.19%
Ventura	246,000	293,800	47,800	1.79%
Seven-County Region	7,148,500	8,054,800	906,300	1.20%
Source: *California Employment Development Department, 2001.*				

3.13.1.2 Regulatory Framework

SCAG is a regional planning agency whose functions include regional transportation planning, air quality planning, and the development of demographic projections. In addition, SCAG reviews proposed projects of regional significance to determine consistency with regional plans, including SCAG's RCPG. SCAG adopted the RCPG in 1996 for the purpose of setting regional growth goals and identifying strategies for agencies to use in implementing the proposals in the plan through the year 2015. The RCPG includes goals for the economy, growth management, transportation, air quality, housing, open space, and water resources. The plan gives primacy to economic recovery and identifies three overall goals for the region: improving the standard of living for all; improving the quality of life for all; and enhancing equity and access to government. Specific RCPG policies are identified in the land use section.

SANDAG, in collaboration with San Diego County and the 18 cities, adopted a Regional Growth Management Strategy in 1993. The Regional Growth Management Strategy provides goals for improving the quality of life in San Diego County through specific growth management, conservation, and social measures. The county and cities have since incorporated the basic provisions of the strategy in their individual general plans (SANDAG 1998). The strategy comprises four basic components: quality of life factors, standards, and objectives; recommended actions; consistency with local/regional plans; and monitoring of growth forecasts and strategy.

A number of sections of the California Water Code indirectly address potential economic effects associated with water transfers. Section 386 pertains to water transfers and states that they may be approved by the State Water Resources Control Board only in the absence of injury to any legal users of the water and in the absence of unreasonable effects to fish, wildlife or other in-stream beneficial uses. Unreasonable effects on the overall economy of the area from which the water is being transferred must also be avoided. Section 1810(d) stipulates identical criteria regarding the use of conveyance facilities used in water transfers. Section 1745.05(b) states that "The amount of water made available by land fallowing may not exceed 20 percent of the water that would have been applied or stored by the water supplier in the absence of any contract entered into pursuant to this article in any given hydrologic year, unless the agency approves, following reasonable notice and public hearing, a larger percentage."

3.13.1.3 Imperial Irrigation District

IID is located in Imperial County, where farming is the main source of income. The Imperial Valley currently is undergoing steady growth in excess of the overall state growth rate. Like other agricultural counties in the state, Imperial County's employment growth has been relatively slow but is projected to increase by over 32 percent by 2020 (SCAG 1999).

3.13.1.4 Coachella Valley Water District

Most of the CVWD lies in Riverside County, but the District also extends into Imperial and San Diego counties. Riverside County has been growing rapidly and is now the sixth most populous county in the state. The growth rate of population, housing, and employment in the Coachella Valley is projected to increase through the year 2010 and then start to decline between 2010 and 2020. This service area contains a number of resorts, as well as agricultural uses, both of which provide employment opportunities.

3.13.1.5 The Metropolitan Water District of Southern California

MWD provides wholesale water service to portions of Orange, Los Angeles, Ventura, San Diego, San Bernardino, and Riverside counties. The region has the largest and fastest growing population and employment base in the state; Los Angeles and Orange counties are two of the California's largest counties. This service area has a diverse employment base.

3.13.1.6 San Diego County Water Authority

SDCWA is located in the western portion of San Diego County. San Diego population, employment, and housing projections show a continuation of current growth trends. This service area has a diverse employment base.

3.13.1.7 Other Areas

Colorado River

The eastern portions of Riverside, San Bernardino, and Imperial counties border the west side of the Colorado River. These counties are growing in population, housing, and employment, as

noted above. The same trends are applicable in Arizona in La Paz and Yuma counties. Areas surrounding the River are used for recreation and agriculture.

Salton Sea

The Salton Sea is located in Imperial and Riverside counties. It is an important recreational and aesthetic resource, attracting visitors from both southern California and throughout the United States, and it generates employment and tax revenues from tourism.

3.13.2 Impacts

3.13.2.1 Significance Criteria

The criteria used to determine the significance of impacts related to population, housing, and employment are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Project would result in significant impacts if it would:

- induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure); or
- displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

3.13.2.2 Methodology

Each Project component was evaluated for its potential to influence future population and housing. This was accomplished by identifying potential effects of Project implementation on economic activity, especially with regard to employment levels. Project components were also evaluated as to their potential to displace people, housing, or businesses or create other economic impacts on a local or regional scale. Impacts to the CVWD service area were compared against the Existing Baseline. Potential impacts to the Colorado River and Salton Sea geographic areas would result from changes in surface water elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

The impact analysis for the IID service area is based on that performed for the IID Conservation and Transfer Project EIR/EIS (IID and USBR 2002). The methodology used to support the socioeconomic analysis of the IID Water Conservation and Transfer Project EIR/EIS is based on a regional economic model using the software and data package IMPLAN PRO. IMPLAN PRO is an input-output (I-O) model that estimates the total impacts to a regional economy of changes to local business conditions, expenditures, or employment levels. Economic changes were estimated and used as inputs to the IMPLAN PRO model, which predicts the total effects on the regional economy. The effect of the IID Water Conservation and Transfer Project on the

regional economy was evaluated using: (1) changes in employment; and (2) the value of business output as the primary indicators.

Changes in business activity that would be caused by the IID Water Conservation and Transfer Project are attributed to one of the following three categories, which were individually modeled to estimate their impact on the regional economy:

- **Non-Agricultural Sectors –** Changes in local expenditures for goods, materials, and services associated with the construction, operation, maintenance, and replacement of on-farm and water delivery system improvements.
- **Transfer Revenue Expenditures** - Changes in the local expenditure of disposable income by farmers participating in the water conservation program.
- **Agricultural Production Sectors** - Reductions in agricultural output resulting from the fallowing of agricultural lands.

More detailed results of the impact analysis, including a breakdown of the total effect into the I-O components of direct, indirect, and induced effects, can be found in the IID Water Conservation and Transfer Project EIR/EIS. IMPLAN PRO takes into consideration annual changes in local expenditures and agricultural production during the quantification period and therefore is considered to use a Future Baseline.

Information regarding impacts of the All American and Coachella Canal lining projects is summarized from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.13.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to population, housing, or employment from construction or operation of this component of the Proposed Project.

A number of implementation scenarios potentially could take place in the IID service area depending on the amount of water that is conserved, the manner in which it is conserved (on-farm and water delivery system improvements versus land fallowing), and the eventual destination (and transfer fees paid) of the transferred water. This analysis is based on a worst-case scenario, which assumes that 300 KAFY of water would be conserved for transfer through fallowing. (Additional conservation by IID may be required for compliance with IID's Priority 3a cap on Colorado River water diversions.) It also assumes that the first 50 KAFY of water conserved under the QSA would be transferred to CVWD rather than to MWD. Under the terms of the QSA, if CVWD purchased the first 50 KAFY of water from IID, IID would be paid a base price of $50 per AF. If CVWD purchased the second 50 KAFY of water from IID, IID would be paid a base price of $125 per AF. If CVWD did not purchase water from IID under the QSA, MWD could purchase the water at a base price of $125 per AF. Thus, Imperial County would receive less economic benefit if CVWD purchased the first 50 KAFY rather than MWD.

If the reduction in water use was accomplished solely through land fallowing, Imperial County could experience a net loss of up to 1,400 jobs, mostly in the agricultural sectors. Such a change would comprise just under 3 percent of the Year 2000 county employment level. Net agricultural sector job losses would total up to 1,300, representing about 12 percent of the total county agricultural employment. The net decrease in the value of business output is estimated to be up to $98 million. This represents approximately 2 percent of the estimated $4.8 billion total value of business output for Imperial County (IID and USBR 2002). This would not represent a significant impact to population, housing, or employment.

As noted in Chapter 6, Growth Inducing Impacts, implementing the Proposed Project would not involve the construction of new housing or businesses or the creation of roads or other infrastructure that could serve an increased population; nor would it displace people or housing in the IID service area. Water diversions by IID would be reduced as a result of the Proposed Project, which provides for the transfer of the conserved water outside the IID service area. Water supplies are considered adequate to maintain the current level of agricultural productivity given the use of conservation or land fallowing measures identified in Chapter 2.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to population, housing, or employment from construction or operation of this component of the Proposed Project.

Water supply to the CVWD service area would increase under the Proposed Project; however, the additional water would be used only to offset the existing groundwater overdraft. The increased water supply that would result from the Proposed Project is considered in the Draft Coachella Valley Water Management Plan prepared by CVWD (CVWD 2000), the specific purpose of which is to address and reduce basin overdraft. Sufficient water is currently available in the Valley groundwater basins to meet the demands of the projected growth with or without the Proposed Project (CVWD 2000). Therefore, the same rates, magnitudes, and distribution of growth would occur regardless of whether or not the Proposed Project was implemented.

Implementing the Proposed Project could require the construction of pipelines, pumping stations, and other facilities in the CVWD service area; but this would not displace any existing housing or people because these facilities are expected to be located in agricultural or remote areas, such as the vicinity of Dike 4 and Martinez Canyon, two preliminary locations being considered for a recharge basin. This infrastructure would be used only for implementation of the Proposed Project and would not serve increased population. Because population trends would not change and since no significant impacts to agriculture would occur, the Proposed Project would not significantly impact employment or housing in the CVWD service area.

The Metropolitan Water District of Southern California

Implementation of the Proposed Project would not affect population, housing, or employment in the MWD service area. No new homes or businesses would be constructed, nor would any infrastructure that could serve new residents. No Project elements would displace people

and/or housing or require the construction of replacement housing. No infrastructure that could serve increased population would be constructed in this service area.

San Diego County Water Authority

Implementation of the Proposed Project would not affect population, housing, or employment in the MWD service area. No new homes or businesses would be constructed, nor would any infrastructure that could serve new residents. No Project elements would displace people and/or housing or require the construction of replacement housing. No infrastructure that could serve increased population would be constructed in this service area.

Other Areas

COLORADO RIVER AREA

The only change to this area would be a slight decrease in surface water elevation between Parker and Imperial dams, which would not be sufficient to adversely affect tourism or other economic activities in California or Arizona. Any such reductions in revenues from tourist activities and the associated jobs would be negligible.

SALTON SEA

Implementing the Proposed Project would accelerate the rate at which the surface water elevation is declining in the Salton Sea and thus would accelerate the rate of increase in salinity. These changes would impact the fisheries and other recreational resources of the Salton Sea, which may indirectly affect employment opportunities in the area, and possibly lead to a reduction in population, depending on the severity of the impact. This potential loss of employment opportunities, while having social consequences, would not constitute a significant change to the environment.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would displace existing housing or people or cause population growth. A reduction in the amount of conserved water dedicated to MWD would not result in an activity that would directly or indirectly induce population growth or cause the displacement of people or existing housing. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would cause the displacement of people or existing housing.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to existing population, housing, or employment levels would occur. The exchange of water with SDCWA would occur through existing infrastructure and would not require construction activities that would cause the displacement of people or existing housing.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would cause the displacement of people or existing housing. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would impact existing population, housing, or employment levels.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to population, housing, or employment levels along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the displacement of people or housing or that would result in an activity that would cause substantial population growth.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the displacement of people or housing or that would result in an activity that would cause substantial population growth. No impacts to population, employment, or housing levels would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component

would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the displacement of people or housing or cause substantial population growth.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to existing population employment or housing levels since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the displacement of people or housing or that would result in an activity that would generate substantial population growth.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to existing population, employment, or housing levels. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause displacement of people or housing or that would result in an activity that would cause substantial population growth.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would significantly impact existing population employment or housing levels.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to

manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short term. The potential impacts to population, housing, and employment would relate to job losses from fallowing or decreased recreational use of the Salton Sea. However, additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.13.3 Mitigation Measures

No mitigation measures are required.

3.13.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to population, housing, and employment would occur as a result of the implementation of the Proposed Project.

3.13.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to population, housing, and employment would occur as a result of the implementation of the Proposed Project.

4.0 CUMULATIVE IMPACT ANALYSIS

4.1 CUMULATIVE IMPACT METHODOLOGY

As described in the State CEQA Guidelines (sec. 15355), cumulative impacts refer to two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. A cumulative impact is the change in the environment that results from the incremental impact of the project when added to other closely related past, present or reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time. An EIR must discuss the cumulative impacts of a project when the project's incremental impact is cumulatively considerable (State CEQA Guidelines sec. 15130[a]). "Cumulatively considerable" means that the Project's incremental effects are considerable when viewed in connection with the impacts of other related projects (State CEQA Guidelines sec. 15065 [c]). In this PEIR, if the Proposed Project's incremental impact is cumulatively considerable in combination with the impacts of other projects, the impact is identified as a "significant cumulative impact." Conversely, if the Project's incremental impact is less than cumulatively considerable when combined with the impacts of other projects, the impact is stated to be a "less than significant cumulative impact."

This section addresses the cumulative impacts of the Proposed Project combined with other regional water supply or closely related projects in the region. A list approach was used to identify the closely related projects that could result in cumulatively considerable impacts. Potential projects that may result in a cumulative impact in combination with the Proposed Project initially were identified through a review of regional and local environmental documents. These projects then were examined for their potential to result in a cumulative impact when combined with the Proposed Project. Those projects ultimately included in the analysis of cumulative impacts are generally those that involve water resources in the region, have the potential to affect the resources of the Colorado River or Salton Sea, or have the potential to impact the same resources as the Proposed Project. The projects considered in the cumulative analysis are briefly described below. Table 4.1-1 provides a summary of the anticipated impacts of the various projects considered in this cumulative analysis and potential cumulative impacts that would occur if these projects were implemented in combination with the Proposed Project.

4.2 ANALYSIS OF CUMULATIVE IMPACTS

This section describes the projects included in the cumulative impact analysis, the status of environmental documentation, anticipated environmental impacts of these projects that could contribute to a cumulative impact, and the potential cumulative impacts of these projects in combination with those of the Proposed Project.

4.2.1 Implementation Agreement

Project Description

The IA is described in Chapter 1, section 1.5.

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Implementation Agreement (IA)	Same as Proposed Project.	No significant cumulative impacts would occur.
Inadvertent Overrun and Payback Policy (IOP)	Minor changes in river and reservoir levels associated with overrun and payback periods. Impacts associated with conservation by IID for purposes of paying back diversion exceedances in accordance with the IOP would be consistent with those that are already addressed in Chapter 3 of this PEIR.	No significant cumulative impacts would occur.
Interim Surplus Guidelines	Minor reduction in Lake Mead reservoir levels.	No significant cumulative impacts would occur.
Rule for Offstream Storage	Possible changes to flows and reservoir elevations in the Colorado River between Lake Powell and the Southerly International Boundary. This could adversely impact biological resources.	The Proposed Project could significantly impact biological resources of the lower Colorado River due to reduction in groundwater and surface water elevation. Cumulative impacts are potentially significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Lower Colorado River Multi-Species Conservation Program (MSCP)	Long-term beneficial impacts to biological resources on the lower Colorado River. The construction of conservation/restoration actions could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise. Impacts to cultural resources also could result from ground disturbance required to implement the conservation/restoration actions of the MSCP. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion of Important Farmland to non-agricultural use.	The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. Impacts to cultural resources along the lower Colorado River also could result from ground disturbance required to implement the conservation/restoration actions of the MSCP and the Proposed Project's biological mitigation measures.

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Lower Colorado River Multi-Species Conservation Program (MSCP) (continued)		Impacts to cultural resources from the Proposed Project also could occur in the IID and CVWD service areas and at the Salton Sea. Impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. The Proposed Project could result in the conversion of Important Farmland to non-agricultural use, as described in section 3.5. This is considered a significant and potentially unavoidable impact. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion, as could the implementation of the Proposed Project's biological mitigation measures along the Colorado River. This would be a significant and potentially unavoidable impact to agricultural resources.
Lower Colorado River Desert Region Plan	Beneficial impacts to water quality in agricultural drains.	No significant cumulative impacts would occur.
Colorado River Salinity Control Program	Beneficial impacts to Colorado River water quality	No significant cumulative impacts would occur.
Colorado River Basin Watershed Management Initiative	Beneficial impacts to water quality of the Salton Sea, New River, Alamo River, Imperial Valley agricultural drains, and CVSC.	No significant cumulative impacts would occur.
Salton Sea Restoration Project	Potential short- and long-term significant impacts to several environmental resources depending upon the alternative restoration strategies selected.	Due to lack of definition of alternatives, cumulative impacts are speculative. Cumulative impacts are potentially significant but mitigable.
Total Maximum Daily Load (TMDL) Program	Beneficial impacts to water quality in the Salton Sea and its tributaries.	No significant cumulative impacts would occur.
Heber Wastewater Treatment System	Beneficial impacts to water quality of agricultural drains and the Alamo River.	No significant cumulative impacts would occur..

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Dos Palmas Habitat Restoration/Enhancement	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Brawley, California Wetland Project	Beneficial impacts to water quality of the New River, Salton Sea, and Imperial Valley agricultural drains.	No significant cumulative impacts would occur.
North Baja Powerline Project	Potential significant impacts to biological and (marsh and riparian habitat).	Potentially significant cumulative biological impacts. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. Significant, potentially unavoidable cumulative impacts to agricultural resources could occur if both projects resulted in the conversion of Important Farmland. Short-term cumulative impacts from construction are unlikely unless construction occurred in the same general location and at the same time. Potential unavoidable short-term air quality impacts if construction occurred at the same time as the Coachella Canal Lining Project.

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Mexicali Wastewater System Improvements	The Mexicali Wastewater System Improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea. The two power plants would collectively evaporate approximately 10,570 AFY. The net reduction in water flows to the Salton Sea would be less than 1 percent of the total amount of flow (U.S. DOE 2001). The power plants combined would result in a negligible increase in the salinity of the Salton Sea. Ultimately, the reduction of phosphates, organics, and heavy metals from Mexico that are currently discharged to the Salton Sea will have a positive impact on water and biological resources. The small increase in salinity level and reduction in water quantity would be negligible; hence the power plants would have no measurable impact.	The Proposed Project would result in a less than significant impact to the water quality of the New River, while the wastewater treatment plant improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea. The power plants would result in negligible impacts to water quality. Cumulative impacts would not be significant.
Coachella Valley Water Management Plan (CVWMP) (non-QSA part)	Short-term, construction-related impacts to biological resources, air quality, geology and soils, public services and utilities, transportation, hazardous materials, noise, and public safety. Potential increased agricultural return flows and decreased water quality to drains that empty into the Salton Sea from the Coachella Valley. Depending on the specific locations of facilities that would be constructed, impacts to biological, cultural, and geological resources also could occur.	Potential localized impacts to areas of disturbance that may be within the same general locations as those facilities associated with the Proposed Project. Impacts to biological, cultural, and geological resources, air quality, public services and utilities, transportation, hazardous materials, and noise would be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Coachella Valley Multi-Species Habitat Conservation Plan (MSHCP)	Potential short-term localized impacts to biological resources. Long-term beneficial impacts to biological resources.	No significant cumulative impacts would occur.

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Whitewater River Basin Flood Control Project	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Flood Mitigation and Riverine Restoration Program	Beneficial impacts to flood control and biological resources.	No significant cumulative impacts would occur.
Peninsular Bighorn Sheep Recovery Plan	Beneficial impacts to biological resources.	No significant cumulative impacts would occur.
Mission Creek Subbasin Recharge Project	Beneficial impact from decrease in groundwater overdraft conditions within the Coachella Valley.	No significant cumulative impacts would occur.
Caltrans Route 86 Expressway Mitigation	Beneficial biological impact.	No significant cumulative impacts would occur.
Te'Ayawa Energy Center	Potentially significant impacts, including impacts to geologic hazards, water resources, biological resources, traffic and transportation, noise, air quality, hazardous materials, hazardous waste, and visual resources would be reduced to less than significant impacts through application of mitigation measures.	Potentially significant impacts could result from the construction of the energy center and Proposed Project facilities, such as recharge basins, pipelines, and pumping stations. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Coachella Valley/Salton Sea Non-Point Source Project	Beneficial impact to water quality of the Salton Sea. Short-term construction related impacts.	No significant cumulative impacts would occur.
Cabazon Resource Recovery Park	Short-term, localized construction impacts. Potential for contamination of surface and groundwater supplies due to hazardous spills.	Both the Proposed Project and the Cabazon Resources Recovery Park could result in significant impacts from construction. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.

Table 4.1-1. Summary of Cumulative Impacts

Related Projects	*Potential Impacts of the Related Projects*	*Significant Cumulative Impacts*
Cabazon Power Plant	Potential impact to water quality in the CVSC dependent on the salinity of the discharge from the plant.	Water quality impacts are speculative. Both the Proposed Project and the power plant project could result in significant impacts from construction. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts, with the possible exception of air quality, to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.
Hayfield Groundwater Storage Program	Short-term construction related impacts to biological resources, hazardous waste, soils, noise, and air quality.	No significant cumulative impacts would occur.
Cadiz Groundwater Storage and Dry-Year Supply Program	Potential impact to groundwater quality. Short-term, construction-related impacts to biological, air, hazardous materials, and paleontological resources.	No significant cumulative impacts would occur.
Palo Verde Land Management, Crop Rotation, and Water Supply Program	Potentially minor loss of marsh and riparian habitat between Parker Dam and the Palo Verde Diversion Dam. Land fallowing could cause air quality impacts from fugitive dust emissions.	The Proposed Project and the Land Management, Crop Rotation, and Water Supply Program together would slightly lower the Colorado River median groundwater and surface elevation between Parker Dam and the Palo Verde Diversion Dam. This would not significantly affect water resources, but would result in a significant cumulative impact to biological resources. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.

Project's Environmental Analysis Status and Anticipated Impacts

A Notice of Intent (NOI) was published in the *Federal Register* on March 9, 2001. A Draft EIS that evaluates the environmental impacts of the IA, the IOP and related biological conservation measures (USFWS 2001) was issued by Reclamation in January 2002. The impacts that were identified in the EIS are consistent with those of the Proposed Project since execution of the IA is simply the federal action that is required prior to implementation of the Proposed Project.

Cumulative Impacts with the Proposed Project

No environmental changes would occur in addition to those addressed in this PEIR. Thus, no significant cumulative impacts would result from this action.

4.2.2 Inadvertent Overrun and Payback Policy

Project Description

The IOP is described in Chapter 1, section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

The Notice of Public Comment Period on the draft IOP was published on January 18, 2001. An NOI was published in the *Federal Register* on March 9, 2001. As noted above, a Draft EIS was published by Reclamation in January 2002 that evaluates the consequences of the IOP in addition to those of the IA and related biological conservation measures. Implementation of the IOP would result in minor year-to-year changes to the water surface elevation of Lake Mead and the Colorado River both during overrun years and payback years. These changes would not cause significant biological or hydrologic impacts because on average the elevations would be similar to those that would exist without the IOP.

This PEIR provides program-level CEQA analysis for IID's Priority 3a Colorado River water cap, including the conservation of water by IID necessary to comply with the Priority 3a cap. The analysis assumes that payback for exceedances would comply with the IOP. These impacts are addressed on a project level in the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002).

No significant impacts would occur in the CVWD service area because any reduction in deliveries required to pay back previous overruns would be accommodated by reduced groundwater recharge during the payback period. No impacts to the MWD service area would occur since any overruns would result in minor changes in diversions at Lake Havasu that are well within historic diversions. The IOP would not cause additional changes to the SDCWA service area since it is within the MWD service area.

Cumulative Impacts with the Proposed Project

The changes in water surface elevation along portions of the lower Colorado River that would result from the implementation of the Proposed Project may result in significant impacts to biological resources. The IOP could minimally contribute to this impact, and this contribution

would vary from year to year. In those years when a user's entitlement is exceeded, flow in the lower Colorado River would be increased, whereas in payback years, flow in the lower Colorado River would be reduced. There would be no net, long-term, aggregate change in river flow as a result of implementing the IOP. Because the IOP has no net effect as described above, there would be no significant cumulative impact to the environmental resources of the lower Colorado River.

Impacts associated with conservation by IID for purposes of paying back diversion exceedances in accordance with the IOP would be consistent with those described in Chapter 3 of this PEIR. No impacts would occur beyond those that are already addressed in this PEIR, and no significant cumulative impacts would occur.

4.2.3 Interim Surplus Guidelines

Project Description

This project is described in Chapter 1, section 1.3.3.2.

Project's Environmental Analysis Status and Anticipated Impacts

A ROD for the Interim Surplus Guidelines was published in January 2001. Reclamation determined that small changes in the probabilities of occurrence of flows that could impact some resources are within Reclamation's current operational regime and authorities under applicable law. Specific biological conservation measures were identified for threatened and endangered species in the Biological Assessment (USBR 200a) prepared for both the Interim Surplus Guidelines and the IA and the subsequent Biological Opinion issued by the Service (USFWS 2001).

Cumulative Impacts with the Proposed Project

Implementation of the Interim Surplus Guidelines will result in minor reductions in the reservoir levels of Lake Mead, and implementation of the Proposed Project would result in minor increases in Lake Mead's surface elevation and storage volume. Thus, no significant cumulative impacts to Lake Mead would occur. The Interim Surplus Guidelines will not change Colorado River flows between Parker and Imperial dams or change points of diversion; thus, no significant cumulative impacts to the Colorado River area would occur from implementing both the Interim Surplus Guidelines and the Proposed Project.

4.2.4 Rule for Offstream Storage of Colorado River Water

Project Description

The Rule for Offstream Storage of Colorado River Water project is described Chapter 1, section 1.3.3.2.

Project's Environmental Analysis Status and Anticipated Impacts

Impacts of this rule were evaluated in a 1999 environmental assessment prepared by Reclamation (USBR 1999b). No significant environmental impacts requiring mitigation were

identified, although Reclamation will conduct the appropriate project-level NEPA analysis to identify potential impacts associated with all specific Storage and Interstate Release Agreements when they are presented to the Secretary. Any agreement for offstream storage would require a change in points of diversion from the Colorado River. Depending on the entities involved, this change in point of diversion may or may not result in a change in river flow. For example, in the event that MWD and the Arizona Water Banking Authority (AWBA) enter into an agreement for offstream storage, there would be changes in points of diversion between the MWD facilities and the Central Arizona Water Conservation District (CAWCD) facilities, although, as both are located in Lake Havasu, there would not be a reduction in river flows. In the event that the Southern Nevada Water Authority (SNWA) and AWBA implement the agreement for offstream storage, there would be changes in points of diversion between Lake Mead and Lake Havasu, and a subsequent increase or reduction in river flows between Hoover Dam and Lake Havasu. Currently, the AWBA is the only storing entity.

Cumulative Impacts with the Proposed Project

The Rule for Offstream Storage could affect both flows and reservoir elevations within the Colorado River from Lake Powell to the Southerly International Boundary (SIB). Except for the impacts of the SNWA/AWBA agreement, the project-specific effects are speculative and would depend on the amounts of water transferred and the location of the diversion points affected. The Proposed Project would result in potentially significant impacts to biological resources along the lower Colorado River from a reduction in median groundwater and water surface elevation. Depending on the details of individual agreements for offstream storage, cumulative impacts to biological resources along the lower Colorado River could be significant. It is anticipated that most of the potential cumulative impacts to biological resources would be attributable to the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact.

4.2.5 Lower Colorado River Multi-Species Conservation Program

Project Description

The MSCP is described Chapter 1, section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

An EIS/EIR and Biological Assessment are being prepared to analyze the potential impacts from implementation of the Conservation Plan. Reclamation and the Service are the lead agencies under NEPA, and MWD is the lead agency under CEQA. An NOI and an NOP were issued in May 1999, and seven scoping hearings were held in June and July 1999 to inform the public about the MSCP and solicit input. A Supplemental NOI to prepare an EIS/EIR on the project was published in the *Federal Register* on July 12, 2000, and additional scoping meetings were held in July and August 2000. The MSCP Conservation Plan is scheduled for public release in late 2002. Completion of environmental review, a ROD by the Secretary, federal ESA and CESA permitting, and execution of an Implementation Agreement among MSCP participants is scheduled for 2003.

Implementation of the MSCP is intended to have a beneficial impact to habitat along the lower Colorado River. Biological conservation measures necessary to account for the incidental take of protected species within the historic floodplain of the lower Colorado River would be implemented over a 50-year period. Additional conservation measures are planned to assist in the recovery of the covered species. These conservation measures could include the restoration of existing degraded habitat and/or the construction of new open water, marsh, and riparian forest habitats. The first phase of these actions is likely to restore cottonwood-willow habitat suitable for southwestern willow flycatcher and western yellow-billed cuckoo, mesquite habitat, and marsh habitat suitable for the Yuma clapper rail and other similar species. In addition, native fish refugia would be created and native fish populations may be supplemented by hatchery-raised fish. Later phases would add more habitat, based on adaptive management principles. Implementation of the biological conservation measures associated with the MSCP is expected to mitigate any adverse effects of current and future diversions of the Colorado River, including those associated with the Proposed Project. The conceptual projects whose potential impacts to biological resources are covered by the MSCP would undergo separate environmental evaluation when, and if, they are proposed.

The construction of conservation/restoration actions associated with the MSCP could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise along the lower Colorado River. Impacts to cultural resources along the lower Colorado River also could result from ground disturbance required to implement the conservation/restoration actions of the MSCP. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion of Important Farmland to non-agricultural use.

Cumulative Impacts with the Proposed Project

The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to biological resources, water quality, geology and soils, air quality, and noise along the lower Colorado River. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. With mitigation, these potential short-term impacts would be reduced to less than significant.

Impacts to cultural resources along the lower Colorado River could result from ground disturbance required to implement the conservation/restoration actions of the MSCP and the Proposed Project's biological mitigation measures. Impacts to cultural resources from the Proposed Project also could occur in the IID and CVWD service areas and at the Salton Sea. Impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. It is anticipated that mitigation measures for potential impacts to cultural resources also are being developed or have been developed as part of the environmental review process for the related projects.

The Proposed Project could result in the conversion of Important Farmland to non-agricultural use, as described in section 3.5. This is considered a significant and potentially unavoidable

impact. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion, as could the implementation of the Proposed Project's biological mitigation measures along the Colorado River. This would be a significant and potentially unavoidable cumulative impact to agricultural resources in Southern California.

The Proposed Project could result in potentially significant long-term impacts to the biological resources of the lower Colorado River. These impacts would be reduced to less than significant by the implementation of mitigation measures identified in section 3.2. On a long-term basis, the implementation of biological conservation measures associated with the MSCP would result in beneficial impacts to biological resources along the lower Colorado River. No significant long-term cumulative impacts to biological resources would occur.

4.2.6 Lower Colorado River Desert Region Plan (Environmental Quality Incentives Program)

Project Description

Since 1997, the Natural Resources Conservation Service (NRCS) has been implementing a cost-sharing program to address water and air quality issues for 520,000 acres of irrigated cropland in the Imperial and Coachella valleys. Cooperating parties are private landholders, Native American groups, IID, and the Bard Resource Conservation District. The program goals include reducing salinity levels in soil, reducing soil compaction and stratification, reducing nitrate and pesticide concentrations in runoff agricultural drainage, reducing nitrates leached into groundwater, and, reducing PM_{10} levels during "the critical periods." The program provides 50 percent matching funds for on-farm improvements in the Imperial and Coachella valleys to applicants considered each year. Improvements can include slip plowing, covering crops to reduce erosion, planting windbreaks to reduce dust, nutrient (fertilizer) management, installation of tile drains, installation of drip systems, and other environmentally sound practices (personal communication S. Cameron, 2001).

Project's Environmental Analysis Status and Anticipated Impacts

This is an ongoing program. Implementation of the NRCS projects, which are partially funded by the Environmental Quality Incentives Program, has had a beneficial impact on the quality of water in agricultural drains, has reduced sediment in the drains, has improved water use efficiency, improved drainage, and reduced nutrients and pesticides in drain water.

Cumulative Impacts with the Proposed Project

The Proposed Project would result in significant unavoidable impacts to water quality in drains (due to increased selenium concentration) within the Imperial and Coachella valleys. The NRCS projects, however, have a beneficial impact to water quality in such drains. Because water quality impacts of the NRCS projects would be beneficial, no significant cumulative impacts would occur.

4.2.7 Colorado River Salinity Control Program

Project Description

This program, pursuant to the 1974 Colorado River Basin Salinity Control Act, PL 93-320, as amended, provides for the construction, operation, and maintenance of projects in the Colorado River Basin to control the salinity of water. A wide range of salinity control actions has been undertaken in the Colorado River basin as part of this program. These actions include the construction of a desalting plant at Yuma, Arizona, development of a protective well field along the U.S.-Mexico border, a salinity control program on BLM land, a voluntary on-farm salinity control program by USDA, specific projects and a program for funding basin-wide salinity control projects through competitive bid.

The Colorado River Basin Salinity Control Forum has determined that 1,477,700 tons of salt must be removed or prevented from entering the Colorado River system annually to maintain water quality through 2015 (USBR 2000c). To meet this goal, it is necessary to fund and implement new measures that would allow the removal of an additional 756,000 tons annually.

Project's Environmental Analysis Status and Anticipated Impacts

To achieve future reduction goals, a variety of salinity control methods are being investigated. Existing salinity control measures under this program have a beneficial impact by preventing over a half-million tons of salt per year from reaching the River (DOI 1999).

Cumulative Impacts with the Proposed Project

Reclamation's modeling predicts that the Proposed Project would slightly increase (about 8 mg/l) the salinity of the Colorado River at Imperial Dam (see section 3.1 and Appendix C). The salinity control measures discussed above are intended to maintain the salinity of the River. Because water quality impacts of the salinity control measures would be beneficial, no significant cumulative impacts would occur.

4.2.8 Colorado River Basin Watershed Management Initiative

Project Description

This basin-wide management initiative is a RWQCB, Colorado River Basin Region, internal planning mechanism for the Salton Sea Transboundary Watershed basin planning unit. The watershed was identified as impaired under the 1998 California Unified Watershed Assessment (UWA). The UWA was a collaborative process between California and the EPA developed to guide allocation of new federal resources for watershed protection. The watershed contains five main surface water bodies: the Salton Sea, New River, Alamo River, Imperial Valley agricultural drains and the CVSC.

Project's Environmental Analysis Status and Anticipated Impacts

This initiative is not a project, but an overall plan and would be implemented by the TMDL program discussed below.

Cumulative Impacts with the Proposed Project

The Proposed Project would have significant unavoidable water quality impacts to the Alamo River and IID drains due to increased selenium concentration. It also would result in decreased flows to the Salton Sea and this, combined with evaporation, would act to lower the mean surface elevation, decrease surface area, and increase the salinity concentration of the Sea. Because water quality impacts of the initiative would be beneficial, no significant cumulative impacts would occur.

4.2.9 Salton Sea Restoration Project

Project Description

The Salton Sea Restoration Project is described in Chapter 1, section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

A NOP/NOI was issued on June 26, 1998, and a Draft EIS/EIR was released in January 2000. The Draft EIS/EIR was not finalized due to concerns regarding the feasibility of the alternatives that were analyzed. A revised Draft EIS/EIR including different alternatives and revised modeling and impact analysis is in preparation. Although the project is speculative at this time, if implemented, the Salton Sea Restoration Project would be expected to reduce and stabilize the overall salinity of the Salton Sea and stabilize the surface elevation of the Salton Sea. Certain potential restoration measures could reduce inflows to the Salton Sea or reduce its elevation or otherwise adversely affect water quality. If such measures are implemented as part of the Salton Sea Restoration Project, this could result in significant impacts to air quality, biological resources, cultural resources, and recreational resources. There is also a potential that agricultural lands may be converted to non-agricultural uses depending upon the alternative selected for Salton Sea restoration. Short-term impacts to resources such as noise, air quality, and geology and soils could result from construction. Other significant short and long-term impacts may occur depending upon the alternative selected.

Cumulative Impacts with the Proposed Project

Since the alternative methods of implementing the Salton Sea Restoration Project have not been defined at this time, the cumulative impacts of the Proposed Project and the Salton Sea Restoration Project are speculative. Depending on the restoration methods selected, cumulative impacts could potentially be significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the potential cumulative impacts. It is anticipated that mitigation measures also would be developed as part of the environmental review process for the Salton Sea Restoration Project.

4.2.10 Total Maximum Daily Load Program

Project Description

Pursuant to the requirements of the Clean Water Act, the Colorado River RWQCB identified and ranked "impaired waterbodies" for which TMDLs need to be established. The RWQCB is to develop and adopt an Implementation Plan for each TMDL/water body combination and identify implementing actions, monitoring and surveillance for compliance, and technical and economic feasibility. The RWQCB has identified the New River, Alamo River, Imperial Valley drains, Salton Sea, Palo Verde outfall drain and CVSC as quality-limited waters. The Salton Sea Watershed has also been identified as a priority watershed.

Project's Environmental Analysis Status and Anticipated Impacts

The TMDL Program is in process. Implementation of the TMDLs is expected to improve the quality of the individual quality limited waterbodies, including the Salton Sea.

Cumulative Impacts with the Proposed Project

The Proposed Project would have significant unavoidable water quality impacts to the Alamo River and IID drains due to increased selenium concentration. It also would result in decreased flows to the Salton Sea and this, combined with evaporation, would act to lower the mean surface elevation, decrease surface area, and increase salinity concentrations of the Sea. The TMDL Program would have a beneficial impact to water quality in the New River, Alamo River, Imperial Valley drains, Salton Sea, Palo Verde outfall drain, and the CVSC. Because impacts of the TMDL Program would be beneficial, no significant cumulative impacts would occur.

4.2.11 Heber Wastewater Treatment Plant Expansion and Upgrade

Project Description

The Heber Wastewater Treatment Plant serves the community of Heber, located approximately 5 miles north of the U.S.-Mexico border in Imperial County. The plant discharges to an agricultural drain that flows to the Alamo River. The Alamo River flows approximately south to north through the Imperial Valley and terminates at the Salton Sea. The plant is expanding capacity from 0.402 to 0.810 million gallons per day (mgd) and upgrading plant components, including the addition of a new oxidation ditch, two clarifiers, a return activated sludge and waste activated sludge pump station, sludge drying beds, and disinfection facilities. (Montgomery Watson 1999).

Project's Environmental Analysis Status and Anticipated Impacts

The EPA issued an *Environmental Assessment and Finding of No Significant Impact for the Heber Wastewater Treatment Plant Expansion and Upgrad*e in 1999. The Notice to Proceed for construction was granted in April 2000, and construction activities were completed in the fall of 2001. The expanded and upgraded plant would have a beneficial impact by improving water quality in the agricultural drains and Alamo River.

Cumulative Impacts with the Proposed Project

The Proposed Project would have adverse impacts to the water quality of agricultural drains and the Alamo River, but the wastewater treatment plant would have a beneficial impact by improving water quality in the agricultural drains and Alamo River. Thus, no significant water quality impacts would occur. The only adverse impacts from expansion and upgrade of the Heber Wastewater Treatment Plant identified in the environmental assessment were short-term localized impacts due to construction activities, and construction is completed. Thus, no cumulative impacts from the Heber Wastewater Treatment Expansion and Upgrade would occur.

4.2.12 Dos Palmas Habitat Restoration/Enhancement

Project Description

BLM administers the Dos Palmas Preserve, an approximately 14,880-acre wildlife refuge and nature preserve near the town of North Shore on the northeast shore of the Salton Sea. The purposes of the preserve are to:

- protect wildlife habitat within the Salt Creek watershed identified by the BLM as an ACEC;
- provide protection for endangered species;
- provide research, educational and recreational opportunities; and
- manage the watershed on an ecosystem basis to provide for natural functioning of processes.

An interdisciplinary team has developed a restoration plan, and components of the plan (including modifying 25 acres of wetlands to create habitat for endangered species and a tamarisk removal program) have been implemented. Sensitive species in the preserve include the endangered Yuma clapper rail, black rail, and desert pupfish.

Project's Environmental Analysis Status and Anticipated Impacts

This project is not subject to environmental review. The wetland modifications are complete and vegetation is being grown to emulate more natural habitat. Tamarisk eradication efforts are ongoing. The Dos Palmas project would have a beneficial effect by providing habitat for a variety of species.

Cumulative Impacts with the Proposed Project

The Proposed Project would have significant impacts to the biological resources of the Salton Sea. The Dos Palmas Habitat Restoration/Enhancement project would have beneficial impacts to biological resources in this area. Because the latter project would have beneficial impacts to biological resources, no significant cumulative impacts would occur.

4.2.13 Brawley, California Wetland Project

Project Description

The Brawley Constructed Wetlands Demonstration Project (Brawley Wetlands Project) involves the construction of two pilot treatment wetlands to improve water quality in the Imperial Valley's agricultural drains, the New River, and the Salton Sea. A 5-acre wetland has been constructed on a 7-acre site near the City of Brawley, which is designed to divert and improve the quality of approximately 2.4 million gallons of New River water per year. A second, larger wetland (40 acres) has been constructed on a 68-acre site near the City of Imperial. This 40-acre wetland would collect 6.9 million gallons of agricultural water per year from IID's Agricultural Rice 3 Drain. Both wetlands are designed to remove silt from inflows as they flow through the first sedimentation basin and reduce nutrient loads, pesticide/herbicide toxicity, and selenium concentrations as water flows through a series of shallow ponds. A monitoring program, which has been underway for over six months, is to determine relative water quality improvement and the effects on wildlife (USBR and SSA 2000).

Project's Environmental Analysis Status and Anticipated Impacts

The project has the potential to improve the quality of flow to the Salton Sea from the Imperial Valley. The estimated degree of improvement would be small due to the small size of the project. Wetlands can remove significant amounts of nitrogen, up to 80 or 90 percent, and less phosphorus, on the order of 30 to 40 percent.

Cumulative Impacts with the Proposed Project

The Proposed Project would have adverse impacts to the water quality of the Salton Sea and the New River and significant impacts to the water quality of Imperial Valley agricultural drains due to increased selenium concentration. The Brawley Wetlands Project is intended to improve water quality to the New River, the drains, and the Salton Sea. Because the Brawley Wetlands Project would have a beneficial water quality impact, no significant cumulative impacts would occur.

4.2.14 North Baja Powerline Project

Project Description

The North Baja Powerline Project is located within the southwestern portion of the Imperial Valley. Two new power lines that are parallel to the existing line are proposed to run from the Imperial Valley substation to the Mexican Border.

Project's Environmental Analysis Status and Anticipated Impacts

A Draft EIS/EIR has been issued by BLM (IID and USBR 2002). The 6-mile long power line is expected to result in potential impacts to marsh and riparian habitat, including habitat for the Yuma clapper rail. The North Baja Powerline Project may impact desert tortoise habitat, flat-tailed horned lizard habitat, and riparian habitat occupied by the clapper rail, desert tortoise, and flat-tailed horned lizard. The project may create short-term, but less than significant

impacts to air quality, noise, and traffic. The project may also result in conversion of Important Farmland to non-agricultural use, resulting in a significant impact.

Cumulative Impacts with the Proposed Project

The North Baja Powerline project could result in a slight increase in the loss of riparian and marsh habitat and so has the potential for a significant cumulative impact in combination with the Proposed Project. The potential conversion of Important Farmland is considered a significant cumulative impact since both the Proposed Project and the power line project could result in such a conversion. This impact is potentially unavoidable. Short-term construction impacts such as noise and traffic are unlikely to be cumulatively significant since they are highly localized. Air quality impacts from construction could be cumulatively significant if construction occurred during the same timeframe. If the power line project and Coachella Canal lining project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

4.2.15 Mexicali Wastewater System Improvements

Project Description

Raw or partially treated wastewater from the city of Mexicali, Mexico flows into the New River, which flows north into the Imperial Valley and into the Salton Sea. These discharges pose a threat to water quality both in Mexico and the United States. The U.S. and Mexican sections of the International Boundary and Water Commission, as well as several other agencies, are planning to update and develop wastewater treatment facilities in order to improve the water quality of the New River, as well as general sanitation in Mexicali. Specific improvements include, but are not limited to, rehabilitating and expanding the capacity of the Mexicali Wastewater Treatment Plant to 30 mgd and constructing another wastewater treatment plant with a capacity of 20 mgd. In addition to the wastewater system improvements, two power plants are being constructed. One power plant would use a portion of the treated wastewater effluent for cooling water; the other power plant would obtain and treat raw sewer water and subsequently use the treated water for cooling water.

Project's Environmental Analysis Status and Anticipated Impacts

Rehabilitation and expansion of the capacity of the Mexicali Wastewater Treatment Plant began in autumn 2000. Construction is expected to be completed by 2004. The construction of the new wastewater treatment plant is estimated to be completed by the end of year 2003. The power plants are expected to begin operation in Mexico during the summer of 2002.

The Mexicali Wastewater System Improvements are intended to resolve problems related to the quality of water treated by the existing Mexicali wastewater system and treatment plant, which discharges its effluent into the New River, which ultimately empties into the Salton Sea. According to EPA and the International Boundary and Water Commission (IBWC), after the

system improvements are complete, the treated water would be discharged into the New River. The improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea.

The two power plants would collectively evaporate approximately 10,570 AFY. The net reduction in water flows to the Salton Sea would be less than 1 percent of the total amount of flow (U.S. DOE 2001). The power plants combined would also remove 6,120,000 pounds of TDS per year in their water withdrawals. However, the increased TDS concentration of water discharged by the power plants to the river would result in "an increase in salinity to the Salton Sea of 0.142 percent" (U.S. DOE 2001).

According to the environmental documentation on the power plants, these impacts are negligible and well within the error range of the recorded data and measurement instruments (U.S. DOE 2001). Ultimately, the reduction of phosphates, organics, and heavy metals from Mexico that are currently discharged to the Salton Sea will have a positive impact on water and biological resources. The small increase in salinity level and reduction in water quantity would be negligible; hence the power plants would have no measurable impact (U.S. DOE 2001).

Cumulative Impacts with the Proposed Project

The Proposed Project would result in a less than significant impact to the water quality of the New River, while the wastewater treatment plant improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea. The power plants would result in negligible impacts to water quality. Cumulative impacts would not be significant.

4.2.16 Coachella Valley Water Management Plan (Non-QSA Part)

Project Description

CVWD has prepared the Coachella Valley Water Management Plan (CVWMP) to provide an overall program of managing its surface and groundwater resources in the future. The CVWMP involves a number of actions to reduce the current overdraft of groundwater in the Coachella Valley through increased use of Colorado River water (reducing the requirement to pump groundwater), various water recycling programs, and conservation measures to decrease the consumption of water in the Coachella Valley. Water would be gained through non-QSA-related sources, including recycled water, desalted agricultural drain water, municipal and industrial conservation, and golf course conservation. Implementing these elements of the CVWMP would involve construction of various facilities for water treatment and development of additional policies to implement increased conservation. Implementation of the CVWMP may also result in additional water from other transfers not related to the Proposed Project. This includes a potential transfer of up to 100,000 AFY of SWP entitlement.

Project's Environmental Analysis Status and Anticipated Impacts

The impacts of the CVWMP are being addressed in a PEIR currently under preparation by CVWD. An NOP was filed with the State Clearinghouse in November 1995. A revised NOP

was issued in March 2000 to incorporate the changes to the project from the Colorado River allocation negotiations. The Draft PEIR is scheduled to be released in early 2002.

Potential environmental impacts of the CVWMP are expected to consist of both short-term construction impacts and long-term impacts. Short-term, construction-related impacts include impacts to biological resources, air quality, geology and soils, public services and utilities, transportation, hazardous materials, noise, and public safety. Other potential long-term impacts include increased agricultural return flows and decreased water quality to drains that empty into the Salton Sea from the Coachella Valley. Depending on the specific locations of facilities that would be constructed, impacts to biological, cultural, geological, and agricultural resources also could occur.

Cumulative Impacts with the Proposed Project

As discussed in section 3.1, the implementation of the CVWMP (QSA portion) has the potential to result in significant water quality impacts due to increased TDS in the lower basin groundwater and increased selenium in the drains. The implementation of the non-QSA portion of the CVWMP would not increase the TDS of the groundwater in the lower basin, nor would it increase the selenium in drains beyond that which would occur under the Proposed Project. The increase in agricultural drain flows may produce net beneficial impacts to the Salton Sea through an increase in flows of lower salinity water. No significant cumulative impacts to water quality would occur.

Implementation of the CVWMP would result in potential localized impacts to areas where facilities may be located. These areas of disturbance may be within the same general locations as those facilities associated with the Proposed Project components of the CVWMP. Impacts to biological, cultural, and geological resources, air quality, public services and utilities, transportation, hazardous materials, and noise could be cumulatively significant. If the CVWMP and Coachella Canal Lining Project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed as part of the environmental review process for the CVWMP.

4.2.17 Coachella Valley Multiple Species Habitat Conservation Plan

Project Description

The purpose of the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP) is to conserve adequate habitat to provide for the long-term viability of designated Species of Concern and to simplify compliance with endangered species-related laws and regulations. Thirty-one Species of Concern and 24 natural communities are considered, based on current habitat conditions and the extent of available information. The MSHCP area includes the entire Coachella Valley watershed except those portions outside Riverside County or outside the boundaries of the Coachella Valley Association of Governments (CVAG). The area covers over

1.2 million acres (approximately 1,950 sq. mi.) that include the Valley floor and surrounding mountains up to the ridgeline.

The MSHCP is being prepared by CVAG and the Coachella Valley Mountains Conservancy. Cooperating agencies include the National Park Service, Natural Resources Conservation Service, the Service, U.S. Forest Service, BLM, CDFG, California Department of Parks and Recreation, Riverside County, CVWD, MWD, and other state and local agencies, and private landowners and organizations. Permitting agencies are the Service and CDFG. In December 1999, a *Biological Analysis of Three Conservation Alternatives for the MSHCP* was prepared for review by the involved agencies. At the same time, preliminary draft maps of known locations of sensitive species were prepared. The plan does not currently include the fringe-toed lizard because this species has an existing HCP that is undergoing some revision, but it does include the peninsular bighorn sheep, for which critical habitat has been designated.

Project's Environmental Analysis Status and Anticipated Impacts

An administrative draft MSHCP containing three alternatives was prepared in August 2000. A single preferred alternative is now being considered and a public draft MSHCP should be available in early 2002. Estimated completion date is August 2002 (personal communication, K. Barros 2001). The MSHCP is expected to have a net beneficial impact on habitat and special status species in the Coachella Valley, although the project may have short-term, localized impacts to biological resources, including sensitive species.

Cumulative Impacts with the Proposed Project

The Proposed Project would result in significant impacts to biological resources in the Coachella Valley, and the MSHCP could have short-term, localized impacts to biological resources. This short-term cumulative impact would be potentially significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. The MSHCP would have a net beneficial impact to biological resources, and no long-term significant cumulative impacts would occur.

4.2.18 Whitewater River Basin Flood Control Project

Project Description

CVWD and the USACE are cooperating on a flood control project to provide flood protection measures within the Thousand Palms area of the Whitewater River Basin. The area is located in Riverside County unincorporated areas. The project consists of constructing levees approximately midway between Interstate 10 and the Indio Hills. The levees would protect the Thousand Palms area from flooding and convey stormwater to the Coachella Valley fringe-toed lizard preserve and then on to the existing flood control features at Del Webb Sun City. The preferred alternative of the feasibility study proposes four levees and a 550-acre floodway that would protect developed and undeveloped areas from flood flows from the Indio Hills, while allowing sediment carried by flood flows to be deposited in the wind corridor or directly in the Coachella Valley Preserve.

Project's Environmental Analysis Status and Anticipated Impacts

Environmental documents for this project have been completed. The USACE started final design in the fall of 2001. CVWD estimates a 2-year design period, followed by a 2-year construction period. The project is expected to be operational in late 2005 to early 2006, (personal communication, D. Farris CVWD 2002).

Cumulative Impacts with the Proposed Project

The Proposed Project would result in significant impacts to biological resources in the Salton Sea and the Coachella Valley. The Whitewater River Basin Flood Control Project would provide significant beneficial impacts for the northern portion of the Coachella Valley. Because the flood control project would have beneficial impacts to biological resources impacted by the Proposed Project, no significant cumulative impacts would occur.

4.2.19 Flood Mitigation and Riverine Restoration Program, Whitewater River/CVSC

Project Description

CVWD and USACE are cooperating an another flood control project to reduce flood flow elevations and develop a wetland habitat at the delta where the CVSC flows into the Salton Sea. This project is a high priority project within President Clinton's Challenge 21 program. Given political changes at the federal level, the Challenge 21 program may not reach fruition, (personal communication D. Farris CVWD 2002).

Project's Environmental Analysis Status and Anticipated Impacts

No environmental compliance documentation has begun. This project would provide a beneficial reduction in flow velocity and decreased scour in the CVSC. It also would have a beneficial impact to biological resources by increasing wetland habitat.

Cumulative Impacts with the Proposed Project

The Proposed Project would have significant impacts to biological resources of the Coachella Valley and Salton Sea, although these would be reduced to less than significant by the implementation of mitigation measures identified in this PEIR. If the flood control project were implemented, it would be expected to create a beneficial impact to biological resources through the creation of wetland habitat at the Salton Sea. Because the flood control project would benefit resources impacted by the Proposed Project, no significant cumulative impacts would occur.

4.2.20 Peninsular Bighorn Sheep Recovery Plan

Project Description

In December 1999, the Service released for public review a *Draft Recovery Plan for the Bighorn Sheep in the Peninsular Range* (USFWS 1999). The Draft Recovery Plan provides background on the species and its status, the bases for plan development, and the proposed plan itself. Significant elements of the plan are to protect habitat, including critical habitat, and promote

increase in population abundance. The plan also includes fencing to exclude sheep from areas where they may become habituated to and dependent upon artificial sources of food and water.

Project's Environmental Analysis Status and Anticipated Impacts

The recovery plan and the critical habitat designation are expected to have beneficial impacts by maintaining bighorn sheep habitat and enhancing the population.

Cumulative Impacts with the Proposed Project

There is a potential that some facilities associated with the Proposed Project, such as recharge basins, may encroach upon peninsular big horn sheep habitat, which could be a significant but mitigable impact. The Recovery Plan would have beneficial impacts to peninsular bighorn sheep habitat and populations; thus, no significant cumulative impacts would occur.

4.2.21 Mission Creek Subbasin Recharge Project

Project Description

The principal water supply of the City of Desert Hot Springs and nearby communities is groundwater pumped from the Mission Creek Subbasin. As this area has developed, groundwater production has increased and groundwater levels have declined. In order to address the decline in groundwater level, CVWD, DWA, and the local water district have evaluated recharging 10 KAFY of water from the CRA in exchange with MWD for a portion of CVWD's and DWA's SWP water. Recharge basins are under construction by DWA along Mission Creek, which is northwest of Desert Hot Springs. Water would be delivered via a turnout from the CRA that was recently constructed by MWD. Approximately 100 acres of recharge basins are being constructed on about 160 acres of land owned by DWA.

Project's Environmental Analysis Status and Anticipated Impacts

The impacts of this project were evaluated in two separate EIRs and a site-specific Negative Declaration (DWA 1989), which determined that the project would have no significant environmental impacts. In addition, site-specific surveys for biological and cultural resources concluded that the site contains no potentially sensitive resources. DWA adopted a Notice of Exemption in June 1998 (DWA 1998).

Cumulative Impacts with the Proposed Project

The Proposed Project would create significant impacts to biological, cultural, and other resources of the Coachella Valley, but they would be mitigable to less than significant with the adoption of mitigation measures identified in this PEIR. Significant impacts to environmental resources were not identified in the environmental documentation for the Mission Creek project. Thus, no significant cumulative impacts would occur. The Proposed Project and the Mission Creek project would both decrease groundwater overdraft conditions within the Coachella Valley, although in separate groundwater basins.

4.2.22 Caltrans: Route 86 Expressway Mitigation

Project Description

Caltrans is completing three mitigation activities along Route 86 in Riverside County. Route 86 runs north to south from in the Coachella and Imperial valleys, west of the Salton Sea. Reconstruction of 18.5 acres of wetlands and creation of 20 acres of desert pupfish habitat has been completed. Restoration of 112 acres of alkali sink scrub habitat is to be completed within 2 to 3 years.

Project's Environmental Analysis Status and Anticipated Impacts

This project is environmental mitigation and would have long-term beneficial impacts.

Cumulative Impacts with the Proposed Project

The Proposed Project would significantly impact biological resources of the Coachella and Imperial valleys, but these impacts would be mitigated to less than significant through the implementation of measures identified in this PEIR. The Caltrans mitigation project would have beneficial impacts to biological resources; thus, no significant cumulative impacts would occur.

4.2.23 Te'Ayawa Energy Center

Project Description

The Torres Martinez Band of Desert Cahuilla Indians has concluded negotiations for construction of a $275-million Te'Ayawa Energy Center, a 600-MW natural gas-fired power plant on leased reservation land near Mecca. The Calpine Corporation of San Jose, California, is developing the plant. Te'Ayawa Energy Center is negotiating with Reclamation and CVWD for use of Coachella Canal water for cooling the facility. The plant would pump up to 4,000 AFY from the Coachella Canal, and additional groundwater would be pumped for potable water supply. The project would use a "zero liquid discharge" system for treatment of process wastewater, including cooling tower blowdown. Water cycled in a cooling tower would be concentrated into a sludge-like consistency and evaporated from on-site ponds. The resulting mineral concentration that builds up in the ponds would be stored, dried, and eventually hauled offsite for disposal at an appropriate landfill.

Project's Environmental Analysis Status and Anticipated Impacts

A NOI was issued for the project in June 2000 and a revised NOI was issued in January 2001. A Notice of Availability for the draft EIS/EIR was published in the *Federal Register* in October, 2001. In January 2002, the project proponent placed this project on indefinite hold. The Draft EIS/EIR states that the Proposed Project would not result in any significant unavoidable adverse impacts. Potentially significant impacts, including impacts to geologic hazards, water resources, biological resources, traffic and transportation, noise, air quality, hazardous materials, hazardous waste, and visual resources would be reduced to less than significant impacts through application of mitigation measures.

Cumulative Impacts with the Proposed Project

The Te'Ayawa Energy Center project would use Coachella Canal water and pump groundwater. Increased pumping would increase the existing overdraft in the Lower Coachella Valley. The Proposed Project would decrease the groundwater overdraft, and thus would not contribute to a significant cumulative impact to groundwater.

The Proposed Project would adversely impact the water quality of agricultural drains and the Salton Sea. Under the Te'Ayawa Energy Center project, no water would be discharged into the CVSC or agricultural drain system, and no additional inflows to the Salton Sea would be attributable to this project. Thus, no cumulative water quality impacts would occur. Potentially significant impacts could, however, result from the construction of the energy center and Proposed Project facilities, such as recharge basins, pipelines, and pumping stations. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. Mitigation measures also were identified in the Energy Center EIS/EIR that would reduce impacts of this project. If the energy center and Coachella Canal Lining Project were constructed at the same time, however, short-term impacts to air quality could be cumulatively significant and unavoidable.

4.2.24 Coachella Valley/Salton Sea Non-Point Source Project

Project Description

The Whitewater River/CVSC carries agricultural drainage, treated municipal effluent, and runoff to the Salton Sea. The project seeks to address non-point source pollution entering the Salton Sea and Whitewater River/CVSC. The lead agency for the project is the Morongo Consortium of Coachella Valley Tribal Bands. The project includes development and implementation of groundwater protection measures; development of a cooperative water quality monitoring effort; construction of wetlands test cells for treating agricultural drainage water with aquatic vegetation just upstream of the Salton Sea; implementation of BMPs for controlling non-point source pollution; and development of a public awareness and participation program.

Project's Environmental Analysis Status and Anticipated Impacts

The project would include construction of wetlands, development of a water quality monitoring effort, and implementation of groundwater protection measures. Wetlands may remove up to 80 to 90 percent of the nitrogen and up to 30 to 40 percent of the phosphorus from CVSC flows. This would have a beneficial impact on the water quality and nutrient loading of the Salton Sea. Construction of wetlands and implementation of BMPs may have minor, short-term localized impacts and additional water use due to evapotranspiration in the wetlands. Minor adverse impacts to water quantity and beneficial impacts to water quality would be expected from the implementation of this project.

Cumulative Impacts with the Proposed Project

The Proposed Project would have adverse impacts on the water quality of the Salton Sea. The Coachella Valley/Salton Sea Non-Point Source Project would have a beneficial impact to the Sea's water quality. Because the latter project would have a beneficial impact, no significant cumulative impact would occur.

4.2.25 Cabazon Resource Recovery Park

Project Description

The Cabazon Band of Mission Indians plans to develop commercial waste management and industrial facilities in the Mecca area of the Lower Coachella Valley. The site covers approximately 590 usable acres of tribal lands, of which approximately 471 acres are undeveloped. The proposed facilities would recycle, reuse, or transform a variety of waste materials. Proposed projects include metals reclamation, gasification, used oil refinery, reclaimed glass, paper de-inking and other industries that recycle, reuse or transform waste. The project may also include infrastructure such as railways to support the waste management activities in the area.

Project's Environmental Analysis Status and Anticipated Impacts

The Bureau of Indian Affairs released a draft EIS in June 1998 and a final EIS in February 2000. The project was approved in December 2000. Most impacts were described as short-term, localized construction impacts. Due to the nature of the project, there is a potential for contamination of surface and groundwater supplies due to hazardous material spills, although this has been addressed in the final EIS for the project. At full build-out, the projects would use approximately 1,200 AFY of groundwater.

Cumulative Impacts with the Proposed Project

It is anticipated that this project at full build-out may have a minor adverse impact to groundwater quantity in the Lower Coachella Valley. Implementation of the Proposed Project would help to correct the groundwater overdraft in the Coachella Valley, thus reducing the potential groundwater impact of the Cabazon Resource Recovery Park. Since the Proposed Project would have a beneficial impact to groundwater quantity, no significant cumulative impacts to this resource would occur.

Both the Proposed Project and the Cabazon Resources Recovery Park could result in significant impacts from construction. If the recovery park and Coachella Canal Lining Project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. Mitigation measures identified in the Cabazon Resources Recovery Park EIS/EIR also would reduce the potential for cumulative impacts.

4.2.26 Cabazon Power Plant

Project Description

Southern Energy, Inc. (SEI) is proposing to build a 500-MW natural gas-fired generation facility on the Cabazon Indian Reservation. SEI wants to purchase approximately 5,000 AFY of Coachella Canal water for use at the facility, primarily for cooling. The plant proposes to discharge spent cooling water to the Whitewater River/CVSC. The proposed Cabazon Power Plant is not adjacent to the CVSC. In order for spent cooling water to get to the CVSC it would likely need to use the drainage system and thus have impacts on drain water quality.

Project's Environmental Analysis Status and Anticipated Impacts

SEI is currently in discussions with the RWQCB to determine the feasibility and requirements for this plan. The date of anticipated first operation is unknown (IID and USBR 2002). No environmental documentation is currently available to review the potential cumulative effects of the project. As with the Te'Awaya Energy Center project, the discharge of cooling tower blowdown is assumed to be one-fifth of the make-up water needs, or about 1,000 AFY. Assuming year-round continuous flow, this would add up to 1.4 cfs, or less than 1 percent, to the projected 2035 channel flow. The cumulative increase is less than significant. The quality of the discharged cooling water is not known. Its salinity depends on the cooling process used; that is, whether it is passed directly through or recycled multiple times before blowdown. If the salinity substantially exceeds that in the CVSC, there would be an adverse impact to water quality in the CVSC. If salinity were substantially lower than the levels in the CVSC, then the effect would be beneficial since it would dilute the salts.

Cumulative Impacts with the Proposed Project

The Proposed Project would not result in significant water quality impacts to the CVSC. Because of the lack of environmental documentation on the power plant project, the significance of cumulative impacts to water quality is speculative. The power plant project's impacts could either be adverse or beneficial.

If the power plant and Coachella Canal Lining Project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

4.2.27 Hayfield Groundwater Storage Program

Project Description

The Hayfield Groundwater Storage Program is described Chapter 1, section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

The environmental documentation for this project was approved by MWD's Board of Directors in April 1999, followed by approval of the project itself. The feasibility study and demonstration project are ongoing. Construction is scheduled to begin in 2004 and program operation is scheduled to commence by the year 2005. The project would result in short-term construction related impacts to biological resources, hazardous waste, soils (potential erosion impact), noise, and air quality. In addition, the project would result in a minor loss of open space due to facility construction.

Cumulative Impact with the Proposed Project

The Hayfield Groundwater Storage Program is an MWD-sponsored project that would conjunctively store Colorado River water delivered through existing MWD facilities. It is one of the supplemental water management projects envisioned and described in the draft California Plan. Water would be conjunctively managed in accordance with the terms of the Law of the River without further changes to environmental conditions. The Hayfield Groundwater Storage Program and the Proposed Project are not geographically related; therefore, no cumulative impacts to local or regional environmental resources would occur.

4.2.28 Cadiz Groundwater Storage and Dry-Year Supply Program

Project Description

Cadiz Groundwater Storage and Dry-Year Supply Program is described Chapter 1, section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

A Draft EIR/EIS was prepared by MWD and BLM for the Cadiz Groundwater Storage and Dry-Year Supply Program in November 1999. Federal ESA Section 7 consultation with the Service and other permitting processes are underway. A Supplemental Draft EIR/EIS was prepared to address a modification to the project description for the Cadiz Project. A Final EIR/EIS was published in September 2001. Project approval is pending certification of the Final EIR/EIS.

According to the Final EIR/EIS on the Cadiz Groundwater Storage and Dry-Year Supply Program (MWD and BLM 2001), the project would result in short-term construction-related impacts to biological resources, air quality, hazardous materials, and paleontological resources in the study area of the project. It could also result in potential impact to the groundwater aquifer due to pumping of higher TDS Colorado River water.

Cumulative Impacts with the Proposed Project

The Cadiz Groundwater Storage and Dry-Year Supply Program would conjunctively store Colorado River water delivered through existing MWD facilities and new local facilities in the Mojave Desert near Danby, California. It is one of the supplemental water management projects envisioned and described within the draft California Plan. Under the Cadiz project, water would be conjunctively managed and stored consistent with the Law of the River. The

Cadiz project and the Proposed Project are not geographically related; therefore, no cumulative impacts to local or regional environmental resources would occur.

4.2.29 Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Valley

Project Description

The Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Valley project is described in section 1.5.

Project's Environmental Analysis Status and Anticipated Impacts

An NOP for the Land Management, Crop Rotation, and Water Supply Program was published on October 29, 2001. An EIR is currently under preparation and is expected to be released in early 2002. It is anticipated that there would be a reduction in median water surface elevation from the change in point of diversion of up to 111 KAF between Parker Dam and the Palo Verde Diversion Dam. This could potentially result in a minor loss of marsh and riparian habitat along this portion of the River. It is also anticipated that there would be a reduction in agricultural productivity, although no conversion of existing farmland to other non-agricultural uses would occur. Land fallowing could cause air quality impacts from fugitive dust emissions.

Cumulative Impacts with the Proposed Project

The Proposed Project and the Land Management, Crop Rotation, and Water Supply Program together would slightly lower the Colorado River median groundwater and water surface elevation between Parker Dam and the Palo Verde Diversion Dam. This would not significantly affect water resources, but could result in a significant cumulative impact to biological resources. It is anticipated that most of the potential cumulative impacts to biological resources would be attributable to the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. It is anticipated that mitigation measures also would be developed as part of the environmental documentation for the Land Management, Crop Rotation, and Water Supply Program.

Land fallowing in the IID service area as part of the Proposed Project and the acceleration and increase in the decline of the water elevation of the Salton Sea could cause significant air quality impacts from fugitive dust emissions. Land fallowing as part of the Land Management, Crop Rotation, and Water Supply Program also could cause fugitive dust emissions. The Palo Verde Valley is separated by a distance of approximately 40 miles from the IID service area and the Salton Sea, and a significant cumulative impact would not occur.

4.3 SUMMARY OF CUMULATIVE IMPACTS BY RESOURCE

This section summarizes the significant cumulative impacts that would occur to each resource considered in this PEIR. Impacts that were described as speculative in section 4.2 are not included in the following discussion.

4.3.1 Water Resources

The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to water quality along the lower Colorado River. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. Such practices include, but are not limited to, the installation of temporary berms and sedimentation traps, such as silt fencing, straw bales, and sand bags, revegetating disturbed areas immediately after grading, and conveying surface runoff in a manner that minimizes the potential for erosion and sedimentation. Geotextile binding fabrics should be used if necessary to hold slope soils until vegetation is established. With mitigation, these potential short-term impacts would be reduced to less-than-significant.

4.3.2 Biological Resources

The Proposed Project and the Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Valley together would slightly lower the Colorado River median water surface elevation between Parker Dam and the Palo Verde Diversion Dam. This would result in a potentially significant cumulative impact to biological resources. Depending on the details of individual agreements for offstream storage, cumulative impacts to biological resources along the lower Colorado River could be significant. It is anticipated that most of the potential cumulative impacts to biological resources would be attributable to the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impact to a less-than-significant level. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impact. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

The construction of conservation/restoration actions associated with the MSCP and biological mitigation measures described in section 3.2 could result in short-term impacts to biological resources along the lower Colorado River. These impacts could be cumulatively significant if these actions occurred at the same general time and location. These impacts would be mitigable through standard construction practices that would be developed once specific sites were selected. With mitigation, these potential short-term impacts would be reduced to less-than-significant.

The North Baja Powerline Project could result in a slight increase in the loss of riparian and marsh habitat in the IID service area and so has the potential for a significant cumulative impact in combination with the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

Implementation of the CVWMP would result in potential localized impacts to areas in the Coachella Valley where facilities may be located. These areas of disturbance may be within the same general locations as those facilities associated with the Proposed Project components of the CVWMP. Impacts to biological resources could be cumulatively significant. Mitigation

measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

4.3.3 Geology, Soils, and Minerals

Significant impacts to geology and soils could result from construction of Proposed Project facilities in the IID and CVWD service areas. To the extent that construction of projects such as the CVWMP, Te'Ayawa Energy Center, Cabazon Power Plant occurred at the same time and/or in the same general location as the Proposed Project, impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

4.3.4 Land Use and Planning

No significant cumulative impacts to land use and planning would result from implementation of the Proposed Project and related projects.

4.3.5 Agricultural Resources

The Proposed Project could result in the conversion of Important Farmland to non-agricultural use, as described in section 3.5. This is considered a significant and potentially unavoidable impact. Depending on the sites that are selected for restoration/conservation actions, the MSCP also could result in such a conversion, as could the implementation of the Proposed Project's biological mitigation measures along the Colorado River, and the North Baja Powerline Project. If such conversion occurred, it would be a significant and potentially unavoidable cumulative impact to agricultural resources in Southern California.

4.3.6 Recreational Resources

No significant cumulative impacts to recreational resources would result from implementation of the Proposed Project and related projects.

4.3.7 Air Quality

Construction of Proposed Project facilities in the IID and CVWD service areas would create short-term significant air quality impacts. To the extent that construction of projects such as the CVWMP, Te'Ayawa Energy Center, and Cabazon Power Plant occurred at the same time and/or in the same general as construction associated with the Proposed Project, air quality could be cumulatively significant. If these projects and the Coachella Canal lining project were constructed at the same time, short-term impacts to air quality could be cumulatively significant and unavoidable. With the exception of the potential air quality impact described above, mitigation measures associated with the Proposed Project would reduce the potentially

significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

4.3.8 Cultural Resources

Impacts to cultural resources from the Proposed Project could result from construction in the IID and CVWD service areas and at the Salton Sea. Impacts to cultural resources also could result from construction of related projects in the IID and CVWD service areas. Impacts to cultural resources along the lower Colorado River could result from ground disturbance required to implement the conservation/restoration actions of the MSCP and the Proposed Project's biological mitigation measures. Impacts could be cumulatively significant. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

4.3.9 Noise

The Proposed Project could result in short-term noise impacts from construction and long-term impacts from the operation of pumps in proximity to noise-sensitive receptors. Related construction projects also could result in short-term noise impacts. A significant cumulative impact could occur if construction occurred in the same general area at the same time. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts. It is anticipated that mitigation measures also would be developed for related projects, which would further reduce impacts.

4.3.10 Aesthetics

The Proposed Project could cause significant aesthetic impacts should facilities in the CVWD service area be constructed in visually sensitive areas. Significant visual impacts are not expected to result from the other related projects, but mitigation measures associated with the Proposed Project would reduce any potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

4.3.11 Hazards and Hazardous Materials

The Proposed Project would result in a significant impact to hazards and hazardous materials if construction temporarily interfered with an adopted emergency response plan or occurred in proximity to evacuation or other emergency routes. It also could result in a significant impact if construction occurred on sites containing hazardous materials. Significant cumulative impacts could occur to the extent that other related projects caused similar impacts. Mitigation measures associated with the Proposed Project would reduce the potentially significant

cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

4.3.12 Public Services, Utilities, and Transportation

Construction associated with the Proposed Project in the IID and CVWD service areas could cause temporary impacts to transportation and emergency access to facilities such as schools. Significant cumulative impacts could occur if construction of related projects occurred in the same general location and at the same time as the Proposed Project. Mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels. No additional mitigation for the Proposed Project other than that identified in this PEIR would be necessary to address the cumulative impacts.

4.3.13 Population, Housing, and Employment

No significant cumulative impacts to population, housing, or employment would result from implementation of the Proposed Project and related projects.

5.0 ALTERNATIVES TO THE PROPOSED PROJECT

5.1 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

An EIR must describe a range of reasonable alternatives to a Proposed Project that could would feasibly attain most of the basic project objectives, but would avoid or substantially lessen any of the Proposed Project's significant effects. Additionally, a no-project alternative must be analyzed. An EIR must evaluate the comparative merits of the alternatives (State CEQA Guidelines § 15126.6[a], [d] and[e]). CEQA also requires that an EIR identify the environmentally superior alternative.

An EIR should briefly describe the rationale for selecting alternatives to be evaluated and the rationale for rejecting other alternatives as infeasible. Among the factors that may be used to eliminate alternatives from consideration are failure to meet most of the basic objectives, infeasibility, or inability to avoid significant impacts (State CEQA Guidelines § 15126.6[c]). "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (State CEQA Guidelines § 15364).

Section 5.2 describes the potential alternatives that initially were considered. Section 5.3 identifies the screening criteria used to evaluate alternatives and analyzes whether the potential alternatives meet these criteria. Section 5.4 discusses the environmental impacts of the alternatives carried forward for analysis in the PEIR. Section 5.5 describes the environmentally superior alternative.

5.2 POTENTIAL ALTERNATIVES

Listed below are potential alternatives considered by the co-lead agencies.

5.2.1 Alternative 1: No Project

Under Alternative 1, the Department of Interior would enforce the Law of the River under its existing terms and require California to divert no more than 4.4 MAF during normal years. Based on the existing priority system, the diversions to MWD would be reduced from the baseline condition of approximately 1.25 MAFY to approximately 660 KAFY. Net diversions for Priority 1, 2, and 3 users (including CVWD and IID) would be limited to 3.85 MAFY, less the amount of water made available under the 1989 IID/MWD Agreement described in section 1.5. There would also be no increased use of Colorado River water in the CVWD service area, resulting in continued dependence on groundwater resources.

MWD and SDWCA would be expected to make up the shortfall of approximately 650 KAFY in Colorado River water supplies through other water management methods or supply options. These could include increased recycling and conservation, and other methods including desalination of ocean water, and use of other supply options.

5.2.2 Alternative 2: Implement the Proposed Project while Minimizing Changes in Points of Diversion

The following alternatives would result in the implementation of the Proposed Project while minimizing changes to the current diversion points and amounts on the Colorado River. Under Alternative 2, Colorado River flows (and the resultant median water surface elevation) between Parker and Imperial dams would remain largely unchanged. Under the Proposed Project, flows in that portion of the River would be reduced, and the water surface elevation would be slightly reduced. Therefore, Alternative 2 would reduce the anticipated project-related adverse impacts on Colorado River fish, wildlife, and wetland resources.

Alternative 2A: Connect the Coachella Canal to the CRA

Alternative 2A would connect the Coachella Canal to the CRA by adding a new pipeline and associated facilities between these two canals west of the City of Coachella. This option would retain the current diversion points and amounts on the Colorado River but would allow water to be transferred to MWD and SDCWA to be diverted at Imperial Dam rather than at Parker Dam. The water ultimately would be delivered into the CRA for use in the MWD or SDCWA service areas and to implement the San Luis Rey Indian Water Rights Settlement Act. Therefore, there would be no reduction in flow or median water surface elevation of the Colorado River between Parker and Imperial dams, as would occur if the Proposed Project were implemented. Biological impacts along the Colorado River of the Proposed Project associated with the change in point of diversion would be avoided.

Alternative 2B: Connect the All American Canal to the SDCWA System

Alternative 2B would connect the All American Canal to the SDCWA system via a new pipeline between the western end of the All American Canal to the San Vincente Reservoir within Imperial and San Diego counties. This option would allow implementation of the IID/SDCWA Water Conservation and Transfer Agreement, as amended by the QSA. Up to 200 KAFY would be diverted at Imperial Dam for use by SDCWA, rather than at Parker Dam as would occur under the Proposed Project. Therefore, the maximum anticipated reduction in river flow between Parker and Imperial dams would be 183 KAFY. Implementation of this alternative would substantially reduce the potential impacts of the Proposed Project along the Colorado River.

5.2.3 Alternative 3: Reduce the IID/SDCWA Water Conservation and Transfer to 230 KAFY

Alternative 3 includes partial implementation of the Proposed Project by reducing the level of conservation and transfer to the minimum allowable under the IID/SDCWA Water Conservation and Transfer Agreement. The purpose of this alternative is to substantially lessen the biological, recreational, air quality, and water impacts of the Proposed Project on the Salton Sea, IID service area, and the Colorado River. Under this alternative, 130 KAFY rather than 200 KAFY would be conserved via on-farm conservation methods and transferred to SDCWA. The first and second 50 KAFY components of the Proposed Project could be satisfied by a mixture of conservation measures, including on-farm irrigation system improvements, delivery system improvements, and/or fallowing. The remainder of the Proposed Project would be

implemented as proposed. Therefore, the maximum anticipated reduction in flows of the Colorado River between Parker and Imperial dams would be 318 KAFY. This alternative would be expected to reduce inflows to the Salton Sea up to approximately 230 KAFY, or 21 percent from baseline conditions.

5.2.4 Alternative 4: Proposed Project Implementation with Replacement Water

This alternative was designed to avoid impacts to piscivorous birds at the Salton Sea resulting from a reduction in inflow volume, as contemplated under the Proposed Project. Under this alternative, water conserved by additional actions within the IID service area would offset reduced inflows to the Salton Sea resulting from water conservation and transfer actions by IID. Replacement water would be made available for the period necessary to avoid impacts of the Proposed Project on piscivorous birds as a result of the loss of the food source of these birds or to avoid the recreational impact of the loss of the Salton Sea sport fishery.

5.2.5 Alternative 5: Increased Water Conservation by CVWD, MWD, and SDCWA

This alternative was developed to avoid impacts related to the proposed conservation and transfer of Colorado River water to CVWD, MWD, and SDCWA. Under this alternative, demands within the CVWD, MWD, and SDCWA service areas that would have been supplied by the Proposed Project would be offset through a reduction in demands achieved by increased water conservation. Under this alternative, there would be no reduction in flow of the Colorado River between Parker and Imperial dams and no change in inflow to the Salton Sea as would occur upon implementation of the Proposed Project.

5.2.6 Alternative 6: Alternative Water Supplies for CVWD, MWD, and SDCWA

This alternative was developed to avoid or substantially lessen impacts related to the proposed conservation and transfer of Colorado River water to CVWD, MWD, and SDCWA. Under this alternative, water demands within the CVWD, MWD, and SDCWA service areas that would have been supplied by the Proposed Project would be met through the development of alternative water sources. Alternatives are included to highlight impacts that would occur under this scenario. Potential sources include additional water transfers, increased water recycling, and desalination plants.

5.2.7 Alternative 7: Alternatives to Reduce Groundwater Salinity within the CVWD Service Area

Two potential alternatives were identified to reduce the significant impacts from the increase of TDS of lower aquifer groundwater in the CVWD service area. These are described below.

Alternative 7a: Direct Import of SWP Water to the CVWD Service Area

This alternative would involve the direct importation of SWP water into the CVWD service area via a pipeline from the Devil Canyon Afterbay in San Bernardino to the CVWD service area. This pipeline would likely be constructed through San Gorgonio Pass to the Upper Coachella Valley. This alternative would add lower TDS water to the groundwater aquifer, which would somewhat reduce the impact to groundwater quality.

Alternative 7b: Desalination of a Portion of Colorado River Water

Alternative 7b would involve the desalination of a portion of the Colorado River water imported into CVWD. This would be accomplished through the construction of one or more desalination plants to reduce the overall TDS.

5.3 SCREENING OF POTENTIAL ALTERNATIVES

5.3.1 Screening Criteria

The following criteria were used to screen the alternatives:

- ability to meet most basic project objectives (see section 2.2), which may be paraphrased as the following:
  - *consensual agreement*: settle by consensual agreement disputes regarding Colorado River water use;
  - *water distribution plan:* establish a plan for future distribution of Colorado River water among the co-lead agencies;
  - *certainty and reliability*: maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;
  - *conservation and transfer terms*: agree on terms and conditions for Colorado River water conservation and transfers; and
  - *conservation incentives*: provide incentives for conserving Colorado River water.
- feasibility: economic, environmental, legal, social, and technological.
- ability to avoid or substantially lessen significant environmental impacts from the implementation of the Proposed Project.

5.3.2 Screening of Alternatives

Alternative 1 (No Project): The no project alternative does not meet basic project objectives, but has been retained for further evaluation as required by CEQA.

Alternative 2 (Implement the Proposed Project while Minimizing Changes in Points of Diversion): Both Alternative 2A and Alternative 2B meet most of the basic project objectives and could lessen biological impacts on the Colorado River. Both will be evaluated further.

Alternative 3 (Reduce the IID/SDCWA Water Conservation and Transfer Agreement to 230 KAFY): Alternative 3 will be evaluated in detail because it meets many of the basic project objectives and would lessen biological impacts on the Colorado River and overall impacts to the Salton Sea.

Alternative 4 (Proposed Project Implementation with Replacement Water): Alternative 4 will be evaluated in detail because it meets the project objectives and could lessen overall impacts to piscivorous birds at the Salton Sea. Alternative 4 would increase the flow of drain water into the Salton Sea when compared to the Proposed Project's implementation schedule. This could lessen impacts to the Salton Sea by providing conserved drain water to the Salton Sea that would be produced by accelerated implementation of conservation measures within the IID service area during a prescribed period of time.

Alternatives 5 and 6 (Increased Water Conservation by CVWD, MWD, and SDCWA; Alternative Water Supplies for CVWD, MWD, and SDCWA): These alternatives have been rejected because they do not meet the following basic objectives of the Proposed Project:

- *consensual agreement*: settle by consensual agreement disputes regarding Colorado River water use;
- *water distribution plan*: establish a plan for future distribution of Colorado River water among the co-lead agencies; and
- *certainty and reliability*: ensure certainty and reliability of Colorado River water supplies among the co-lead agencies.

Independent of the Proposed Project, CVWD, IID, MWD, and SDCWA would continue their ongoing programs to promote water conservation and, with the exception of IID, attempt to acquire additional water supplies. Water management plans of these agencies contemplate substantial reliance on water conservation and supply augmentation. While these agencies have made a significant commitment to meet these goals, these water sources alone would not meet projected demands.

Alternatives 7a and 7b have been determined to be infeasible. Importation of SWP water to CVWD under Alternative 7a would not be feasible from a cost standpoint. It would likely increase the cost of implementing the CVWMP by about 50 percent. Furthermore, it would not substantially reduce the TDS level in the Lower Basin, which is where the significant water quality impacts would occur. There would also be substantial environmental impacts associated with building an approximately 70-mile pipeline. Desalination under Alternative 7b was also found to be infeasible. Even partial desalination of Colorado River water would double the cost of implementing the CVWMP. There would be substantial energy costs and issues involved with brine disposal.

5.4 EVALUATION OF IMPACTS OF ALTERNATIVES

The environmental impacts of the alternatives determined to be within the reasonable range are discussed below. Table 5.4-1 summarizes the impacts of each alternative compared to the Proposed Project.

Table 5.4-1. Alternatives Comparison Summary

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Resource/ Location	Alternative 1: *No Action*	Alternative 2A: *Full Implementation with Coachella Canal Connection to the CRA*	Alternative 2B: *Full Implementation with All American Canal Connection to the SDCWA*	Alternative 3: *Partial Water Conservation and Transfer of 230 KAFY*	Alternative 4: *Full Implementation with Replacement Water.*
WATER RESOURCES					
IID	--	=	=	--	--
CVWD	++	=	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	=	=	=
Colorado River	--	--	--	--	=
Salton Sea	--	=	=	--	--
BIOLOGICAL RESOURCES					
IID	--	=	=	--	--
CVWD	=	+	=	=	=
MWD	+	=	=	=	=
SDCWA	+	=	+	=	=
Colorado River	--	--	--	--	=
Salton Sea	--	=	=	--	-- --
GEOLOGY, SOILS AND MINERALS					
IID	=	=	=	=	=
CVWD	=	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
LAND USE AND PLANNING					
IID	=	=	+	--	=
CVWD	=	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
AGRICULTURAL RESOURCES					
IID	--	=	+	--	+
CVWD	=	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	=	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	++

Table 5.4-1. Alternatives Comparison Summary

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Resource/ Location	Alternative 1: *No Action*	Alternative 2A: *Full Implementation with Coachella Canal Connection to the CRA*	Alternative 2B: *Full Implementation with All American Canal Connection to the SDCWA*	Alternative 3: *Partial Water Conservation and Transfer of 230 KAFY*	Alternative 4: *Full Implementation with Replacement Water.*
RECREATIONAL RESOURCES					
IID	=	=	+	=	--
CVWD	=	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	--	=	=	--	--
AIR QUALITY					
IID	+	=	+	=	=
CVWD	=	+	=	=	=
MWD	+	=	=	=	=
SDCWA	+	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
CULTURAL RESOURCES					
IID	--	=	+	--	=
CVWD	--	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
NOISE					
IID	--	=	+	=	=
CVWD	--	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
AESTHETICS					
IID	=	=	+	=	=
CVWD	=	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	--	=	=	--	--

Table 5.4-1. Alternatives Comparison Summary

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Resource/ Location	Alternative 1: *No Action*	Alternative 2A: *Full Implementation with Coachella Canal Connection to the CRA*	Alternative 2B: *Full Implementation with All American Canal Connection to the SDCWA*	Alternative 3: *Partial Water Conservation and Transfer of 230 KAFY*	Alternative 4: *Full Implementation with Replacement Water.*
HAZARD AND HAZARDOUS MATERIALS					
IID	--	=	+	=	=
CVWD	--	+	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	+	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
PUBLIC SERVICES, UTILITIES AND TRANSPORTATION					
IID	=	=	+	=	=
CVWD	=	+	=	=	=
MWD	+	=	=	=	=
SDCWA	+	=	+	+	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=
POPULATION, HOUSING AND EMPLOYMENT					
IID	=	=	=	=	=
CVWD	=	=	=	=	=
MWD	=	=	=	=	=
SDCWA	=	=	=	=	=
Colorado River	=	=	=	=	=
Salton Sea	=	=	=	=	=

Symbol Key
(=) - impacts generally equal to those of the Proposed Project
(+) - impacts greater than those of the Proposed Project
(-) - impacts less than those of the Proposed Project
(++) - impacts much greater than those of the Proposed Project
(--) - impacts much less than those of the Proposed Project

Alternative 1: No Project

Description of Alternative

Under Alternative 1, the Proposed Project would not be implemented and the related conservation measures and acquisition of additional water supplies would not occur. MWD diversions of Colorado River water would be limited to 660 KAF in a normal year, reduced from the historic diversions of approximately 1.25 MAFY. MWD and SDCWA would evaluate other water management actions such as desalination of seawater, recycling, and conservation that would not involve additional diversions from the Colorado River. MWD would continue to rely on its SWP entitlement and the delivery of SWP water to meet water demands in its service area.

Anticipated Impacts of Alternative

Under Alternative 1, the beneficial impacts of the Proposed Project from reduced groundwater overdraft in the Coachella Valley would not occur. Water conserved and transferred as part of the All American and Coachella Canal lining projects, included as part of the Proposed Project, also would not occur. Significant unavoidable impacts in the CVWD and/or IID service areas would not occur, including temporary construction-related impacts to air quality from increases in PM_{10} during construction of the Coachella Canal lining; conversion of agricultural land to non-agricultural use in the IID service area; and water quality impacts to the Alamo River, IID and CVWD Drains, and CVWD Lower Valley upper aquifer groundwater. Significant but mitigable impacts to biological resources, geological resources, water quality, recreational resources, air quality, cultural resources, noise, agricultural resources, aesthetics, hazards, and transportation in the IID and/or CVWD service areas also would not occur.

Reduction in median water flows in the Colorado River from Parker to Imperial dams due to the implementation of the Proposed Project would not occur, nor would the resulting potential significant impacts to biological resources of the lower Colorado River.

Alternative 1 would avoid the acceleration of impacts to air quality, biological resources, cultural resources, recreational resources, and aesthetics of the Salton Sea that would occur under the Proposed Project. Future impacts to these Salton Sea resources would occur regardless of whether the Proposed Project is implemented, although at a slower rate. Less shoreline would be exposed under Alternative 1 so that impacts directly associated with the decline in water surface elevation would be somewhat lessened. (Table 3.0-1 provides a comparison between the changes to water surface elevation, surface area, and salinity that would occur under the Future Baseline [i.e., no project conditions] and Proposed Project.) Under Alternative 1, the interruption of the Salton Sea ecosystem, including reproductive success of introduced fish species, is predicted to occur within the next 20 years. This major change in ecosystem function is projected to occur sooner (estimated at approximately 11 years) if the Proposed Project were implemented. Impacts to piscivorous birds, such as pelicans, foraging at the Salton Sea would occur within a similar timeframe. Significant impacts to Salton Sea recreation (e.g., sport fishing and bird watching) from reduced fish populations would be similarly delayed. Under Alternative 1, no mitigation measures would be implemented to reduce the environmental impacts associated with declining water surface elevation and increased salinity.

Environmental impacts resulting from other water management actions (i.e., conservation, recycling and desalting) that may be implemented as part of Alternative 1 would primarily occur in the CVWD, MWD, and SDWCA service areas. The overall impacts of seawater desalination and water conservation and recycling are discussed below.

SEAWATER DESALINATION

Seawater desalination could potentially provide additional water supplies within the MWD and SDWCA service areas that would not depend on Colorado River diversions and could be developed and implemented locally rather than relying upon an imported supply. Construction of a desalination facility and associated ancillary facilities would result in land disturbance; however, siting, engineering and design considerations would largely determine

impacts to geological resources, land use, terrestrial biological resources, cultural resources, aesthetics and recreation. Marine resources in the vicinity of the desalination plant could be affected by the constituents present in concentrate discharges, by the concentrate discharge method and by the process of feedwater intake. Depending upon the method used for concentrate disposal, increased demands may be placed on waste disposal facilities. Air quality and noise impacts would occur during project construction but would be minimal during project operation. Energy use at a desalination plant (primarily electricity or heat) is typically high and would place increased demands on regional or local energy sources. In addition, an accidental release of chemicals from the desalination plant could have an adverse impact on facility personnel, the general public, plant, and possibly aquatic life. Desalination and other water management actions would replace Colorado River water supplies that are currently diverted or would be conserved and transferred under the Proposed Project, and therefore, would not change the Future Baseline population or demand for public services. Construction and operating/maintenance personnel would be needed for the facility, which would benefit the local economy. Construction activities and plant operations/maintenance could increase traffic in the area.

Depending upon the desalting technology selected and ultimate delivery volume and quality of the desalination facility, a site of 20 to 50 acres could be required in a coastal area, which would involve specific approvals and requirements related to coastal zones. Concentrate disposal would be a key environmental issue in the design of the facility. Seawater desalination is technically feasible, but not at the volumes required. It also would not be economically feasible because production costs are projected in the range of $1,200 to over $2,000 per AF (DWR 1998). These costs generally do not include the cost of transmission or storage. Recent advances in technology offer lower potential estimated production costs, but economic viability has not yet been established. In sum, the use of this technology would not be technologically or economically feasible at this time given the volume of water being considered and the timeframe of the Proposed Project.

WATER CONSERVATION AND RECYCLING

Conservation and recycling would consist of measures such as reclamation and reuse, residential, industrial, and agricultural conservation, and waste minimization, over and above measures that are presently in place or planned within MWD, SDWCA, and CVWD service areas (i.e., a more aggressive program of water conservation and recycling than currently planned). Water reclamation plants could be designed to supply recycled water to meet non-potable water demands for uses such as golf courses, parks, schools, freeway landscaping, cemeteries, government facilities, and residential and industrial developments. The potential for additional reclamation would depend upon the capacity of both existing and future water reclamation plants, volume of demand from existing and future recycled water, and the potential for funding and constructing of more reclamation plants in the future. Typical components within a recycled water system include the reclamation plant, a reuse pump station to retrieve recycled water to the distribution system, distribution piping, booster pump stations, and reservoirs.

Water conservation programs can include public education programs and information for children and adults, outdoor landscaping programs that promote use of low-water-use plants,

requirements for installation of ultra-low flush toilets in all new construction, routine water meter replacement, scheduled facilities maintenance, system audits and leak detection. Other measures could, for example, include promoting use of high efficiency washing machines; holding workshops for industries that can contribute to water conservation (such as plumbers, landscapers and irrigation service providers); offering rebates/incentives to residential and non-residential customers for replacing older fixtures; implementing water pressure management programs; implementing marginal-cost pricing; and facilitating water audits for large-volume users.

Construction of new reclamation plant(s) and recycled water system components would result in land disturbance; however, siting, engineering, and design considerations would determine any impacts on geological, biological and cultural resources, land use, and aesthetics. Reductions in water demand would be beneficial. Short-term increases in traffic, noise, dust and exhaust emissions could occur during construction. Effluent disposal and discharge can affect water quality of receiving water bodies. Minor increases in solid waste disposal and additional use of hazardous materials could occur. Minor increases in traffic could occur from routine plant operations and maintenance. No direct impacts to population, housing or public services would occur since the conservation and recycling measures discussed would potentially replace water currently diverted from the Colorado River or make up for the conservation and transfer of Colorado River water proposed under the Proposed Project.

Water conservation would reduce demand and avoid impacts to environmental resources from new construction, land disturbance, and facility operations. In addition, pumping would be reduced as compared to water reclamation plants, thereby resulting in fewer power plant emissions.

The types of recycling and conservation measures listed above could apply within the CVWD service area as well as additional on-farm conservation measures, which could offset some effects of continuing use of overdrafted groundwater.

Conclusion

This alternative would not meet any of the objectives of the Proposed Project summarized in section 5.3.1 and described in section 2.2, which are consistent with the objectives of the California Colorado River Water Use Plan. It would not:

- settle by consensual agreement disputes regarding Colorado River water use;
- establish a plan for future distribution of Colorado River water among the co-lead agencies;
- maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;
- result in agreement on terms and conditions for Colorado River water conservation and transfers; and
- provide incentives for conserving Colorado River water.

None of the significant or less-than-significant environmental impacts of the Proposed Project that are described in Chapter 3 of this PEIR would occur. Degradation of the Salton Sea would continue. Beneficial impacts associated with lining the All American and Coachella canals would not occur, nor would beneficial impacts from reduced groundwater overdraft in the Coachella Valley. Under the no project alternative, Proposed Project-related impacts to the Salton Sea would be avoided.

Alternative 2A: Connect the Coachella Canal to the CRA

Description of Alternative

Alternative 2A would connect the Coachella Canal to the CRA by adding a pipeline (and associated pumping and handling equipment) between these two facilities near Coachella. This would allow retention of the current diversion points and amounts on the Colorado River by conveying the proposed conserved and transferred water through the Coachella Canal rather than diverting the water directly into the CRA at Lake Havasu.

This new pipeline could require up to three parallel pipes of up to 12 to 16 feet in diameter. Because of the seismic and soil conditions, the pipelines are expected to be above ground for much of their length to allow for maintenance. Total pumping requirements would be approximately 0.5 to 0.6 million horsepower. The construction corridor would be approximately 150 to 200 feet in width and would range in length from 7 to 10 miles (depending on the alignment selected). Alignments would follow road rights-of-way to minimize the extent of required land acquisition and to minimize construction of access roads. It is also assumed that a number of permits would be required from such agencies as the Bureau of Land Management and the Bureau of Reclamation.

Anticipated Impacts of Alternative

Except as noted below, the impacts of Alternative 2A would be the same as described for the Proposed Project in Chapter 3. Impacts to the IID, CVWD, MWD, and SDCWA service areas from water conservation and/or use would remain the same as described for the Proposed Project, as would impacts to the Salton Sea. Alternative 2A would avoid impacts associated with the change in diversion of water from the Colorado River.

Implementation of this alternative would result in both short-term and long-term impacts within the Coachella Valley associated with the construction and operation of the new pipeline connecting the Coachella Canal to the CRA. These impacts are discussed below.

Water Resources: Short-term sedimentation and erosion impacts could result from pipeline construction. The use of fuels and other hazardous materials could result in spills that could impact surface waters and groundwater. Alternative 2A would reduce impacts associated with the change in diversions of water from the Colorado River. No loss of habitat on the Colorado River would occur. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.1.

Biological Resources: Construction of the pipeline could impact sensitive plant and wildlife resources, including the desert tortoise. Mitigation measures would be required.

Geology, Soils, and Minerals: The pipeline would cross an area of relatively high seismic activity. Damage to the pipeline could occur and result in the release of water in the event of a pipeline rupture or other damage. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.3.

Land Use: Long-term conversion of agricultural and desert land to a public utility function would occur. Conversion would result from construction easements and the permanent easements associated with the actual pipeline and service road. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.4.

Agricultural Resources: Depending upon the exact pipeline alignment and reservoir placement, both short-term and long-term loss of prime agricultural lands could occur due to both construction and permanent easements. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.5.

Recreational Resources: Construction and operation of the above-ground pipeline and associated facilities could adversely affect nearby dispersed recreation activities such as OHV use. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.6.

Air Quality: Construction activities would generate emissions associated with operation of construction equipment and generation of dust. Increased emissions associated with generation of electricity for pump stations could occur. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.7.

Cultural Resources: Prehistoric and historic resources could be disturbed by construction of the pipeline and other facilities such as access roads. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.8.

Noise: Short-term noise impacts could result from the construction of the pipeline. Increased noise levels would impact sensitive receptors, including sensitive wildlife species, near the facility. Noise from pumps also could affect nearby noise sensitive receptors. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.9.

Aesthetics. The construction of the pipeline could create aesthetic impacts especially in areas containing natural vegetation and an above-ground pipeline. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.10.

Hazard and Hazardous Materials: Construction of the pipeline connecting the Coachella Canal to the CRA would require the use of standard construction and industrial fuels, lubricants coatings and welding materials. Natural events (e.g., earthquakes) and human activities could cause damage to the pipeline with potential release of water in the event of a pipeline rupture or other damage.

Public Services and Utilities: Short-term impacts to utilities and roadways could occur during the construction period. Impacts could include additional construction traffic and potential disruption of utility system where the pipeline crossed utility lines and other utility structures.

Conclusion

Implementation of Alternative 2A, while avoiding potential impacts to biological resources along the Colorado River, would not reduce any other impacts associated with implementation of the Proposed Project. There is a potential that the construction of the pipeline connecting the Coachella Canal to the CRA would result in a number of substantial and possibly unavoidable significant impacts to water resources, biological resources, geology, soils and minerals, agricultural resources, air quality, cultural resources, noise, aesthetics, and hazards and hazardous materials. This alternative would not have any major advantage over the Proposed Project because mitigation measures for biological impacts to the Colorado River area have been identified in section 3.2 that would reduce these impacts to less-than-significant levels. This alternative would meet all of the objectives of the Proposed Project summarized in section 5.3.1 and described in section 2.2. It would:

- settle by consensual agreement disputes regarding Colorado River water use;
- establish a plan for future distribution of Colorado River water among the co-lead agencies;
- maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;
- result in agreement on terms and conditions for Colorado River water conservation and transfers; and
- provide incentives for conserving Colorado River water.

Alternative 2B: Connect the All American Canal to the SDCWA System

Description of Alternative

Alternative 2B would involve the transfer of up to 200 KAFY of conserved water from IID directly to the SDCWA service area via a new pipeline between the western end of the All American Canal to the San Vincente Reservoir within Imperial and San Diego counties. This option would allow implementation of the IID/SDCWA Water Conservation and Transfer Agreement, as amended by the QSA, and diversion of up to 200 KAFY at Imperial Dam for use by SDCWA, rather than at Parker Dam as included under the Proposed Project.

SDCWA is evaluating several optional alignments to connect the All American Canal facilities (e.g., the Westside Main turnout) within the IID service area and the SDCWA system at San Vincente Reservoir. The routes generally follow existing roadways and powerline rights-of-way and easements between these two points, primarily Interstate 8. It is anticipated that operation of the new pipeline would have a minimal effect on the diversion and de-silting capacity at Imperial Dam. However, the All American Canal capacity below Drop 3 may have to be increased to accommodate year-round transportation of water. Additional storage reservoirs for daily operations may be required in the IID Service Area. Storage may also be required at San Vincente Reservoir. The new pipeline would consist of two to three parallel, 5- to 6-foot diameter pipes, mostly above ground because of seismic and soil conditions. The construction corridor would be approximately 150 to 200 feet wide and would range in length

from 90 to 150 miles (depending on the alignment selected). Total pumping requirements would be approximately 0.2 to 0.3 million horsepower.

Anticipated Impacts of Alternative

Except as noted below, the impacts of Alternative 2B would be the same as described for the Proposed Project in Chapter 3. Implementation of this alternative would reduce the impacts of the Proposed Project to biological resources along the Colorado River through the reduction in the acreage of potential impact to marsh and riparian vegetation. Implementation of this alternative has all of the other impacts that the Proposed Project would have. Additional potential impacts associated with the proposed pipeline construction could include the following:

Water Resources: Construction associated with the pipeline reservoir could cause short-term sedimentation and erosion impacts. The use of fuels and other hazardous materials could result in spills that could impact surface waters and groundwater. This alternative would reduce impacts to the Colorado River by shifting diversion of up to 200 KAFY that could be taken at Parker Dam, per the QSA, downstream to Imperial Dam.

Biological Resources: The construction of the pipeline and reservoirs could impact sensitive plant and wildlife resources, including the desert tortoise.

Geology, Soils, and Minerals: The pipeline and reservoirs would be located in areas of relatively high seismic activity. Damage to these facilities could occur and result in the release of water in the event of a rupture or other damage.

Land Use: Long-term conversion of agricultural and desert land to a public utility function could occur. Use conversion would result from the construction easements and the permanent easements associated with the pipeline, reservoirs, and service road. Agricultural lands in the IID service area would be used for construction of temporary or permanent on-farm conservation measures.

Agricultural Resources: Depending upon the exact location of the pipeline and reservoirs, both short-term and long-term loss of prime agricultural lands could occur due to both construction and permanent easements. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.5.

Recreational Resources: Construction and operation of the pipeline and reservoirs and associated facilities could adversely affect nearby dispersed recreational activities such as off-highway vehicle use in western Imperial and eastern San Diego counties. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.6.

Air Quality: Construction activities would generate emissions associated with operation of construction equipment and fugitive dust. Increased emissions associated with generation of electricity for pump stations could occur. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.7.

Cultural Resources: Prehistoric and historic resources could be disturbed by construction of the pipeline and reservoirs and other facilities such as access roads. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.8.

Noise: Short-term noise impacts could result from the construction of the pipeline and reservoirs. Increased noise levels would impact sensitive receptors, including sensitive wildlife species, near the facility. Noise from pumps also could affect nearby noise sensitive receptors. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.9.

Aesthetics: The construction of the pipeline and reservoirs could create aesthetic impacts, especially in areas containing natural vegetation. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.10.

Hazards and Hazardous Materials: Construction of the pipeline connecting the western end of the All American Canal to facilities in San Diego County and construction of reservoirs would require the use of standard construction and industrial fuels, lubricants, coatings, and welding materials. Natural events (e.g., earthquakes) and human activities could cause the potential release of water in the event of a pipeline rupture or other damage. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.11.

Public Services and Utilities: Short-term impacts to utilities and roadways could occur during the construction period. Impacts could include additional construction traffic and potential disruption of utility systems where the pipeline crossed utility lines and other utility structures. Impacts associated with the other components of the Proposed Project would be the same as described in section 3.12.

Conclusion

Implementation of Alternative 2B, while partially reducing potential impacts to biological resources along the Colorado River, would not reduce any impacts to the Salton Sea associated with the implementation of the Proposed Project. There is also a potential that the construction of the pipeline and reservoirs would result in a number of substantial and possibly unavoidable significant impacts as identified. Although potentially feasible, the alternative would not have any major environmental advantage over the Proposed Project. This alternative would lessen impacts along the Colorado River, but a portion of the mitigation measures that have been identified to reduce potential impacts to biological resources to less than significant levels would still need to be implemented. This alternative would meet all of the objectives of the Proposed Project summarized in section 5.3.1 and described in section 2.2. It would:

- settle by consensual agreement disputes regarding Colorado River water use;
- establish a plan for future distribution of Colorado River water among the co-lead agencies;
- maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;

- result in agreement on terms and conditions for Colorado River water conservation and transfers; and
- provide incentives for conserving Colorado River water.

The anticipated costs of this alternative, however, would probably be substantially greater than those of the Proposed Project.

Alternative 3: Reduce the IID/SDCWA Water Conservation and Transfer to 230 KAFY

Description of Alternative

Alternative 3 includes partial implementation of the Proposed Project by reducing the level of conservation and transfer to the minimum allowable under the IID/SDCWA Water Conservation and Transfer Agreement. Under this alternative, 130 KAFY rather than 200 KAFY would be conserved via on-farm conservation methods and transferred to SDCWA. The first and second 50 KAFY components of the Proposed Project could be satisfied by a mixture of conservation measures, including both on-farm and water delivery system conservation measures, and fallowing. The remainder of the Proposed Project would be implemented as proposed and impacts identified under Chapter 3 would occur, but to a lesser degree.

Anticipated Impacts of Alternative

Except as noted below, the impacts of Alternative 3 would be the same as described for the Proposed Project in Chapter 3. Under this alternative, the maximum anticipated reduction in flows of the Colorado River between Parker and Imperial dams would be 318 KAFY. There would also be reduced conservation of water in the IID service area, and therefore, reduced impacts to Salton Sea resources, although impacts to the Salton Sea would remain significant. Beneficial impacts to groundwater resources in the Coachella Valley would be the same as the Proposed Project. The following is a summary of potential impacts by resources area.

Water Resources: Compared to the Proposed Project, this alternative would reduce the amount of water to be transferred from IID to SDWCA by 70 KAFY. Alternative 3 would result in a lesser reduction in inflow to the Salton Sea. Alternative 3 would result in impacts to water quality from increased selenium concentrations in the IID surface drain discharge to both the Alamo River and the New River and at the IID drains to the Salton Sea. These impacts would occur to a lesser degree under the Proposed Project. Reductions in surface water quantity in drains to the Salton Sea may be less for Alternative 3 than the Proposed Project.

Reduction in the flow and water surface elevation in the Colorado River between Parker and Imperial dams would be proportionally less than under the Proposed Project, although still within the historical range. Reductions in surface water quantity in the All American Canal, the collective drains discharging to the New and Alamo rivers, and in the rivers themselves would be less for Alternative 3 than the Proposed Project.

Biological Resources: Impacts to the habitat and species on the Colorado River would be less for Alternative 3 than the Proposed Project since flow reductions (and the associated water surface elevation) between Parker and Imperial dams would be reduced by approximately 70 KAFY. Implementation of identified mitigation measures would reduce these impacts to less than

significant levels. This alternative could have impacts to the IID service area and Salton Sea similar to the Proposed Project. Impacts would be significant prior to implementation of the mitigation measures described in section 3.2.

Geology, Soils, and Minerals: Because most of the components of the Proposed Project would be implemented under this alternative, potential impacts would be similar to those described in section 3.3. Impacts associated with conservation measures in the IID service area would be slightly reduced, for example, the amount of erosion, since the total amount of water conserved through conservation measures would be reduced.

Land Use: Most of the components of the Proposed Project would be implemented but conservation actions within the IID service area would be completed at a reduced level. Agricultural lands would be used for construction of temporary or permanent on-farm conservation measures.

Agricultural Resources: On-farm irrigation system improvements, delivery system improvements, and/or fallowing would be required. If fallowing were implemented so as to take farmland out of production on a short-term basis, it would not result in the conversion of Important Farmland to non-agricultural use. If fallowing were implemented so as to take farmland out of production on a longer-term or permanent basis, this would result in the conversion of farmland to non-agricultural use. The amount of farmland that could be converted would be less than the maximum that could be converted under the Proposed Project.

Recreational Resources: Reduced levels of water transfers would be expected to reduce the level of impacts to sport fishing and bird watching at the Salton Sea, as well as impacts to the Salton Sea's recreational facilities.

Air Quality: Reduced construction of on-farm conservation measures could reduce anticipated levels of temporary air emissions from that projected for the Proposed Project. Less fallowing could occur, thus reducing the potential for fugitive dust emissions from this action. Fugitive dust emissions at the Salton Sea would be lessened because less currently submerged land would be exposed. Overall, air quality impacts are anticipated to be similar to but slightly less than those described for the Proposed Project.

Cultural Resources: Impacts to cultural resources from land disturbance for construction of on-farm conservation measures could occur, but the level of effect would be less than expected for the Proposed Project. Potential exposure of currently submerged cultural resources due to the decreased water surface elevation of the Salton Sea would be reduced compared to the Proposed Project. Overall, the types of impacts to cultural resources would be similar to those described for the Proposed Project.

Noise: Noise from construction and operation of on-farm conservation measures would occur and could disturb residences and sensitive wildlife, but to a lesser degree than anticipated from the Proposed Project. However, the overall impact to the ambient noise environment would be similar to that described for the Proposed Project.

Aesthetics: Significant aesthetic impacts to the Salton Sea would be similar, but slightly less than those of the Proposed Project because the surface elevation of the Salton Sea would decline less.

Hazards and Hazardous Materials: Construction of on-farm and system conservation measures would require the use of standard construction and industrial fuels, lubricants, coatings, and welding materials at somewhat reduced level than those described for the Proposed Project. However, the overall impact from hazards and the use of hazardous materials would be similar to those described for the Proposed Project.

Public Services Utilities and Transportation: Short-term impacts to utilities and roadways could occur during the construction period of on-farm and system conservation measures. This would include additional construction traffic and potential disruption of the utility system where the new facilities crossed utility lines and other utility structures. However, the overall impact to public services, utilities and transportation systems would be similar to those described for the Proposed Project.

Conclusion

Alternative 3, although decreasing the amount of water transferred, provides only a slight reduction of impacts to the Colorado River and at best slightly less impacts to the IID service area and the Salton Sea than the Proposed Project. This alternative would meet the objectives of the Proposed Project summarized in section 5.3.1 and described in section 2.2. It would:

- settle by consensual agreement disputes regarding Colorado River water use;
- establish a plan for future distribution of Colorado River water among the co-lead agencies;
- maintain certainty and reliability of Colorado River water supplies among the co-lead agencies;
- result in agreement on terms and conditions for Colorado River water conservation and transfers; and
- provide incentives for conserving Colorado River water.

This alternative, however, would not avoid or substantially reduce the impacts of the Proposed Project.

Alternative 4: Proposed Project Implementation With Replacement Water

Description of Alternative

Alternative 4 primarily was designed to avoid impacts to piscivorous birds at the Salton Sea resulting from a reduction in inflow volume, as contemplated under the Proposed Project. Under both the Future Baseline and the Proposed Project, increased salinity will reduce fish reproductive capacity within the main body of the Salton Sea and eventually cause a decline in the number of species and individuals within a species. However, as previously discussed in Chapter 3 of this PEIR, because inflows to the Salton Sea would be reduced under the Proposed Project, the Proposed Project will accelerate salinity increases. This alternative would provide

replacement water to the Salton Sea to offset reduced inflows resulting from conservation by IID.

At some point, as a result of salinity increases, fish will no longer be able to survive in the Salton Sea away from estuaries where drainage inflow occurs. A loss of fish (numbers and species) will affect bird species that feed on these fish at the Salton Sea. The timing of eventual elimination of the Salton Sea fish species is uncertain because it involves a number of external environmental factors as well as the adaptation potential of the fish. However, based upon assumptions concerning salinity and its effect on the persistence of fish species, this time period is predicted to be from 2 to 15 years sooner under the Proposed Project than under the Future Baseline as described in Chapter 3. Replacement water would be made available for the time period necessary to avoid impacts of the Proposed Project on piscivorous birds as a result of the loss of the food source of these birds or the recreational impact of the loss of the Salton Sea sport fishery.

The water needed to implement this alternative could be provided by additional conservation activities beyond those necessary for transfer and compliance with IID's Priority 3 cap on diversions. This additional water would allow the avoidance of the temporary impacts for the Proposed Project on piscivorous birds and the sport fishery. However, the Salton Sea is an agricultural drainage repository that has no legal rights or entitlements to Colorado River water. Implementation of any Project element or mitigation strategy that would make available Colorado River water to the Salton Sea could subject that part of the Project to a claim that it is not in compliance with the Law of the River and/or a claim that it is not a reasonable and beneficial use of water.

Changes in median water surface elevation in the Colorado River would not be different from those described for the Proposed Project.

Anticipated Impacts of Alternative

Except as noted below, the impacts of Alternative 4 would be the same as described for the Proposed Project in Chapter 3. Except for the elimination of the temporary impacts to piscivorous birds and the sport fishery, the types of impacts to the Salton Sea ultimately would be generally the same as those of the Proposed Project, although they could differ in intensity. Temporary impacts to piscivorous birds would be avoided since the water from the additional conservation would allow water to be temporarily made available to avoid water quality impacts to the Salton Sea. Implementation of this alternative would delay impacts to air quality, cultural resources, and recreational resources from the Proposed Project as a result of reduced water surface elevation of the Salton Sea. These impacts would eventually occur under Future Baseline conditions described in Chapter 3.

Water Resources: In order to generate water for this alternative, IID could utilize conservation measures that could include fallowing (i.e., in excess of that needed for the proposed transfer build-up schedule). Colorado River impacts would be the same as under the Proposed Project because the location and amount of diversion would not change.

Biological Resources: Potentially significant impacts to piscivorous birds at the Salton Sea would be avoided by providing for additional inflows to the Salton Sea.

Geology, Soils, and Minerals: Short-term impacts relating to erosion could result from the construction of Proposed Project components.

Land Use: Impacts would be as described for the Proposed Project (section 3.4), although changes to the area's desirability as a recreational destination would be delayed as compared to Future Baseline conditions.

Agriculture: If fallowing is used to generate additional water for the Salton Sea to implement this alternative, and if such fallowing converts farmland to a non-agricultural use, potentially significant impacts to agricultural resources would occur. The impacts would be greater than those described for the Proposed Project.

Recreation: Potential significant recreational impacts to the Salton Sea associated with the Proposed Project from changes in water elevation and water quality (salinity) would be avoided or delayed under this alternative, including impacts to sport fishing, impacts to and recreational facilities.

Air Quality: Construction of on-farm conservation measures would contribute to temporarily increased air emissions, comparable to those described for the Proposed Project. Air quality impacts associated with fallowing would be as described for the Proposed Project. Fugitive dust impacts from the exposure of submerged lands at the Salton Sea would be delayed.

Cultural Resources: Impacts to cultural resources could occur from land disturbance for construction of on-farm conservation measures, as described for the Proposed Project. The potential for exposure of submerged cultural resources within the Salton Sea due to the decreased water elevations would be delayed.

Noise: Noise from construction and operation of on-farm and system improvement conservation measures would occur and could disturb residences and sensitive wildlife. The overall impact to the ambient noise environment would be similar to that of the Proposed Project.

Aesthetics: Aesthetic impacts to the Salton Sea would be delayed since accelerated water conservation and dedication to the Salton Sea would reduce the rate of alteration of water elevations.

Hazard and Hazardous Materials: Construction of on-farm and system conservation measures would require the use of standard construction and industrial fuels, lubricants, coatings, and welding materials at the same level as those described for the Proposed Project.

Public Services and Utilities: Short-term impacts to utilities and roadways could occur during construction of water conservation improvements. Impacts could include additional construction traffic and potential disruption of utility system where the pipeline crossed utility lines and other utility structures. These impacts would be as described for the Proposed Project

Conclusion

Alternative 4 would avoid significant impacts on the Salton Sea recreational fishery and impacts to piscivorous birds caused by the loss of the fishery. Other impacts would be delayed for the period that replacement water is utilized. This alternative would meet most of the objectives of the Proposed Project summarized in section 5.3.1 and described in section 2.2.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an EIR identify the environmentally superior alternative. In the case of this PEIR, Alternative 1, the no project alternative, is considered environmentally superior because it would not result in any of the identified significant impacts associated with the implementation of the Proposed Project.

CEQA requires that an additional alternative be defined as environmentally superior if the no project alternative is considered environmentally superior. Depending upon how conservation is implemented and which mitigation measures are employed, the Proposed Project may be environmentally superior to the other alternatives. If conservation actions and mitigation measures that would reduce impacts to the fish populations and piscivorous birds at the Salton Sea are not employed as part of the Proposed Project, then Alternative 4 would be considered environmentally superior. Alternative 4 would avoid significant impacts to biological resources associated with the implementation of the Proposed Project to the Salton Sea. Impacts to resources in other areas from other project alternatives would not be substantially different than those of the Proposed Project, with the exception of impacts to the biological resources of the lower Colorado River, which would be avoided or reduced by Alternatives 2A and 2B, respectively. Unlike certain impacts to the air quality and recreational resources of the Salton Sea, which are considered potentially unavoidable (air quality and recreation), impacts to the biological resources of the lower Colorado River are considered fully mitigable through the implementation of the identified mitigation measures. Alternative 4 would reduce environmental impacts to their lowest levels while still fulfilling the objectives of the Proposed Project.

6.0 GROWTH-INDUCING IMPACTS

6.1 OVERVIEW

6.1.1 Population Growth Trends in the Seven County Region

Five of California's six largest counties in population — Los Angeles, San Diego, Orange, San Bernardino, and Riverside — are located in Southern California. Taken together, the Southern California region with its seven counties contained approximately 19.6 million people in July 1999 (Department of Finance [DOF] 2000). The Southern California region accounts for approximately 55 percent of the state's total population.

As described in detail in section 3.13.1.1, Southern California has traditionally been one of the fastest growing areas of California. Los Angeles, San Diego, and Orange counties have experienced the highest numerical population gains of any of the state's 58 counties. Riverside County, the sixth largest county in population, has also been among the fastest growing based on percentage change for the past several years (DOF 2000).

Population projections for the seven Southern California counties prepared by the DOF, SCAG, and SANDAG anticipate steady growth over the next 20 to 40 years (see Table 3.13-1). It is anticipated that by 2040, Southern California would house as many people as live in the entire state today. Although the estimates prepared by the DOF sometimes differ from the SCAG and SANDAG forecasts, all the numbers reflect an expectation of substantial growth in the seven county area.

As described in section 3.13.1.1, growth in Southern California, as well as most of the state, has historically been attributable to natural increase, in-migration from other states, and immigration from foreign countries.

SCAG adopted the RCPG in 1996 for the purpose of setting regional growth goals and identifying strategies for agencies to use in implementing the proposals in the plan through the year 2015. The RCPG includes goals for the economy, growth management, transportation, air quality, housing, open space, water resources, and the implementation of those goals. In addition, SCAG has adopted and is now revising the Regional Transportation Plan that identifies transportation needs within the region, including automobile, transit, and other transportation modes, future transportation projects, and funding.

SANDAG, in collaboration with San Diego County and the County's 18 cities, adopted a Regional Growth Management Strategy in 1993. The Regional Growth Management Strategy provides goals for improving the quality of life in San Diego County through specific growth management, conservation, and social measures. The County and cities have incorporated the provisions of the strategy into their individual general plans (SANDAG 1998). SANDAG has adopted a Regional Transportation Plan for San Diego County.

The California State Water Plan estimates that the state currently incurs a water shortage of 1.6 MAF in an average year (about 1.5 MAF of this represents on-going groundwater overdraft) and 5.1 MAF in drought years (DWR 1998). The California Department of Water Resources

projects that by the year 2020, if new water management actions are not undertaken, the state will face shortages of 2.4 MAF in an average year and 6.2 MAF during times of drought. If a variety of proposed management measures are applied, including measures similar to the Proposed Project components, then the year 2020 statewide shortages could be reduced to an estimated 0.2 MAF in average years and 2.7 MAF in drought years (DWR 1998).

The population projections used by DWR in the State Water Plan are based on those prepared in 1998 by the Department of Finance and are approximately 4.6 percent higher than current growth projections. As a result, shortages would be slightly smaller than predicted.

6.1.2 Intent of the Proposed Project

The Colorado River currently provides over 50 percent of the water used in Southern California (Los Angeles, San Diego, Orange, San Bernardino, Riverside, and Imperial Counties). California's Colorado River water normal year apportionment of 4.4 MAFY is less than historic levels of use. As described in Chapter 1, over the past 10 years the amount of Colorado River water actually available and utilized by California has varied from 4.5 MAFY to 5.2 MAFY (averaging approximately 5.0 MAFY during that period). Over time, increased use of Colorado River water by other Colorado River water contractors will reduce the supply of unused apportionments and surplus water that was previously available to the State of California. At that time, California's normal year (4.4 MAF) apportionment may become the limit on the amount of water available to the state in non-surplus years.

The Proposed Project is intended to optimize the State's use of Colorado River water within its normal year apportionment of 4.4 MAF. The Proposed Project quantifies the water supplies that would be available to the participating agencies and the agencies' obligations to convey, conserve, or transfer these supplies. By establishing specific allocations and assigning specific agency responsibilities, the Proposed Project improves the reliability of supplies of Colorado River water to the agencies within California's normal year apportionment. Under the Proposed Project, water conserved in agricultural areas, primarily within the IID service area would be transferred to urban areas served by MWD and SDCWA. Additionally, conserved water would be provided to CVWD to address the groundwater overdraft problem in the Coachella Valley.

As a whole, the Proposed Project establishes the framework for strategies that are intended to provide future service using less Colorado River water than is currently being used, and by establishing agreements for the use of the reduced Colorado River supply among the major Southern California users. Within California, the overall effect of reducing water use from 5.2 to 4.4 MAFY is to reduce agricultural water use through conservation, and prevent significant reductions in urban water supplies to established users.

6.1.3 CEQA Requirements

This section discusses the potential growth-inducing effect of the Proposed Project. Under the State CEQA Guidelines (Guidelines Section 15126[2][d]), a project may have a growth-inducing effect if it would:

- foster economic or population growth or the construction of additional housing, either directly or indirectly; or

- remove obstacles to population growth; or

- require the construction of additional community service facilities that could cause significant environmental effects; or

- encourage and facilitate other activities that would significantly affect the environment.

The analysis below discusses whether the Proposed Project is growth-inducing using this CEQA definition for purposes of this PEIR.

6.1.4 Common Analysis of Growth-Inducing Effects for All Service Areas

The Proposed Project does not directly or indirectly provide new water supplies to Southern California. Instead, the Proposed Project changes the distribution of existing Colorado River water supplies among the co-lead agencies, thereby assisting California in reducing its use of Colorado River from an average of 5.0 MAFY to 4.4 MAFY in normal years. Proposed Project implementation will merely ensure that delivery of Colorado River water to the MWD/SDCWA service areas will be identical, at best, to the historical averages for the last 15 years or more.

The diversion patterns of Colorado River water envisioned by the Proposed Project have occurred for decades. For example, MWD has diverted up to an amount to fill the CRA, or approximately 1.3 MAFY. There have also been years where CVWD has diverted up to approximately 450 KAF, and years where IID had reduced its diversions to, or less than, 3.1 MAF.

Cities and counties are the primary agencies responsible for regulating land use through their general plans, specific plans, and zoning regulations. The water supplies being provided and planned for by all four co-lead agencies are consistent with the level of growth projected by regional planning agencies and local general plans. Regional effects of projected growth have been addressed in general plan CEQA documents.

CVWD, IID, MWD, and SDCWA do not have the authority to regulate land use. Future growth will occur in accordance with local planning decisions. With the enactment of SB 610, Ch. 643, (the Costa Bill) and SB 221 (the Kuehl Bill) in 2001, urban water suppliers such as the co-lead agencies are required to provide detailed information to cities and counties about current and future water demand and availability in advance of city and county planning decisions on large development proposals.

6.1.4.1 Proposed Project Will not Foster Economic or Population Growth or Construction

The Proposed Project will not provide additional water that would foster economic or population growth within the IID, CVWD, MWD, and SDCWA service areas. Forecasts by SCAG and SANDAG project continued growth for the Southern California region. Existing urban water management plans describe strategies for meeting this projected demand (MWD's Regional Urban Water Management Plan, SDCWA's 2000 Urban Water Management Plan, and

CVWD's 2000 Urban Water Management Plan [interim]). These urban water management plans, as well as the Proposed Project, are consistent with growth projections developed by SCAG and SANDAG.

Through conservation and transfers, the Proposed Project would maintain the reliability of Colorado River supplies as one component of meeting current and projected water demand in the MWD and SDCWA service areas. Also, while the Proposed Project would increase the current imported water supply to CVWD, the additional water would be used to offset the existing groundwater overdraft and would not provide additional water that would induce population growth beyond that currently projected.

6.1.4.2 Proposed Project Will not Remove Obstacles to Population Growth

The Proposed Project will not remove an obstacle to growth in any of the four co-lead agency service areas. In the MWD and SDCWA service areas, the Proposed Project will maintain water supply reliability. In the CVWD service area, additional water received under the Proposed Project would be used solely to offset the Coachella Valley's existing groundwater overdraft. In the IID service area, the Proposed Project will reduce IID water supplies available to serve both agricultural and urban clients.

6.1.4.3 Proposed Project Will not Require Construction of Additional Community Service Facilities

Projected increases in population for the region would require substantial investments in new public facilities and infrastructure over the next decades, including among other things, roads and transportation facilities, water and sewer treatment facilities, fire and police stations, and schools. Construction of these public facilities and infrastructure is not dependent on the Proposed Project, and would proceed regardless with appropriate CEQA review.

No new delivery or treatment systems are proposed by, nor are necessary to, operations of MWD or SCDWA as a result of the Proposed Project.

Conservation efforts by IID as a result of implementation of the Proposed Project include lining of the All American Canal and various agricultural conservation projects (on-farm and water delivery system). These agricultural conservation projects would relate to water for agricultural use and would not be used for urban development in Imperial County. Therefore, implementation of the Proposed Project-related measures would not require construction of additional community service facilities.

A number of conceptual projects are proposed under the Coachella Valley Water Management Plan currently being considered by CVWD (CVWD 2000). These facilities are aimed at reducing groundwater dependence (and overdraft) within the Coachella Valley by providing recycled or canal water for agricultural and urban uses. Their programmatic impacts are discussed in section 6.2.2.2. Impacts to the extent known are analyzed in the Coachella Valley Water Management Plan PEIR. Additional environmental reviews will be conducted as site-specific facilities are identified. However, such facilities will merely be used to reduce existing groundwater overdraft.

6.1.4.4 Proposed Project Will not Encourage and Facilitate Other Activities that would Significantly Affect the Environment

The Proposed Project would not facilitate or encourage other activities that would affect the environment, other than limited construction (e.g., canal lining) already included in the Proposed Project components. Water transfers would occur using existing facilities operated by CVWD, IID, MWD, and SDCWA. Water conservation activities by IID and adherence to the 3.1 MAFY cap on IID's Priority 3a consumptive use may reduce water use within the IID service area. IID may implement delivery/drainage system improvements as conservation measures, but any construction involved is not anticipated to be growth-inducing. CVWD would apply the additional water it receives to its efforts to recharge its groundwater basin and reduce the existing overdraft condition.

6.2 GROWTH-INDUCING EFFECTS IN WATER SERVICE AREAS

6.2.1 Imperial Irrigation District

A key component of the Proposed Project is the conservation of water by IID and the transfer of that conserved water to other agencies. These proposed transfers of water would reduce IID's current diversions from the Colorado River. Nonetheless, the remaining water is expected to be sufficient to maintain agricultural uses within the IID service area, with the application of water conservation techniques.

No growth-inducing effect would result from reducing water diversions by IID. Other than the lining of canals and installation of on-farm and system conservation measures, the Proposed Project would not require construction of facilities within the IID service area. Further, the construction of facilities to implement the Proposed Project would be for the purpose of efficient delivery of agricultural water, not new development. Depending on the type of water conservation methods used, a limited number of jobs might be added, but this would not constitute a growth-inducing impact.

6.2.1.1 Growth and Water Demand

Approximately 98 percent of IID's water is delivered to agricultural users. That sector is where IID is directing its conservation programs. Programs may include, but are not limited to, canal lining, changes in delivery hours, non-leak gates, system automation, fallowing, and water-efficient on-farm management. The Proposed Project is not growth-inducing as it would require IID to continue to provide service to both agricultural and urban clients from a reduced water supply.

6.2.1.2 Water Supply in the Absence of the Proposed Project

If the Proposed Project is not implemented, reductions in Colorado River diversions to serve both agricultural and urban clients would not occur.

6.2.2 Coachella Valley Water District

CVWD will receive transferred water for the sole purpose of offsetting the existing overdraft of its groundwater basins. The Proposed Project would not be growth-inducing because the transferred water supply will be used to improve the Coachella Valley's ongoing groundwater overdraft condition. In 1999 the overdraft was estimated to be approximately 136 KAFY. Water transfers under the Proposed Project would result in changes in water deliveries to CVWD of up to 155 KAFY. This additional water as a result of the Proposed Project will be used solely to offset the Valley's existing groundwater overdraft. No new conveyance facilities to deliver transferred water to CVWD would be required.

6.2.2.1 Growth and Water Demand

The Coachella Valley, particularly its existing cities, has shown the same steady growth as all of Southern California. Coachella Valley water demand was estimated to be approximately 669 KAF in 1999. Demand, based on SCAG/CVAG population projections extrapolated by CVWD, is projected to grow to approximately 891 KAF by 2035. The projected available water supply, without the Proposed Project, is estimated to be approximately 891 KAF by 2035. Providing this amount of water without outside supplementation would increase the level of groundwater overdraft to approximately 167 KAFY (CVWD 2000). Implementation of the Proposed Project would provide the Valley with a reliable supply of water for groundwater recharge, while avoiding the chronic groundwater overdraft situation that currently exists. Because CVWD would manage water resources so as to offset a groundwater overdraft situation, the Proposed Project would not have growth-inducing impacts within the CVWD service area. The water supply that would result from the Proposed Project is considered in more detail in the draft Coachella Valley Water Management Plan prepared by CVWD, the specific purpose of which is to address and reduce groundwater overdraft (this project is described in section 4.1.3).

6.2.2.2 Water Supplies in the Absence of the Proposed Project

CVWD will undertake efforts to reduce its dependence on groundwater whether the Proposed Project is implemented or not. In the absence of the Proposed Project, many of the elements of the CVWMP would be implemented. However, without the additional water supplies provided for in the Proposed Project, many goals of the Water Management Plan, such as elimination of the groundwater overdraft, may not be realized.

CVWD would pursue the projects described below, proceed with intensified efforts in water recycling (including both wastewater and agricultural run off), increase conservation (including golf course, agriculture, and urban programs), and pursue additional water from the SWP and transfers from IID in the event that the Proposed Project was not implemented. These actions are identified in the interim 2000 Urban Water Management Plan that CVWD has filed with DWR pending completion of the CVWMP. Conceptual projects described in the draft CVWMP include: future construction of a 10 mgd desalination plant that would treat agricultural drain water for reuse in irrigation; future expansion of recycled wastewater; future pumping stations and pipelines to serve Upper Valley golf courses and reduce their groundwater pumping; future construction of conveyance facilities to serve agricultural uses to reduce groundwater pumping; future improvements related to converting municipal users in the Lower Valley from groundwater to canal water supplies; and construction of new groundwater recharge facilities

to serve the Lower Valley. These facilities and projects would proceed to the extent possible absent the water supplies provided for under the Proposed Project. As noted above, CVWD will pursue the projects listed above to reduce its dependence on groundwater without the Proposed Project. However, in the absence of the Proposed Project, certain goals of the CVWMP may not be fully met. The PEIR for the CVWMP analyzes the potential impacts of these activities.

6.2.3 The Metropolitan Water District of Southern California

The Proposed Project would allow MWD to maintain its water supplies as the amount of water available to California from the Colorado River is reduced. No new delivery facilities are proposed as part of the Proposed Project, however, and the capacity of the Colorado River Aqueduct is a limiting factor in the delivery of water from the Colorado River to the MWD service area. No changes in historic levels of aqueduct flows or expansion of aqueduct capacity are proposed as part of the Proposed Project. Since no new deliveries are proposed, no increase in the amount of water carried by the aqueduct would occur, and no expansion of aqueduct capacity is proposed, the Proposed Project would not be growth inducing in the MWD service area.

6.2.3.1 Growth and Water Demand

The population of the MWD service area is growing consistently. The Proposed Project would not involve additions or expansions to MWD's water delivery and storage system. MWD estimates that water demand within its service area was between 3.3 and 3.9 MAFY during the period of 1990 to 1999 (3.8 MAF in 1999). Projected future demand, based on SCAG population projections, is 4.9 MAF in 2020. The Proposed Project would not require a change to the assumptions upon which SCAG has based its population projections for the region.

6.2.3.2 Water Supplies in the Absence of the Proposed Project

Without the Proposed Project, MWD would need to implement other methods to meet the water demands of the service area. These include increased water conservation through implementation of urban water management Best Management Practices; water recycling undertaken by wastewater treatment plants in the region for groundwater recharge, saltwater intrusion barrier, industrial, and irrigation uses; increased storm water conservation through increased levels of groundwater replenishment; enhanced local groundwater recovery (and associated treatment); desalination; regional surface reservoir storage; and water marketing from other sources such as the SWP (including spot transfers, option transfers, storage transfers, and exchange agreements). Pursuant to its 1996 Integrated Resources Plan, MWD has undertaken many of these initiatives under its "preferred resources mix." However, the Integrated Resources Plan identified a "local emphasis mix" that would meet future needs without the Proposed Project at a cost of approximately 20 percent more per AF by the year 2020 (MWD 2000).

Separate from the Proposed Project, MWD has a 1988 agreement with IID whereby conserved Colorado River water is made available to MWD. MWD also has agreements with the Semitropic and Arvin-Edison Water Storage Districts in Kern County whereby MWD provides the districts with SWP water during years of plentiful supply and will call in an equivalent

amount of groundwater during dry years. MWD is also pursuing conjunctive use/groundwater storage in desert aquifers in California (Cadiz, Hayfield, and Chuckwalla) and Arizona (Arizona Water Bank) where it would bank Colorado River water in times of available supply. (MWD 2000)

6.2.4 San Diego County Water Authority

Under the Proposed Project, SDCWA will pay for the conservation of between 130 to 200 KAF of Colorado River water in the IID service area and for the transfer of that water to the SDCWA. IID will divert a lesser amount of water through the All American Canal as a result of the conservation, and a corresponding amount of water will be diverted at MWD's Whitsett Intake at Lake Havasu for delivery through the CRA.

Under terms of the Exchange Agreement between MWD and SDCWA, the water transferred from IID to SDCWA will be exchanged with MWD for delivery of a like quantity and quality of water to SDCWA. MWD currently provides SDCWA with about 600 KAF annually of imported water, and has delivered up to 656 KAF in recent years. The transfer will not cause SDCWA to receive any more or less water than it has received prior to the transfer, but will maintain reliability of past Colorado River deliveries. The transfer will not alter the current level of physical deliveries of water to SDCWA from MWD.

6.2.4.1 Growth and Water Demand

The San Diego region is also growing in population on a consistent basis. The Proposed Project will not involve additions or expansions to SDCWA's water delivery and storage system. Year 2000 water demand within the SDCWA service area was approximately 670 KAF. Based on SANDAG population projections, the SDCWA estimates that water demand will increase to approximately 813 KAF per year by 2020. Projected future supply will match the year 2020 demand (SDCWA 2000). The Proposed Project will not change the assumptions upon which SANDAG has based its population projections for the region.

6.2.4.2 Water Supplies Absent the Proposed Project

In the event that the Proposed Project is not implemented, SDCWA would rely upon continued delivery of imported water from MWD, water transfers, recycling (including wastewater treatment), groundwater supplies (and associated treatment facilities), and seawater desalination. As described in Chapter 2, in 1998 SDCWA entered into an agreement with IID to transfer conserved water to SDCWA. This agreement has been incorporated into the Proposed Project, but if the Proposed Project were not to proceed, SDCWA and IID would pursue their transfer agreement as a separate project. The means of delivering the transfer water to the SDCWA service area has been identified in the Exchange Agreement between SDCWA and MWD. However, implementation of the Exchange Agreement is subject to the satisfaction of certain conditions, some of which would be satisfied under the Proposed Project. If the Proposed Project was not implemented, other means would have to be found to satisfy those conditions. In a shortage condition, it is uncertain what SDCWA's share of total MWD supplies would be. As a Priority 3a Colorado River source, the IID transfer would maintain a reliable source of water.

SDCWA is undertaking the Regional Colorado River Conveyance Feasibility Study to analyze the feasibility of constructing a separate conveyance system to allow IID transfer water to be imported without using MWD's Colorado River Aqueduct. Presumably, if a separate system were found to be feasible, it would be undertaken by SDCWA in the absence of the Proposed Project and would be subject to a separate environmental review at that time.

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10.0 ACRONYMS & GLOSSARY OF TERMS

ACRONYMS

ACEC	Area of Critical Environmental Concern
AIRFA	American Indian Religious Freedom Act
AF	Acre-feet
AFY	Acre-feet per year
ARB	Air Resources Board
AWBA	Arizona Water Banking Authority
BCPA	Boulder Canyon Project Act
BLM	United States Bureau of Land Management
BMP	Best Management Practice
CAA	Federal Clean Air Act of 1969
CAAQS	California Ambient Air Quality Standards
CA DHS	California Department of Health Services
Cal-OSHA	California Occupational Safety and Health Administration
CAWCD	Central Arizona Water Conservation District
CCR	California Code of Regulations
CDC	California Department of Conservation
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second

CHP	California Highway Patrol
CHRIS	California Historic Resource Information System
CNEL	Community Noise Equivalent Level
CO	Carbon monoxide
CRA	Colorado River Aqueduct
CRB	Colorado River Board of California
CRBPA	Colorado River Basin Project Act
CRC	Colorado River Commission of Nevada
CRSS	Colorado River Simulation System
CVAG	Coachella Valley Association of Governments
CVMSHCP	Coachella Valley Multiple Species Habitat Conservation Plan
CVSC	Coachella Valley Stormwater Channel
CVWD	Coachella Valley Water District
CVWMP	Coachella Valley Water Management Plan
CY	Calendar Year
dB	Decibel
dBA	A-weighted sound level
DDD	Dichlorodiphenyldichlorethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichlorethane
DOF	California Department of Finance
DOI	United States Department of the Interior
DOT	United States Department of Transportation
DTSC	Department of Toxic Substance Control
DWA	Desert Water Agency

DWR	Department of Water Resources
EES	Enhanced Evaporation System
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
F1	First Generation or Wild-Born
HCP	Habitat Conservation Plan
hp	Horsepower
IA	Implementation Agreement
IBWC	International Boundary and Water Commission
ICAPCD	Imperial County Air Pollution Control District
ID-1	Improvement District No. 1
IID	Imperial Irrigation District
IIDS	Imperial Irrigation District Decision Support System
I-O	Input-output
IOP	Inadvertent Overrun Policy
ISG	Interim Surplus Guidelines
KAF	Thousand acre-feet
KAFY	Thousand acre-feet per year
kWh	Kilowatt-hours
L_{dn}	Day/Night Average Sound Level
L_{eq}	Energy-equivalent sound/noise descriptor
LOS	Level of Service
LROC	Long-Range Operating Criteria

MAF	Million acre-feet
MAFY	Million acre-feet per year
MDAQMD	Mojave Desert Air Quality Management District
mgd	million gallons per day
mg/L	milligrams per liter
MOU	Memorandum of Understanding
MSCP	Multi-Species Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
msl	Mean sea level
MW	Megawatts
MWD	The Metropolitan Water District of Southern California
MWh	Megawatt-hours
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIB	Northerly International Boundary
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWR	National Wildlife Refuge
O_3	Ozone

OHV	Off-highway Vehicle
PEIR	Program Environmental Impact Report
PL	Public Law
PM_{10}	Particulate matter less than 10 microns in diameter
ppb	Parts per billion
ppm	Parts per million
PPR	Present Perfected Right
PRBO	Point Reyes Bird Observatory
PVID	Palo Verde Irrigation District
QSA	Quantification Settlement Agreement
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROI	Region of Influence
RV	Recreational Vehicle
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SDCAPCD	San Diego County Air Pollution Control District
SDCWA	San Diego County Water Authority
SEI	Southern Energy, Inc.
SIB	Southerly International Boundary
SIP	State Implementation Plan

SLR	San Luis Rey
SNWA	Southern Nevada Water Authority
SR	State Route
SRA	State Recreation Area
SSA	Salton Sea Authority
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids
U.S.	United States
U.S. 95	United States Highway 95
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USDA-SCS	United States Department of Agriculture - Soil Conservation Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWA	California Unified Watershed Assessment
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile organic compound
WACOG	Western Arizona Council of Governments
WMA	Wildlife Management Area
WRC	Water Resources Chapter

µg/kg	Micrograms per kilogram
µg/m^3	Micrograms per cubic meter

GLOSSARY OF TERMS

acre-foot	Volume of water (43,560 cubic feet) that would cover one acre to a depth of one foot.
affected environment	Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as a result of a proposed human action.
allocation, allotment	Refers to a distribution of water through which means specific persons or legal entities are assigned individual rights to consume pro rata shares of a specific quantity of water under legal entitlements. For example, a specific quantity of Colorado River water is distributed for use within each Lower Division State through an apportionment. The water available for consumptive use in that state is further distributed among water users in that state through the allocation. An allocation does not establish an entitlement; the entitlement is normally established by a written contract with the United States.
apportionment	Refers to the distribution of water available to each Lower Division state in normal, surplus, or shortage years, as set forth, respectively, in Articles II (B)(1), II (B)(2), and II (B)(3) or the Decree in *Arizona v. California*.
backwater	A relatively small, generally shallow area of a river with little or no current.
benthic	Bottom of rivers, lakes, or oceans; organisms that live on the bottom of water bodies.
biological opinion	Document stating the U.S. Fish and Wildlife Service and the National Marine Fisheries Service opinion as to whether a federal action is likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat.
candidate species	Plant or animal species not yet officially listed as threatened or endangered, but which is undergoing status review by the Service.
Colorado River Basin	The drainage basin of the Colorado River in the United States.

consumptive use	The total water diversions from the Colorado River, less return flows to the river.
critical habitat	Specific areas with physical or biological features essential to the conservation of a listed species and that may require special management considerations or protection. These areas have been legally designated via *Federal Register* notices.
cultural resource	Building, site, district, structure, or object significant in history, architecture, archeology, culture, or science.
depletion	Loss of water from a stream, river, or basin resulting from consumptive use.
endangered species	A species or subspecies whose survival is in danger of extinction throughout all or a significant portion of its range.
entitlement	Refers to an authorization to beneficially consume Colorado River water pursuant to (1) a decreed right, (2) a contract with the United States through the Secretary of the Interior, or (3) a Secretarial reservation of water.
eutrophic	A body of water, often shallow, containing high concentrations of dissolved nutrients with periods of oxygen deficiency.
flow	Volume of water passing a given point per unit of time expressed in cfs. *peak flow* – Maximum instantaneous flow in a specified period of time. *return flow* – Portion of water previously diverted from a stream and subsequently returned to that stream or to another body of water.
full pool	Volume of water in a reservoir at maximum design elevation
gaging station	Specific location on a stream where systematic observations of hydrologic data are obtained through mechanical or electrical means.
headwater	The source and upper part of a stream.
hydrology	Science dealing with natural runoff and its effect on streamflow.
hydroelectric power	Electrical capacity produced by falling water.

Law of the River	As applied to the Colorado River, a combination of federal and state statutes, interstate compacts, court decisions and decrees, federal contracts, an international treaty with Mexico, and formally determined operating criteria.
Lead Agency	The agency initiating and overseeing the preparation of an environmental impact statement.
Lee Ferry	A reference point marking division between the Upper and Lower Colorado River Basins. The point is located in the mainstream of the Colorado River 1 mile below the mouth of the Paria River in Arizona.
Lee's Ferry	Location of Colorado River ferry crossings (1873 to 1928) and site of the USGS stream gage above the Paria River confluence.
load	Amount of electrical power or energy delivered or required at a given point.
Lower Basin	The part of the Colorado River watershed below Lee Ferry, Arizona; covers parts of Arizona, California, Nevada, New Mexico, and Utah.
Lower Division	A division of the Colorado River system that includes the states of Arizona, Nevada, and California.
Lower Division States	Arizona, California, and Nevada as defined by Article II of the Colorado River Compact of 1922.
megawatt (MW)	One million watts of electrical power (capacity).
megawatt hour (MWh)	One million watt-hours of electrical energy.
Minute 242	Minute 242, August 30, 1973 of the International Boundary and Water Commission United States and Mexico pursuant to the Mexican Water Treaty. Similar to an amendment.
Participating Agencies	California agencies that are affected by the implementation of the QSA, specifically, CVWD, IID, MWD and SDCWA
Piscivorous	Habitually feeding on fish.
PM_{10}	Particulate matter less than 10 microns in mean diameter.
Present Perfected Rights	With respect to the Colorado River, a water right exercised by the actual diversion of a specific quantity of water, prior to June 25, 1929, the effective date of the Boulder Canyon Project Act.

priority	A ranking with respect to diversion of water relative to other water users.
quantification period	75-year period that the Implementation Agreement and Quantification Settlement Agreement would be in effect.
reach	A specified segment of a stream, channel, or other water conveyance.
reserved water	Water "reserved" for use on a national property.
riparian	Of, on, or pertaining to the bank of a river, pond, or lake.
RiverWare	A commercial river system simulation computer program that was configured to simulate operation of the Colorado River (See Appendix D).
salinity	A term used to refer to the dissolved minerals in water, also referred to as total dissolved solids.
San Luis Rey Indian Water Rights Settlement Parties	Those entities named in PL 100-675, which include La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, the City of Escondido, Escondido Mutual Water Company (which is no longer in existence) and Vista Irrigation District.
Secretary	Secretary of the Interior
sediment	Unconsolidated solid material that comes from weathering of rock and is carried by, suspended in, or deposited by water or wind.
total dissolved solids (TDS)	A measure of the inorganic or mineral content of water, commonly expressed in milligrams per liter.
tributary	River or stream flowing into a larger river or stream.
Upper Basin	The part of the Colorado River watershed above Lee Ferry, Arizona; that covers parts of Arizona, Colorado, New Mexico, Utah, and Wyoming.
Upper Division	A division of the Colorado River system that includes the states of Colorado, New Mexico, Utah, and Wyoming.
watershed	The drainage area upstream of a specified point on a stream.

Final Program Environmental Impact Report

Implementation of the Colorado River Quantification Settlement Agreement

Volume 2 - Comments and Responses

June 2002

State Clearinghouse Number 2000061034

Coachella Valley Water District
Imperial Irrigation District
The Metropolitan Water District of Southern California
San Diego County Water Authority

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The Metropolitan Water District of Southern California
San Diego County Water Authority

PREFACE

FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

Volume 2 of the Final PEIR contains comments received on the Draft PEIR in the order listed below and responses to those comments. Each substantive comment is numbered and a corresponding response is provided immediately following the comment letter. Twenty-one comment letters were received from the following from the following seventeen agencies, Indian tribes, organization, and individuals:

FEDERAL AGENCIES

- International Boundary and Water Commission
- U.S. Environmental Protection Agency

STATE AGENCIES

- California Office of Planning and Research, California State Clearinghouse
- Southern Nevada Water Authority
- California Department of Fish and Game
- California Department of Food and Agriculture
- California Regional Water Quality Control Board

REGIONAL AGENCY

- Southern California Association of Governments

LOCAL AGENCIES

- County of Imperial
- County of San Diego

INDIAN TRIBES

- Quechan Indian Tribe
- Torres Martinez Band of Desert Cahuilla Indians

ORGANIZATIONS

- Defenders of Wildlife
- National Audubon Society, Planning and Conservation League, Defenders of Wildlife, and National Wildlife Federation
- Save Our Forest and Ranchlands

INDIVIDUALS

- Floyd and Margot Overholt
- John Pavlich

FEDERAL AGENCIES

Comments and Responses

CONTENTS

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

FEB 25 2002

Science Application International Corporation (SAIC)
Attn: QSA PEIR
816 State Street, Suite 500
Santa Barbara, CA 93101

Dear SAIC:

The United States Section, International Boundary and Water Commission (USIBWC) has reviewed the *Draft* Programmatic Environmental Impact Report (EIR) titled "*Implementation of the Colorado River Quantification Settlement Agreement*" dated January 2002. The review comments on the EIR are as follows:

General Comment:

The proposed Inadvertent Overrun and Payback Policy (IOP) is mentioned in the project description. Note that the IOP does not apply to Mexico and the deliveries made under the United States-Mexico Water Treaty of 1944. The IOP establishes requirements for payback of inadvertent overuse of Colorado River water by Colorado River users in the Lower Division States. This proposal affecting the Lower Division States does not include Mexico. In addition, the IOP does not conform to the Water Treaty of 1944. | 1

Specific Comments:

- Page 1-14, line 16. Revise the footnote associated with the referenced Figure 1.3-2 schematic since the footnote refers to un-named impoundments and incorrectly includes Morelos Dam in that category. Morelos Dam is a diversion structure and has no impoundment. | 2
- Page 1-23, line 15. Insert the wording that is found in the general comment section above. | 3
- Page 2-17, line 16. Revise the footnote associated with the referenced Figure 2.5-1 illustration since Morelos Dam has no impoundment but is incorrectly categorized as having one. | 4
- Page 3.1-1, line 16. Revise the referenced Figure 3.1-1, as stated above. | 5
- Page 3.1-5, line 13. Revise the numerical quantity stated for the salinity limit allowed over the average. The correct limit is 115 +/- 30 milligrams per liter, and not the stated 15 +/- 30 milligrams per liter. | 6

The Commons, Building C, Suite 310 • 4171 N. Mesa Street • El Paso, Texas 79902
(915) 832-4100 • (FAX) (915) 832-4190

- Page 3.1-25, line 3. Correct the typographical error by deleting the word "of." | 7

If you have any questions, or require additional information, please call Mr. Steve Fox at (915) 832-4736.

Sincerely,

Sylvia A. Waggoner

Sylvia A. Waggoner
Division Engineer
Environmental Management Division

International Boundary and Water Commission, February 25, 2002

1. This comment is noted.
2. Figure 1.3-2, which contains the referenced footnote, has been revised and no longer indicates that Morelos Dam has an impoundment.
3. The discussion of the proposed Inadvertent Overrun and Payback Policy (IOP) policy has been revised to clarify that it does not apply to Mexico.
4. Figure 2.5-1 has been modified and no longer indicates that Morelos Dam has an impoundment.
5. Figure 3.1-1 has been modified and no longer indicates that Morelos Dam has an impoundment.
6. This typographical error has been corrected.
7. This typographical error has been corrected.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 16, 2002

Robert D. Thomson
Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

RECEIVED
APR 22 2002
SAIC SANTA BARBARA

Dear Mr. Thomson,

The Environmental Protection Agency (EPA) has reviewed the Draft Program Environmental Impact Report (DPEIR) for the **Colorado River Quantification Settlement Agreement (QSA), Southern California.** We note that there is a clear connection between the QSA and other Federal actions (e.g., Interim Surplus Guidelines, Department of Interior Implementation Agreement, and Imperial Irrigation District/San Diego County Water Authority Water Transfer). Therefore, although the QSA is a non-Federal action, EPA believes it is appropriate to provide comments because of the broad scope of the QSA and its bearing on many Federal actions. Our review and comments on Federal actions are pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), Section 309 of the Clean Air Act.

It was our understanding from discussions with your office that the public comment deadline date had been extended to April 16, 2002. Mr. Elston Grubaugh of the Imperial Irrigation District has informed us that the April 16th comment deadline date was retracted and that the actual deadline date for comments was March 26, 2002. We regret the confusion regarding the comment deadline dates and submit our comments at this time. EPA's substantive comments (attached) contribute to the public dialogue on this action, and merit consideration in the decision making process.

The DPEIR assesses the environmental impacts associated with the implementation of the proposed Colorado River Quantification Settlement Agreement (QSA) for the apportionment of Colorado River water among four water agencies in southern California: Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), the Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA) (Co-Lead Agencies). The implementation of the QSA involves a series of nine water transfers, water exchanges, water conservation measures and other changes identified in the QSA:

- IID/SDCWA Water Conservation and Transfer Project (up to 300,000 acre-feet per year (af/yr)). (IID/SDCWA Water Transfer)
- Coachella Canal Lining Project - Conservation and Transfer
- IID/CVWD water transfer 1st 50,000 af/yr; 2nd 50,000 af/yr (MWD Option)

- MWD/CVWD 35,000 af/yr State Project Water Transfer and Colorado River Water Exchange
- 1988 MWD/IID Water Conservation and Transfer Agreement
- 1989 MWD/IID/CVWD/Palo Verde Irrigation District (PVID) Approval Agreement Amendment
- All American Canal Lining Project - Conservation and Transfer
- IID and CVWD Priority 3 Water Diversion Caps
- Sharing Miscellaneous and Indian Present Perfected Rights Obligations

The programmatic evaluation addresses the aggregate impacts of the implementation of each of the nine program components above. Separate environmental analysis has either been completed or is under preparation for many of these program components.

EPA endorses the effort to reduce Southern California's historic use of Colorado River water to California's legal apportionment of 4.4 million acre-feet per year (maf/yr) while minimizing the adverse effects on beneficial uses. We applaud the efforts by the Co-Lead Agencies, State of California, Department of Interior/Bureau of Reclamation, and other water resource stakeholders to provide flexibility to meet California's Colorado River allocation goals. The reduction of unused apportionment and increased development in both the upper and lower basins, clearly demonstrate the potential for significant water scarcity and the need for long-term strategies to address future shortages. Of special note are the quantification and voluntary diversion caps provided in the QSA. We acknowledge and are encouraged by the shifts in water policy, management, and planning for water resources in California. 1

EPA advocates use of multiple tools which will assure a long-term, sustainable balance between available water supplies, ecosystem health (e.g., in-stream beneficial uses) and water supply commitments. These tools include water transfers and exchanges, conservation, tiered pricing, irrigation efficiencies, operational flexibilities, market-based incentives, water acquisition, conjunctive use, voluntary temporary or permanent land fallowing, and wastewater reclamation and recycling. We are pleased that many of these measures have been integrated into the QSA. We urge aggressive implementation of water use efficiencies in order to achieve and maintain a sustainable balance between water supply and demand.

We note that environmental documentation on the potential impacts of the Department of Interior's Implementation Agreement (IA), which enables implementation of the QSA, and IID/SDCWA Water Transfer have also been released for public review. Although the IA, QSA, and IID/SDCWA Water Transfer are inextricably linked; the comment deadline dates are sequential, making it difficult for the public, local, state, and Federal entities to provide comprehensive comments on these actions. Our comments on the Department of Interior's Implementation Agreement have already been submitted to the Bureau of Reclamation. Since the IA enables implementation of the QSA, many of EPA's comments on the IA are relevant to our concerns with the QSA. Therefore, to minimize repetition, EPA's comments are attached and incorporated by reference. 2

Our review of the DEIS for the IID/SDCWA Water Transfer is not yet complete. Detailed comments on this water transfer project will be submitted to the Bureau of Reclamation by April 26th. Our comments on the IA DEIS, QSA DPEIR, and DEIS IID/SDCWA Water Transfer should be considered together and are incorporated by reference into our comments on each individual action. 3

We recognize the historic nature of the QSA which will result in a fundamental change in the use and allocation of California's Colorado River entitlement. Thus, we are disappointed in the lack of evaluation of the long-range water policy implications of the proposed actions especially given the programmatic nature of the evaluation. For instance, implementation of the QSA will help assure a more reliable water supply for Southern California cities which may influence land use planning and future development. We urge the Co-Lead Agencies to include a Chapter in the Final Program EIR (FPEIR) that clearly describes how water will be allocated and distributed, how the proposed QSA actions will reduce California's Colorado River use to 4.4 maf/yr while maintaining MWD's historic use of 1.25 maf/yr (e.g., how the water quantities add up), and how the QSA will help achieve a long-term sustainable balance between water supply and demand. 4

The DPEIR also contains significant gaps in its analysis of potential impacts. Most notable is the lack of evaluation of potential adverse impacts to Indian tribes. A total of thirty-five Indian tribes (see attached list) could be affected by proposed QSA actions and related actions such as the Interim Surplus Guidelines: five tribes on the lower Colorado River, six tribes in the Salton Sea watershed, six tribes that use or may be affected by the Central Arizona Project, and 18 tribes within San Diego County. These tribes have broad regulatory and land management authority for resources within and traversing their reservations. Water allocation, water use, and water quality within the region are of major interest to these tribes. 5

The DPEIR clearly states that there will be significant adverse effects to water quality, air quality, and the Salton Sea. Significant exceedences of the selenium aquatic life criteria (pg. 3.1-31), total dissolved solids (TDS) water quality standards (pg. 3.1-31), and PM10 air quality standards are predicted (pg. ES-8). Proposed QSA actions would also have significant adverse effects on the Salton Sea resulting in a more rapid collapse of the fisheries, displacement of sizable migratory bird populations, and exposure of up to 67,000 acres of currently inundated sediment. 6

Given the potential significant human health and environmental impacts, the exceedences of national standards, major gaps in the effects analysis, and minimal mitigation proposed; EPA objects to the proposed QSA actions and the DPEIR. Environmental objections indicate that our review has identified significant environmental impacts that should be avoided, via corrective measures or selection of another project alternative, to adequately protect the environment. EPA's goal is to ensure comprehensive disclosure of critical issues and adverse impacts and to first avoid and, then minimize impacts to human health and the environment to the greatest extent practicable. 7

We acknowledge that the DPEIR is a programmatic evaluation of the aggregate impacts of the QSA components and understand that separate project-level environmental analysis has either been completed or is under preparation for many of these program components. However, a fundamental purpose of this program-level document is to provide a comprehensive view of the QSA framework and present a complete summary of key issues and potential impacts that need to be addressed. We believe the DPEIR does not contain sufficient information to provide this comprehensive view or to fully assess environmental impacts that should be avoided in order to fully protect the environment and human health. The identified additional information, analyses, and discussions should be included in the FPEIR. 8

Detailed comments are enclosed. We appreciate the opportunity to review this DPEIR and are available to discuss these issues with you further. Should you have questions, please call Laura Fujii, of my staff, at (415) 972-3852. Please send three copies of the final environmental document to this office at the same time it is released to the public. 9

Sincerely,

Enrique Manzanilla, Director
Cross Media Division

Enclosures: Detailed Comments (12 pages)
EPA's Comments on the DEIS IA
List of Potentially Affected Indian Tribes
Tribal Consultation Executive Order
Guidance for Incorporating Environmental Justice Concerns

MI003421
Filename: CAquantagreedeir.wpd

cc: William Rinne, BOR
Bruce D. Ellis, BOR Phoenix
Carol Roberts, USFWS
Charles Fisher, IBWC
Charles Keene, CA DWR
Arthur G. Baggett, Jr., SWRCB
Phil Gruenberg, RWQCB
Sylvia Oey, CARB
Patricia Port, DOI
Tom Kirk, Salton Sea Authority
Water Resources Division, USGS, Yuma, AZ.
Southern California Agency, BIA
Sacramento and Phoenix Area Offices, BIA
Affected Indian Tribes (see attached list)

EPA DPEIR COMMENTS, COLO. RIVER WATER QUANTIFICATION SETTLEMENT AGREEMENT, APRIL 2002

DETAILED COMMENTS

Scope of the Evaluation and Water Supply Reliability Implications

1. Although the Draft Program EIR (DPEIR) lists the components of the QSA, it does not clearly describe how the proposed actions will help achieve the goal of reducing Southern California's historic use of Colorado River water to California's legal apportionment of 4.4 million acre-feet per year (maf/yr) while minimizing the adverse effects on beneficial uses. 10

Recommendation:

The Final Program EIR (FPEIR) should include a description of how the proposed QSA actions will reduce California's Colorado River use to 4.4 maf/yr while maintaining MWD's historic use of 1.25 maf/yr. We recommend this description include a simple calculation showing how the amounts of the various water transfers and exchanges result in the quantities of water described (e.g., reduction of Colorado River diversions to 4.4 maf/yr, exchange of 300 kaf/yr to San Diego, maintenance of 1.25 maf/yr in Colorado River Aqueduct).

2. Effective and sustainable management of water supplies depends on an accurate knowledge of water supply availability and water use. This knowledge can only be obtained through monitoring and accounting of water supply and demand. 11

Recommendation:

We recommend the Co-Lead Agencies, in partnership with the regulatory agencies and local communities, make a firm commitment to timely and accurate monitoring and accounting. This commitment should include dedicated funding for the monitoring/accounting effort. The FPEIR should describe proposed monitoring, accounting methods, enforcement tools, and assurance measures that will be used to verify, validate, and ensure effective implementation of the QSA and its water conservation and transfer actions. Given the proposed transfer of significant amounts of water, the FPEIR should persuasively demonstrate that water will be put to reasonable beneficial use and that there will be safeguards against misuse of the water.

3. The Quantification Settlement Agreement (QSA) would result in a fundamental change in the use and allocation of California's Colorado River entitlement, at least for 75 years. Thus, we believe the FPEIR should fully disclose the potential long-term water policy implications of implementation of the QSA. 12

1

Recommendations:

At a minimum, we recommend the FPEIR addressed the following: 13

– Potential effects of the QSA and the proposed shortage agreement, on long-term water supply reliability and sustainability for agricultural and urban beneficial uses. For example, what happens after 75 years of the QSA? Is there an expectation that Metropolitan Water District (MWD) and San Diego County Water Authority (SDCWA) will have developed other water sources to replace the water that could revert to Imperial Irrigation District (IID)? Or would IID reclaim the 300,000 acre-feet per year (afy) currently proposed for transfer to SDCWA?

– Urban growth. The transfer water appears to replace existing unreliable water supply, purchased from MWD, with a reliable supply, purchased from IID. Thus, the DPEIR states that the transfer water will be used for existing development and not future growth. Increased reliability of the water supply could significantly influence future regional land use planning and future development. In addition, by replacing the existing unreliable water supply with a more reliable one, new water supply sources may then be available for other future beneficial uses. We recommend the FPEIR describe water supply sources and quantities assumed for existing, approved, and planned growth. We also recommend describing potential mechanisms, where and if appropriate, to ensure the maximum efficient use of the transfer water for current beneficial uses. 14

Given the increasing scarcity and limitations of existing water supply sources, EPA advocates implementation of planned growth principles which are town-centered; transit and pedestrian oriented; have a greater mix of housing, commercial and retail uses; and maximize water use efficiencies. We urge aggressive implementation of water use efficiency measures in order to achieve and maintain a sustainable balance between water supply and demand. We recommend the FPEIR provide a detailed description of water use efficiency and water conservation efforts being taken by SDCWA and MWD. We encourage consideration of water use efficiency targets as one benchmark for obtaining additional increments of transfer water. 15

4. The DPEIR appears to limit its evaluation to potential impacts within the United States up to the international border with Mexico. Actions related to the QSA, such as the Interim Surplus Guidelines and lining of the All-American Canal, could have potentially adverse transboundary effects to the Mexicali groundwater basin and Lower Colorado River delta. 16

Recommendation:

The FPEIR should provide a summary of transboundary effects, including the concerns expressed by Mexico regarding the All-American Canal lining project, and Cocopah regarding adverse cumulative effects to the Limitrophe and Lower

Colorado River Delta. We recommend the FPEIR describe how these concerns have been addressed. The FPEIR should also include a general overview of the Lower Colorado River delta: current conditions, efforts to restore the delta, and pending litigation and International Boundary and Water Commission actions. 16

Water Quality 17

1. EPA objects to the projected increase in concentration and magnitude of exceedences of the selenium aquatic life criteria in the New and Alamo Rivers and Imperial Irrigation District (IID) agricultural drains (pg. 3.1-19 to 3.1-31)). As noted in the DPEIR (pgs. 3.1-10, 3.1-11; Table 3.1-15, pg. 3.1-29), the concentration of selenium in many locations already exceeds EPA's aquatic life criteria of 5 micrograms per liter (ug/l). We note that it is likely that the selenium aquatic life criteria will be revised to a level of 2 ug/l. Therefore, other discharge locations, such as the New River outlet to the Salton Sea (projected to have a selenium level of 3.77 ug/l) would exceed future aquatic life criteria. We are also very concerned with the potential for increased concentrations of perchlorate, boron, nutrients, pesticides, sediments, metals, and total dissolved solids. Our concern is heightened by the presence of fish-eating migratory birds and other threatened and endangered fish and wildlife species that could be adversely affected by these harmful constituents and the bioaccumulation of selenium up the food chain.

Recommendations: 18

We recommend the FPEIR evaluate potential mitigation measures to address the adverse increase in concentration of constituents of concern such as selenium. Potential mitigation measures include anaerobic, microalgal, and chemical selenium removal; integrated drainage management; desalination; evaporation ponds; deep well injection of extremely poor drainwater; and beneficial uses of drain water and salts.[1] In addition, the Regional Water Quality Control Board (RWQCB) will be developing Total Maximum Daily Loads (TMDL) for salinity, selenium and nutrients in the Salton Sea. TMDLs are quantitative assessments of the sources of pollutants (e.g., selenium) and allocated reductions of the pollutants for each pollutant source in order to reduce pollution levels to achieve water quality standards. We encourage the Co-Lead Agencies to work with the Regional Water Quality Control Board, Bureau of Reclamation, EPA and local Indian tribes in the development of TMDLs and other measures to address water quality problems.

The DPEIR does not appear to evaluate the bioaccumulation effects of selenium on biological resources of the New and Alamo Rivers, and the Salton Sea. We believe this is a significant gap in the effects analysis, especially given the 19

[1]San Luis Unit Drainage Feature Re-Evaluation, Preliminary Alternatives Report, US Bureau of Reclamation, Mid-Pacific Region, December 2001.

presence of sensitive fish and wildlife species, current efforts to restore the Salton Sea, and efforts to address water quality problems in regional water bodies (e.g., Total Maximum Daily Loads program). The FPEIR should provide a full description of the bioaccumulation effects of selenium and its potential interactions within the Coachella Valley, Imperial Valley, and Salton Sea ecosystems. 19

The DPEIR also does not provide information on the potential for increased concentrations of perchlorate, boron, pesticides, nutrients, sediments, metals and total dissolved solids. Many of these constituents, such as perchlorate, can have serious adverse effects on human health and the environment. We recommend that the FPEIR provide additional data on the possibility for increased concentrations of perchlorate, boron, pesticides, nutrients, total dissolved solids, sediments and metals in drainage water flowing into the New, Alamo, and Whitewater Rivers and the Salton Sea. The FPEIR should also provide an evaluation of the cumulative effects of possible increased concentrations of these constituents of concern. 20

Although we recognize the challenge of addressing degraded drain water quality, especially that caused by increased water use efficiencies, we urge the Co-Lead Agencies to work with the Bureau of Reclamation, Regional Water Quality Control Board, and EPA in developing feasible measures to avoid, minimize or mitigate the degradation of water flowing into critical fish and wildlife habitat. 21

2. Selenium concentration is increased in IID drains, the Alamo River, and New River due to reduced quantity and quality of drainage water. The DPEIR states that there is no feasible mitigation for the selenium concentration problem. On the other hand, the DPEIR states that Mitigation Strategy 2, use of conserved water as mitigation, will result in less-than-significant impacts at the Salton Sea for air quality, recreation, and biological resources because the conserved water would replace water lost (e.g., AQ 3.7-9). It is not clear why use of conserved water to replace inflows into the Alamo and New Rivers would not also help reduce the increase in selenium concentrations. 22

Recommendation:

The FPEIR should evaluate whether the use of conserved water as mitigation for reduced flows would be a feasible mitigation for reduced water quality.

3. The use of Colorado River water to recharge the overdrafted Coachella Valley groundwater aquifer is a serious matter for EPA. The DPEIR states that the use of Colorado River water, which is high in total dissolved solids (TDS), for groundwater recharge could cause lower aquifer groundwater to exceed 500 milligrams per liter (mg/l) and thus exceed EPA water quality standards (pg. 3.1-31). The proposed groundwater recharge area is located near Martinez 23

Canyon below Lake Cahuilla which would be less than one mile from a primary drinking water well for the Torres Martinez Indian Reservation. 23

In addition, Colorado River water, at sampling points between Hoover Dam and the Mexican Boundary, has consistently measured from 4 to 10 parts per billion (ppb) of perchlorate since testing began in 1997, including 8 ppb in the most recent Hoover Dam sample on February 22, 2002. On January 18, 2002, the California Department of Health Services (CA DHS) lowered the State Action Level for perchlorate in drinking water to 4 ppb requiring water agencies to notify public officials if this level is exceeded. Therefore, the water that will be used to reduce the groundwater overdraft could exceed drinking water standards and potentially affect and contaminate a drinking water source of the Torres Martinez Indian Band. In fact, EPA's National Center for Environmental Assessment recently published a draft Toxicity Health Assessment recommending a dose of approximately 1 ppb as a safe level for perchlorate in drinking water. Analytical methods to reliably detect perchlorate below 4 ppb are in development for general use.

Recommendation:

We urge the Co-Lead Agencies to provide a programmatic level evaluation of potential adverse effects of the groundwater recharge proposal on tribal and Coachella Valley drinking water sources and groundwater quality. For instance, the aquatards between aquifers are interlocking clay lenses which could leak resulting in the contamination of higher quality aquifers used for drinking water. The FPEIR should include a firm commitment to full disclosure and detailed evaluation of potential groundwater effects in the future EIR for the groundwater recharge actions. If there is a risk of contamination to tribal or other drinking water sources, the FPEIR should evaluate potential mitigation measures for this impact.

4. The DPEIR states "that there is no water quality criterion for salinity in the Salton Sea and, therefore, increased salinity would not be a significant impact when compared to current trends." (Table ES-1, pg. ES-45). We note that the Regional Water Quality Control Board has initiated development of a Total Maximum Daily Load (TMDL) for salinity in the Salton Sea. In addition, TMDLs for selenium and nutrients in the Salton Sea are required. 24

Recommendation:

EPA has a strong interest in ensuring actions that may affect the Salton Sea are consistent with TMDL requirements and the need to meet water quality standards. Therefore, we recommend TMDL actions be integrated into the proposed QSA actions, where applicable, and fully described in the FPEIR. Potential impacts of proposed actions on development and implementation of TMDLs must be fully addressed in the FPEIR and in future EIRs.

5. Potential alternatives evaluated in the DPEIR include connecting the Coachella Canal to the Colorado River Aqueduct or connecting the All-American Canal to the SDCWA system. Under these alternatives, Colorado River water, already high in salts and other constituents, would be subjected to additional evaporation. EPA is concerned with the potential increase in the concentrations of constituents such as selenium and perchlorate which have known adverse effects to human health and the environment. 25

Recommendation:

The FPEIR should include an evaluation of the likelihood of increasing the concentration of constituents of concern through increased evaporation which may be caused by proposed alternatives.

6. In the past, the US Geological Service (USGS) has provided adequate sampling and monitoring of water quality in the Lower Colorado River. The USGS monitoring program has been severely reduced as of October 2000 due to lack of funding. The USGS' National Stream Quality Accounting Network - NASQAN, has been collecting comprehensive and long-term monitoring data for this vital water supply source. 26

Recommendation:

With the potential changes in the management of flow and storage in the Colorado River system and increased use of the water for direct human consumption, the effective monitoring of water quality is critical. The FPEIR should describe whether actions have been taken to support and continue the NASQAN. If not, we urge the Co-Lead Agencies, Department of Interior and Bureau of Reclamation, as managers and users of the Colorado River, to advocate and help pursue funding to restore the USGS NASQAN effort, a critical part of water quality monitoring of the Colorado River.

Air Quality

27

1. Proposed QSA actions could result in exposure of 67,000 acres (approximately 105 square miles) of land currently inundated by the Salton Sea. The DPEIR states that the surface elevation of the Salton Sea is expected to decline at a faster rate and to a greater extent with the QSA. The evaluation of potential air quality impacts states that exposed Salton Sea sediments would dry with a crust covering which would minimize the ability of winds to generate dust emissions. Thus, the DPEIR appears to conclude that the level of dust emissions would be dependent upon the amount of human disturbance of these exposed soils (pg. 3.7-9).

EPA disagrees with the statement that the exposed lake bed, caused by reduced inflows to the Salton Sea, would dry and form a crust covering which would minimize the ability of winds to generate dust emissions. EPA believes that the crust formed may breakup under natural events similar to the Owens dry lake bed in California. These natural events could come from ground water evaporation, surface moisture, or rain. These events can cause the surface to crack and,

when exposed to wind, will contribute to particulate matter less than 10 microns in diameter (PM10) emissions. The Owens dry lake bed is approximately 105 square miles of which 35 square miles (22,400 acres) are highly emissive. Crust formations do accrue upon the Owens dry lake bed that can sustain the weight of a car. As the weather changes, these surfaces break up and cause the worst PM10 emissions in the United States. 27

EPA objects to the potential air quality impacts of exposed Salton Sea sediment. Our objections are increased by the lack of information and data regarding constituents of the sediments and its potential behavior when exposed to high winds and human disturbance. We note that there is widespread local concern regarding the constituents of the exposed sediment and its potential to cause adverse human health and environmental effects.

Recommendations:

We strongly recommend that the Co-Lead Agencies initiate, with the Bureau of Reclamation and other stakeholders, a study to determine the durability and sustainability of crust formations on the exposed Salton Sea shoreline. A description of proposed data collection actions should be disclosed in the FPEIR We note that the composition of the sediments and weather patterns may vary along the shoreline and affect crust formation. This fact should be considered when designing the study. 28

We recommend that the FPEIR include a description of the composition of the sediments and the risk of adverse human health and environmental effects if this sediment becomes airborne. If specific data is not available, the FPEIR should describe research and data needs and commit to participate in efforts to obtain this critical information. 29

The FPEIR should also evaluate possible control measures for the newly exposed shoreline. Control measures could include, but are not limited to, the introduction of native plants to provide ground cover. Human disturbances along the exposed shore line should also be addressed as they too can contribute to PM10 and dust emissions. 30

We also recommend that the FPEIR contain a detailed summary of the air quality evaluation, conclusions, and proposed mitigation measures provided in the IID/SDCWA Water Transfer DEIS. We believe it is especially important to describe various air quality mitigation options for affected tribal land since this land is an Indian Trust Asset. 31

2. The DPEIR indicates that air quality impacts could be cumulatively significant if multiple projects occur at the same time (pg. 4-31). It also states that construction projects in the IID and CVWD service areas would create short-term significant air quality impacts. With the exception of these cumulative air quality impacts, the DPEIR states that mitigation measures associated 32

with the QSA actions would reduce the potentially significant cumulative impacts to less-than-significant levels (pg. 4-32). Given the PM10 nonattainment status of the region and the potential exposure of 67,000 acres of Salton Sea sediments, EPA remains very concerned with the potential for major air quality problems. 32

Recommendation:

The FPEIR should provide a more rigorous evaluation of potential air quality impacts. We strongly recommend the Co-Lead Agencies work closely with the Air Resources Board and its regional offices in developing measures to avoid, minimize, and mitigate potential adverse air quality effects.

3. The use of conserved water to replace the loss of inflow into the Salton Sea has been suggested as mitigation for potential air quality impacts from exposed sediments (pg. 3.7-14). Replacement water would maintain the existing inflows to the Salton Sea, avoiding and minimizing the reduction in the Sea's surface elevation and exposure of currently inundated land. 33

Recommendations:

EPA recognizes water conservation and fallowing as tools to avoid, minimize and mitigate for potential impacts of the proposed actions. Thus, we wish to acknowledge the second mitigation strategy of utilizing conserved water to help address adverse air quality impacts of the QSA. We note that fallowing is a very controversial issue and has been rejected by many of the local communities. We recommend the FPEIR provide a more detailed evaluation of the feasibility and process of using conserved water to avoid and minimize adverse air quality effects on the Salton Sea.

We also recommend the FPEIR describe other mitigation measures which could help address adverse effects of exposed Salton Sea sediments.

4. EPA believes that it is important and appropriate that the FPEIR address the new eight-hour ozone standard and the new "fine" particulate matter standard (PM2.5). The DPEIR states that portions of the Project region do not attain the current ozone standard, including Imperial County and southwestern portions of San Bernardino and Riverside counties (pg. 3.7-3, 3.7-5). Although EPA has not designated nonattainment areas for either of these standards, we believe these standards may have bearing on proposed QSA actions. Because the eight-hour ozone standard is more stringent than the one-hour ozone standard, it is likely that parts of the project area would be designated as a nonattainment area for the eight-hour ozone standard, possibly within the time frame of the proposed action. Therefore, it would be useful, and appropriate under the public disclosure requirements, to include a discussion of the implications of the new eight-hour ozone standard with respect to the execution of the IA, QSA, and IID/SDCWA Water Transfer. EPA recognizes the serious health effects that "fine" particulates can cause, and, therefore, urges project proponents to reduce particulate emissions to the greatest extent possible. 34

This is particularly important where the project will impact sensitive receptors, such as children and the elderly. 34

Recommendations:

In its discussion of air quality impacts the FPEIR should include a discussion of the new eight-hour ozone standard, as well as the new PM2.5 standard. To the extent that monitoring data is available on these two criteria pollutants, include that information in the FPEIR.

In addition, we urge the Co-Lead Agencies to commit to a detailed discussion of measures to reduce construction and operational generation of PM2.5 (please refer to our enclosed comments on the IA DEIS).

Tribal Resources and Consultation and Coordination with Indian Tribal Governments

1. EPA objects to the lack of evaluation of potential impacts to Indian Tribes or Indian Trust Assets. We find this lack of evaluation especially egregious given the presence of a number of tribes (e.g., Torres Martinez, Coachella Valley Tribal Consortium, 18 tribes in San Diego County, Cocopah Indian Tribe) that could be directly affected by proposed QSA actions. These tribes have broad regulatory and land management authority for resources within and traversing their reservations. For instance, the Torres Martinez and Coachella Valley Tribal Consortium are currently establishing beneficial use criteria for waters in and under their reservations and are developing water quality standards and TMDLs to protect these uses. 35

The Cocopah Indian Tribe has expressed concern with the cumulative decrease in water to the Limitrophe. The Limitrophe is a 22-mile stretch of the Lower Colorado River and is the boundary between Mexico and the US created via the Gadsden Treaty (1853). It is a major part of the Cocopah Tribal lands. The Cocopah are working to have the Limitrophe designated an International Wildlife Refuge. Furthermore, the Tribe exists on both the US side and in the Colorado River delta of the Mexican side and has a strong interest in restoring the Colorado River delta region. 36

Recommendations:

We strongly recommend that all potentially affected Indian Tribes be consulted on a government-to-government basis. For assistance you may contact James Fletcher, Region 9 EPA, State, Tribal, and Municipal Programs Office, 619-235-4763 (place-based in San Diego, CA.) or Clancy Tenley, Manager of the Indian Programs Office, 415-972-3785.

The FPEIR should evaluate the potential effects of QSA actions on Indian Tribes and their Trust Assets, including those of the Cocopah and other Colorado River Tribes.

2. The Torres Martinez Indian Reservation is adjacent to and partially inundated by the Salton Sea and will, therefore, be adversely affected by identified impacts to the Salton Sea. In fact, nearly 12,000 acres of the Reservation is inundated by the Salton Sea. Part or all of this inundated land may be exposed under proposed QSA actions. The DPEIR speculates that this land may be suitable for agriculture or other purposes, such as recreational uses, and could be developed (pg. 3.4-10). We note that this statement is contrary to the statement that the level of dust emissions from exposed sediments would be proportional to the level of human disturbance of these exposed soils (pg. 3.7-9). 37

Given the designation of the Salton Sea as an agricultural sump for drainage water which may contain selenium, metals, perchlorate, pesticides and other contaminants, EPA questions the ability to utilize exposed land for specific uses. The Salton Sea has been sustained by agricultural drainage water for more than 60 years. Constituents of this water and its sediments, which may be deposited on land inundated by the Salton Sea, are not well known.

Recommendation:

Additional research and data collection is needed before making a determination on the use of and potential impacts from exposed Salton Sea sediment. We recommend the FPEIR describe existing research on Salton Sea sediment and the efforts to obtain more data. For instance, the Regional Water Quality Control Board has recently entered into an agreement with the Torres Martinez to conduct water quality sampling and sediment analysis for various constituents. If information in the IID/SDCWA Water Transfer DEIS is referenced, the FPEIR should contain a summary of the evaluation, conclusions and mitigation measures proposed in the IID/SDCWA DEIS.

3. Figure 1.1-2, "Other Potentially Affected Water Agencies and Selected Tribes" does not include the six tribes located in the Coachella Valley: Cabezon Band of Desert Cahuilla, Torres Martinez, the Morongo Band of Mission Indians, the Agua Caliente Band of Desert Cahuilla, Twenty Nine Palms Band of Mission Indians, and Augustine Band of Desert Cahuilla. The DPEIR is also silent regarding consultations or notifications made to the tribes. 38

Recommendations:

Figure 1.1-2 should be corrected to include all potentially affected tribes. The FPEIR should also describe the government-to-government consultation and coordination with these tribes.

Biological Resources

1. The description of the Salton Sea provided in the DPEIR does not describe the fish kills, bird die-offs, and hypereutrophication of the Sea which are major immediate concerns. Full disclosure of the existing condition of the Salton Sea is important since implementation of the QSA could have significant adverse affects on this condition. 39

Recommendation:

The FPEIR should include a complete description of the biological resources at the Salton Sea, their current condition, potential risks to these resources and the efforts underway to stabilize and save these resources. 39

2. Implementation of the QSA could result in significant adverse effects to biological resources due to construction within the IID service area, reduction in flows of the Lower Colorado River, reduction in Salton Sea surface elevations, and increased salinity in the Salton Sea. Mitigation measures to address construction and Lower Colorado River flow impacts to biological resources include habitat replacement and enhancement and specific species conservation strategies. To address adverse effects to the Salton Sea, two mitigation strategies are proposed: Strategy 1 - fish hatchery and habitat replacement, and Strategy 2 - use of water conserved through fallowing as mitigation (pg. 3.2-38). 40

EPA supports all efforts to avoid, minimize, and mitigate potential adverse effects of the QSA. However, we question whether proposed mitigation, especially mitigation proposed for the Salton Sea, would be able to reduce adverse impacts below the level of significance.

Recommendations:

The first mitigation strategy for the Salton Sea appears to deal primarily with the potential increase in salinity and the eventual collapse of the fishery and subsequent displacement of fish-eating migratory birds. Other potential adverse effects, such as bioaccumulation of selenium, do not appear to be addressed. We urge the Co-Lead Agencies to develop a more comprehensive mitigation strategy for biological resources that would address all potential adverse impacts to the Salton Sea and other affected fish and wildlife species and habitat. EPA urges use of all possible tools, including voluntary fallowing, to avoid, minimize, and mitigate for potential impacts to biological resources. We acknowledge the second mitigation strategy of utilizing conserved water to help address adverse biological resource impacts of the QSA. We note that fallowing is a very controversial issue and has been rejected by many of the local communities. We recommend the FPEIR provide a more detailed evaluation of the feasibility of using conserved water to avoid and minimize adverse biological resources effects on the Salton Sea.

General Comments

1. The DPEIR provides a brief description of the proposed actions and potential effects of transferring Colorado River water to CVWD to help implement the Coachella Valley Water Management Plan (pg. 6-6). We note that the Coachella Valley Water Management Plan is still being finalized and that the Draft Program EIR for the Water Management Plan has not yet been released for public comment (pg. ES-4). 41

Recommendation:

We believe more information regarding the specific components and agreements in the Coachella Valley Water Management Plan should be included in the FPEIR. For instance, provide information on whether Colorado River water would be used in lieu of groundwater pumping and whether there will be restrictions and limitations placed on groundwater pumping at the same time groundwater recharging with Colorado River water is implemented. 41

2. The DPEIR does not appear to evaluate potential environmental justice impacts even though proposed actions could have a disproportionate effect on agricultural workers, Indian tribes, and low income or minority populations. 42

Recommendation:

Although CEQA may not require evaluation of environmental justice effects, we believe such an evaluation is very important given the presence of low income populations or minority communities which could be disproportionately and adversely affected by proposed implementation of the QSA. As a guide, we have enclosed the Federal Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

3. A number of QSA components are provided project-level California Environmental Quality Act (CEQA) coverage through this DPEIR (e.g., Priority 6a priority and volume allocations, effects of shortage sharing provisions) (Table 2.4-1, pgs. 2-4 to 2-7). The current format provides this evaluation under each resource area. The resultant project-level analysis is very repetitive, confusing, and redundant where many of the evaluations are identical except for a few word changes. 43

Recommendation:

We recommend the FPEIR consolidate the project-level evaluations into a single section organized by QSA component versus repeating the same analysis statement for the component for each resource area.

Lower Colorado River Water Supply Projects and the Salton Sea
Potentially Affected Tribes

A total of thirty-five indian tribes could be affected by proposed Colorado River actions and related actions: five tribes on the lower Colorado River, six tribes in the Salton Sea watershed, six tribes that use or may be affected by the Central Arizona Project, and 18 tribes within San Diego County.

Lower Colorado River
Chemehuevi Indian Tribe
Cocopah Indian Tribe
Colorado River Indian Tribes
Fort Mojave Indian Tribe
Fort Yuma Quechan Indian Tribe

Salton Sea
Cabezon Band of Desert Cahuilla
The Five Tribes of the Morongo Consortium of Coachella Valley Tribes:
- Torres-Martinez
- The Morongo Band of Mission Indians
- The Agua Caliente Band of Desert Cahuilla
- Twenty Nine Palms Band of Mission Indians
- Augustine Band of Desert Cahuilla

Central Arizona Project
Salt River Indian Community
Fort McDowell
AK Chin
Tohono O'Odham
Gila River Indian Community
Pascua Yaqui

San Diego County

Campo	Pauma
La Posta	Pala
Cuyapaipe	Manzanita
Viejas	Inaja
Barona - Barron Long	Capitan Grande
Sycuan	Rincon
Jamul	San Pasqual
Meas Grande	La Jolla
Santa Ysabel	Los Coyotes

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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March 26, 2002

Mr. Bruce D. Ellis
Environmental Resources Management
Division
Phoenix Area Office
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APR 22 2002

SAIC SANTA BARBARA

Dear Mr Ellis:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the **Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, Lower Colorado River, Arizona, California, and Nevada** (CEQ# 020007). Our review and comments are pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our scoping comments for these actions were provided on April 5, 2001.

The Bureau of Reclamation (Reclamation) has prepared a draft environmental impact statement (DEIS) on the potential environmental consequences of executing an Implementation Agreement (IA) with Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), the Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA) (collectively referred to as the "California Parties"). The execution of the IA would commit the Secretary of the Interior (Secretary) to make Colorado River water deliveries in accordance with the terms and conditions of the IA which would enable the California Parties' to implement their proposed Quantification Settlement Agreement (QSA).

Federal actions include execution of the IA, wherein the Secretary approves changes in the point of delivery of up to 400,000 acre-feet (af) of Colorado River water annually from Imperial Dam to the intake of the Colorado River Aqueduct (CRA) located in Lake Havasu upstream of Parker Dam; adoption of an inadvertent overrun and payback policy (IOP), which establishes requirements for payback of inadvertent overuse of Colorado River water by the Lower Colorado River Division States; and implementation of biological conservation measures to offset potential impacts to federally listed threatened and endangered fish and wildlife species as identified in the US Fish and Wildlife Service's (FWS) Biological Opinion dated January 12, 2001.

The proposed QSA is an agreement among the California Parties for distribution and use of Colorado River water for a period of up to 75 years. The QSA and IA are integral to the successful implementation of California's Draft Colorado River Water Use Plan (CA 4.4 Plan) which was developed to ensure California limits its annual use of Colorado River water, starting in year 2016, to no more than its legal allocation of 4,400,000 af per year in normal water years. The QSA involves a series of nine water transfers, water exchanges, water conservation measures and other changes, including the Imperial Irrigation District (IID)/San Diego County Water Authority (SDCWA) Water Conservation and Transfer Project (IID/SDCWA Water Transfer). The potential environmental impacts of the QSA and IID/SDCWA Water Transfer are addressed in separate environmental impact reports/environmental impact statements. EPA will be providing comments on both of these actions and their environmental documentation.

We endorse the effort to reduce Southern California's historic use of Colorado River water to California's legal apportionment of 4.4 million acre-feet per year (maf/yr) while minimizing the adverse effects on urban and industrial water use. We commend the Bureau, California, and the other six basin states for their efforts to address the water supply limits in the Colorado River Basin. The reduction of unused apportionment and increased development in both the upper and lower basins, clearly demonstrate the potential for significant water scarcity and the need for long-term strategies to address future shortages. We recognize and support the efforts to provide flexibility to meet California's Colorado River allocation goals while ensuring adequate water supply reliability for all beneficial uses. We acknowledge and are encouraged by the shifts in water policy, management, and planning for water resources in California.

Although the IA, QSA, and IID/SDCWA Water Transfer are inextricably linked; the comment deadlines dates for these actions are sequential, making it difficult for the public, local, state, and Federal entities to provide comprehensive comments on these actions. We continue to recommend that the comment deadline dates for the three projects be more closely aligned. Our goal is to help ensure comprehensive disclosure of critical issues, concerns, and adverse impacts; and avoidance and minimization of potential impacts on the environment and other secondary and third parties.

We note that execution of the IA enables the QSA and IID/SDCWA Water Transfer and that the three projects are clearly connected actions [40 CFR 1508.25(a)(1)]. Since the IA enables the other two projects, it also provides tacit endorsement of the potential impacts of the QSA and IID/SDCWA Water Transfer actions. Although our review of the DEIR for the QSA and DEIS for the IID/SDCWA Water Transfer is not yet complete, we may have significant concerns regarding potential impacts of implementation of these actions and significant information gaps in the environmental documentation. These concerns will be described in detail in our subsequent comments on the QSA DEIR and IID/SDCWA Water Transfer DEIS.

Our current comments are in response to the evaluation of potential impacts of implementation of the IA and IOP which focuses on the impacts to the Lower Colorado River caused by the change in point of delivery and implementation of biological conservation measures. Of major concern are possible impacts to water quality, biological resources, and

Indian tribes. We also remain significantly concerned with the potential cumulative impacts of the IA, IOP, QSA, associated water transfers, and the interim surplus guidelines (which affects the quantity and timing of releases from Lake Mead) on water quality constituents (e.g., perchlorate, selenium) and the increased probability of more frequent and higher magnitude water shortages for other users of Lower Colorado River water (see Detailed Comments).

Because of the above significant concerns, we have rated the DEIS as EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of the EPA Rating System"). Detailed comments are enclosed. We appreciate the opportunity to review this DEIS. Please send three copies of the final EIS to our office when it is officially filed with our HQ EPA Office of Federal Activities. If you have any questions, please call Laura Fujii, of my staff, at 415-972-3852, email: fujii.laura@epa.gov.

Sincerely,

Lisa B. Hanf, Manager
Federal Activities Office
Cross Media Division

Enclosure: Detailed Comments (9 pages)
Summary of the EPA Rating System
Tribal Consultation Executive Order

MI003639
Filename: BORIAQSAdeis.wpd

cc: William Rinne, BOR
Carol Roberts, USFWS
Charles Fisher, IBWC
Charles Keene, CA DWR
Phil Gruenberg, RWQCB
Patricia Port, DOI
Tom Kirk, Salton Sea Authority
Arizona and California Ecological Services Field Offices, USFWS
Water Resources Division, USGS, Yuma, AZ
Sacramento and Phoenix Area Offices, BIA
Elston Grubaugh, IID
Potentially affected Indian tribes

DETAILED COMMENTS

Water Quality Comments

Perchlorate

EPA is very concerned with the potential cumulative impacts of the proposed Implementation Agreement (IA) and related actions on perchlorate concentrations and distribution within Lake Mead and below Hoover Dam in the Colorado River. Perchlorate is of grave concern because of its potential adverse health effects. EPA considers perchlorate to be a water contaminant and is in the process of developing information that would support a specific regulatory level. Perchlorate has been on the Contaminant Candidate List for several years. As of January 2001, perchlorate was included in EPA's nationwide "Unregulated Contaminant Monitoring Requirement" for public water supplies, with a method detection level of 4 parts per billion (ppb). Nearly every sample of Colorado River water from the Las Vegas Wash to the Mexican border has exceeded 4 ppb for the last three years. This level of perchlorate is of concern because of the increased use of Colorado River water for urban use.

The California Department of Health Services (CA DHS) has recently lowered the State Action Level for perchlorate in drinking water to 4 ppb requiring water agencies to notify public officials if this level is exceeded. As the first step in developing an enforceable Primary Drinking Water Standard for California, the California Office of Environmental Health Hazard Assessment has begun accepting public comments on a draft Public Health Goal of 6 ppb for perchlorate in drinking water supplies. EPA's National Center for Environmental Assessment recently published a draft Toxicity Health Assessment recommending a dose of approximately 1 ppb as a safe level for perchlorate in drinking water. Analytical methods to reliably detect perchlorate below 4 ppb are in development for general use. The February 22, 2002 sample of the Colorado River immediately below Hoover Dam had 8 ppb of perchlorate, well above the current detection limit.

Recommendations:

We strongly recommend the IA Final Environmental Impact Statement (FEIS) provide data on the possible levels of perchlorate in Colorado River water diverted for domestic drinking water use. If no data is available, we urge Reclamation, the California Parties, and other Colorado River interests work together to develop and implement monitoring and research programs to obtain this data. The FEIS should describe existing or planned actions to obtain additional information on levels of perchlorate in Colorado River water.

We believe effective monitoring and remediation of perchlorate is needed. In the past, the US Geological Service (USGS) has provided adequate sampling and monitoring. The USGS monitoring program has been severely reduced as of October 2000 due to lack of funding. We understood that Reclamation intended to

contact the USGS regarding resumption of the monitoring program. The FEIS should state whether Reclamation has been able to sponsor the USGS monitoring program.

EPA has a vested interest in the perchlorate remediation program and in assuring the monitoring program has an adequate level of quality assurance. Please contact Kevin Mayer, Region 9 EPA, Northern California Cleanup Section, Superfund Division at 415-972-3176, email: Mayer.Kevin@epa.gov, regarding the proposed monitoring program and perchlorate remediation program.

Tribal Resources and Consultation and Coordination with Indian Tribal Governments

1. A total of thirty-five Indian Tribes could be affected by the proposed action and related actions: five tribes on the lower Colorado River, six tribes in the Salton Sea watershed, six tribes that use or may be affected by the Central Arizona Project, and 18 tribes within San Diego County. These Tribes have a major interest in water allocation, water use, and water quality within the region. For example, the Northern San Diego County Tribes water rights settlement allocate them rights over water from water conservation practices, and the Cocopah and Quechan Tribal groups have a major interest in restoration of the lower Colorado River Delta. The DEIS did not provide evidence that these tribes have been consulted or that potential impacts to tribal resources have been fully evaluated.

We note that the DEIS only evaluated the potential direct effects of Federal actions (e.g., IA) on tribal resources and did not address the indirect effects which would occur within the service areas of the participating non-Federal agencies (e.g., IID water conservation measures) (pg. 3.10-1). Although Reclamation may have limited control over these effects, the execution of the IA would enable these other actions to take place. Reclamation has a duty to evaluate potential direct and indirect impacts to tribal resources [40 CFR 1508.8(b)].

Recommendation:

We strongly recommend that all potentially affected Indian Tribes be consulted on a government-to-government basis pursuant to the Executive Order on Consultation and Coordination with Indian Tribal Governments (enclosed). For assistance with Arizona Tribes, you may contact James Fletcher, Region 9 EPA, State, Tribal, and Municipal Programs Office, 619-235-4763 (place-based in San Diego, CA) and Daniel Pingaro, Indian Programs Office, 415-972-3782. For assistance with California Tribes, you may contact Clancy Tenley, Manager of the Indian Programs Office, 415-972-3785.

2. The DEIS predicts a 5% loss of power generation at the Bureau of Indian Affairs' (BIA) Headgate Rock Dam due to the reduction in river flows. Although this reduction would not affect the ability to meet current needs, it would affect BIA's ability to meet future tribal power needs. Reclamation has concluded that power generation is not an Indian Trust Asset and has not

proposed mitigation or compensation for this power loss. While the power loss may not be an Indian Trust Asset, the proposed action will still adversely affect BIA's ability to meet their trust responsibilities to the affected tribes.

Recommendation:

We urge Reclamation to work with BIA and the affected tribes to minimize and mitigate the loss of power at Headgate Rock Dam for tribal purposes. Options that could be explored include the development of alternative power sources or compensation to BIA and the tribes paid by beneficiaries of the action.

3. Nearly 12,000 acres of the Torres Martinez Reservation lies under the existing Salton Sea and would be exposed sooner under the proposed action. The DEIS speculates that this land may be suitable for agriculture or other purposes, such as recreational uses, and could be developed by the Torres Martinez Indians (pg. 3.4-8). We note that this statement is contrary to the statement that the level of dust emissions from exposed sediments would be contingent upon the amount of human disturbance of these exposed soils (pg. 3.11-4).

Given the designation of the Salton Sea as a repository for agricultural drainage water which may contain selenium, metals, perchlorate, pesticides and other contaminants; EPA questions the ability to utilize exposed land. The Salton Sea has been sustained by agricultural drainage water for more than 60 years. Constituents of this water are not well known and may contain hazardous materials. In addition, it is believed that a large portion of the constituents may be deposited in the form of sediments in the Salton Sea.

Recommendation:

A significant amount of research and data collection is required before making a determination on the use of and potential impacts from exposed Salton Sea sediment. We recommend the FEIS describe existing research on Salton Sea sediment and the efforts to obtain more data. For instance, the Regional Water Quality Control Board has recently entered into an agreement with the Torres Martinez Band to conduct water quality sampling and sediment analysis for various constituents. If information in the IID/SDCWA Water Transfer DEIS is referenced, the IA FEIS should contain a summary of the evaluation, conclusions and mitigation measures proposed in the IID/SDCWA document.

4. The DEIS indicates there is the potential for adverse impacts to population trends and employment from decreased water levels and water quality of the Salton Sea (Table ES-1, pg. ES-28). The evaluation also states that while the loss of employment opportunities would have social consequences, it would not constitute a substantive change to the environment and a discussion of potential measures to minimize these socioeconomic impacts is not provided.

Recommendation:

The Torres Martinez Band of Desert Cahuilla have always lived in this region and would be less able to relocate for employment. Therefore, we believe an evaluation of potential measures to reduce socioeconomic impacts is important, even though these impacts may not constitute a substantive change to the environment. We urge Reclamation and project beneficiaries work with affected tribes in minimizing potential socioeconomic impacts caused by adverse effects on the Salton Sea.

Air Quality Comments

1. The DEIS states that the surface elevation of the Salton Sea is expected to decline under both the No Action and Proposed Action alternatives, exposing currently inundated lands. Under the Proposed Action, the shoreline would recede at a faster rate than under No Action. The evaluation of potential air quality impacts states that exposed Salton Sea sediments would dry with a crust covering which would minimize the ability of winds to generate dust emissions. Thus, the DEIS appears to conclude that the level of dust emissions would be dependent upon the amount of human disturbance of these exposed soils (pg. 3.11-4).

EPA is concerned with the above assumption that the exposed lake bed, caused by reduced inflows to the Salton Sea, would dry and form a crust covering which would minimize the ability of winds to generate dust emissions. EPA believes that the crust formed may breakup under natural events similar to the Owens dry lake bed in California. These natural events could come from ground water evaporation, surface moisture, or rain. These events can cause the surface to crack and, when exposed to wind, will contribute to PM-10 emissions. The Owens dry lake bed is approximately 105 square miles of which 35 square miles are highly emissive. Crust formations do accrue upon the Owens dry lake bed that can sustain the weight of a car. As the weather changes, these surfaces break up and cause the worst PM-10 emissions in the United States.

EPA has significant concerns regarding potential air quality impacts of exposed Salton Sea sediment. This concern is increased by the lack of information and data regarding constituents of the sediments and its potential behavior when exposed to high winds and human disturbance.

Recommendations:

We strongly recommend that Reclamation and the California Parties initiate a study to determine the durability and sustainability of crust formations on the exposed Salton Sea shoreline. A description of proposed data collection actions should be fully disclosed in the IA FEIS and environmental documentation for the QSA and IID/SDCWA Water Transfer. We note that the composition of the sediments and weather patterns may vary along the shoreline and affect crust formation. This fact should be considered when designing the crust formation

study. The IA FEIS should also evaluate possible control measures for the newly exposed shoreline. Control measures could include, but are not limited to, the introduction of native plants to provide ground cover. Human disturbances along the exposed shore line should also be addressed as they too can contribute to PM-10 and dust emissions.

We also recommend that the IA FEIS contain a detailed summary of the air quality evaluation, conclusions, and proposed mitigation measures provided in the IID/SDCWA Water Transfer DEIS. We believe it is especially important to describe various air quality mitigation options for affected tribal land since this land is considered an Indian Trust Asset.

2. EPA believes that it is important and appropriate that the IA FEIS address the new eight-hour ozone standard and the new "fine" particulate matter standard (PM2.5). Although EPA has not designated nonattainment areas for either of these standards, we believe these standards may have bearing on the proposed action and the projects it will enable. Because the eight-hour ozone standard is more stringent than the one-hour ozone standard, it is likely that parts of the project area would be designated as a nonattainment area for the eight-hour ozone standard, possibly within the time frame of the proposed action. Therefore, it would be useful, and appropriate under the public disclosure requirements of NEPA, to include a discussion of the implications of the new eight-hour ozone standard with respect to the execution of the IA, QSA, and IID/SDCWA Water Transfer. EPA recognizes the serious health effects that "fine" particulates can cause, and, therefore, urges project proponents to reduce particulate emissions to the greatest extent possible. This is particularly important where the project will impact sensitive receptors, such as children and the elderly.

Recommendations:

In its discussion of air quality impacts the IA FEIS should address the following:

Affected Environment

- Include a discussion of the new eight-hour ozone standard, as well as the new PM2.5 standard. To the extent that monitoring data is available on these two criteria pollutants, include that information in the EIS.

Construction

- Reduce the use of diesel-powered equipment.
- Specify the duration and concentration of air emissions by pollutant and location for each phase of project construction.
- Identify sensitive receptors in the project area, such as children, elderly, infirm, and athletes, and schedule construction to minimize impact to these populations.
- Include mitigation measures that detail how diesel emissions will be minimized for each phase of project construction. For example, require contractors to keep the equipment fine-tuned or use alternative fueled vehicles.
- Include a fugitive dust control plan.

- Address how traffic congestion related to project construction can contribute to increased levels of carbon monoxide, especially at already congested intersections.

3. Federal agencies are required by the Clean Air Act to assure that actions conform to an approved air quality implementation plan.

Recommendation:

If the proposed project area is in a nonattainment area, Reclamation may need to demonstrate compliance with general conformity requirements of the Clean Air Act [Section 176(c)]. General Conformity Regulations can be found in 40 CFR Parts 51 and 93 (58 Federal Register, page 63214, November 30, 1993). These regulations should be examined for applicability to the proposed actions. The IA FEIS should clearly state whether a conformity determination is required and, if yes, provide a copy of the determination in the FEIS.

Biological Resources Comments

1. Biological conservation measures include restoration or creation of 44 acres of backwaters along the Colorado River between Parker Dam and Imperial Dam. While selenium levels in the Lower Colorado River may be below the Department of Interior level of concern of 5 micrograms per litter (ug/l), backwater areas could act as a sink for selenium which may then become an issue due to its bioaccumulation up the food web. We note that the level of concern is being re-evaluated and may be lowered to 2 ug/l.

Recommendation:

We recommend the IA FEIS evaluate the potential for selenium to accumulate in the proposed backwater areas. If there is potential for adverse impacts, specific backwater design criteria to minimize the problem should be explored or mitigation measures provided.

2. Under the No Action alternative, the DEIS states that Colorado River flows, and therefore water levels, from Hoover Dam to Imperial Dam would likely be lower than historic conditions, since surplus and unused apportionment waters would not be available (pg. 3.2-14). However, since these changes would be consistent with what is allowed under the current legal framework of the Law of the River, potential biological impacts are not disclosed.

Recommendation:

We recommend Reclamation consider providing an evaluation of potential impacts to biological resources which may be caused by the reduction of flows under the No Action alternative. Although these changes may be within the framework of the Law of the River, the reduction in flows could result in a loss of backwaters and riparian areas critical to maintenance of sensitive, threatened, and endangered species.

Water Supply Comments

EPA remains concerned with the probability of more frequent and higher magnitude water shortages to other users of Lower Colorado River water caused by cumulative effects of the interim surplus guidelines, IA, QSA, the proposed water transfers, and build out of the upper and lower basins. For instance, adequate water supply for the Central Arizona Project (CAP) could be significantly reduced since it has the lowest priority water rights. Thus, the CAP would be the first to experience shortages and could be reduced to zero allocation prior to shortages for other higher priority users.

The Interim Surplus Guidelines FEIS indicated that forbearance arrangements made by the Lower Division states and individual contractors were being considered to address potential increased shortages for specific users (pg. 2-13, Interim Surplus Guidelines FEIS). For instance, California had proposed reparation to Arizona for increased shortages (pg. B-232, responses to comment letter 56).

Recommendation:

We recommend Reclamation provide information in the IA FEIS on these potential reparation and/or forbearance agreements and commit to facilitating the development of mitigation measures for potential increased water supply shortages.

National Environmental Policy Act Comments

The range of alternatives evaluated in the DEIS is very limited, including only the Proposed Action and No Action (executing the IA or not executing the IA). Execution of the IA would enable the QSA and its associated IID/SDCWA Water Transfer. It is our understanding that the environmental documentation for these projects evaluate a number of alternatives which would also require Secretarial approval for a change in delivery point and water use. If this is the case, it is not clear why Reclamation has not included these other potential alternatives in its range of alternatives for the IA.

Recommendations:

The IA FEIS should justify Action and No Action as a reasonable range of alternatives pursuant to NEPA [40 CFR 1502.14(a) and (c)]. Commitments to future environmental documentation, if any, should be clearly stated.

We also recommend the FEIS evaluate what actions and projects could go forward without the IA, QSA, and Interim Surplus Guidelines. For instance, it is our understanding that the IID/SDCWA water transfer, as originally formulated in the 1998 IID/SDCWA water transfer agreement, could still move forward without the QSA. Furthermore, surplus water, albeit under more constrained conditions, could still be declared by the Secretary without the Interim Surplus Guidelines.

Comments Specific to Implementation of an Inadvertent Overrun and Payback Policy

Given the growing need to ensure a sustainable balance between existing water supplies and demand, EPA supports the effort to define inadvertent overruns, establish accounting procedures, and define payback requirements. We believe payback of the water overruns, as soon as possible (e.g., in the next calendar year), regardless of the water year type or declaration of flood flows and surplus, is critical due to the potential for significant water scarcity and the need for long-term strategies to address future shortages. We support the use of extraordinary conservation measures as one means of obtaining adequate payback of inadvertent overruns to the mainstream of the Colorado River.

1. Use of extraordinary conservation measures are recommended as the means to obtain payback water. Such measures may not always be feasible.

Recommendation:

The FEIS should include a description of possible water supply backup options for payback water in case the proposed extraordinary conservation measures are not feasible or sufficient to provide the required makeup water. For example, we recommend consideration of water transfers, temporary or permanent fallowing, and groundwater banking. We advocate aggressive conservation and management flexibility to achieve equitable water supply allocation and a sustainable balance between water supply and demand.

General Comments

1. The IA would provide for transfer of conserved water to CVWD, SDCWA, and MWD for groundwater recharge and urban use (Chapter 2). This water would replace Colorado River water that is no longer available (e.g., unused apportionment and surplus water). Thus, the DEIS concludes that there would be no induced growth or impact to population (Section 3.7). EPA remains concerned with the potential for growth and the need to ensure a sustainable balance between existing water supply and demand.

Recommendations:

To maximize water supply benefits and project flexibility, we urge Reclamation and other Federal Agencies to work with the CVWD, IID, MWD, SDCWA to consider and integrate all available tools for enhancing water management flexibility, supply reliability, and water quality. EPA advocates integration of aggressive water conservation and management practices into the IA and QSA. For instance, we recommend Reclamation consider including specific criteria in the IA to ensure that delivered water is effectively used.

We also recommend the IA FEIS provide a more in-depth discussion of water use efficiency measures that have been or could be implemented by MWD, CVWD, and SDCWA.

2. It is well known that Colorado River water supply actions are often complex and controversial. Thus, we are pleased with the description of major proposed and related Federal and State actions in the Lower Colorado River region provided in Chapter 1. While this description is helpful, a discussion of how these projects and actions interrelate, why they are being implemented, and their effects on each other would significantly help minimize confusion, clarify issues, and provide supporting rational for the IA and QSA.

Recommendations:

We recommend the IA FEIS discuss how all the projects and actions interrelate, how they affect each other, how they fit into the larger picture of California and Lower Colorado River water supply allocation and management and why these actions are being implemented. For example, describe the potential affect of the TMDL program, which may implement water conservation measures, on efforts to improve water use efficiency in the Imperial Valley.

An evaluation of the relationships between the IA, QSA, and IID/SDCWA Water Transfer is of immediate importance since all three projects have been released for public review. For instance, the FEIS should clearly state what each project environmental document evaluates and its focus (e.g., lower Colorado River, Salton Sea, or Coachella Valley impacts) and why.

3. The DEIS frequently refers to evaluations contained in other environmental documents (e.g., IID/SDCWA Water Transfer) without providing a summary of these evaluations. A major objective of NEPA is full disclosure to help public officials and the public make better decisions. Thus, it is critical that a complete picture of the IA and the actions it enables (e.g., QSA, IID/SDCWA Water Transfer) should be provided in the EIS.

Recommendation:

We strongly recommend the IA FEIS include a summary of the issues and environmental consequences of other projects referenced in the IA DEIS.

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

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THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release
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November 6, 200

EXECUTIVE ORDER

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CONSULTATION AND COORDINATION
WITH INDIAN TRIBAL GOVERNMENTS

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes; it is hereby ordered as follows:

Section 1. Definitions. For purposes of this order:

(a) "Policies that have tribal implications" refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

(b) "Indian tribe" means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

(c) "Agency" means any authority of the United States that is an "agency" under 44 U.S.C. 3502(1), other than those considered to be independent regulatory agencies, as defined in 44 U.S.C. 3502(5).

(d) "Tribal officials" means elected or duly appointed officials of Indian tribal governments or authorized intertribal organizations.

Sec. 2. Fundamental Principles. In formulating or implementing policies that have tribal implications, agencies shall be guided by the following fundamental principles:

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(a) The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship wit
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Indian tribes.

(b) Our Nation, under the law of the United States, in accordance with treaties, statutes, Executive Orders, and judicial decisions, has recognized the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers ove
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their members and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources, and Indian tribal treaty and other rights.

(c) The United States recognizes the right of Indian tribes to self-government and supports tribal sovereignty and self-determination.

Sec. 3. Policymaking Criteria. In addition to adhering to the fundamental principles set forth in section 2, agencies shall adhere, t
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the extent permitted by law, to the following criteria when formulating and implementing policies that have tribal implications:

(a) Agencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments.

(b) With respect to Federal statutes and regulations administered by Indian tribal governments, the Federal Government shall grant Indian tribal governments the maximum administrative discretion possible.

(c) When undertaking to formulate and implement policies that have tribal implications, agencies shall:

(1) encourage Indian tribes to develop their own policies to achieve
program objectives;

(2) where possible, defer to Indian tribes to establish standards
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and

(3) in determining whether to establish Federal standards, consul
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with tribal officials as to the need for Federal standards an

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any alternatives that would limit the scope of Federal standards or otherwise preserve the prerogatives and authorit
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of Indian tribes.

Sec. 4. Special Requirements for Legislative Proposals. Agencies shall not submit to the Congress legislation that would be inconsistent with the policymaking criteria in Section 3.

Sec. 5. Consultation. (a) Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in th
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development of regulatory policies that have tribal implications. Within 30 days after the effective date of this order, the head of each agency shall designate an official with principal responsibility for th
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agency's implementation of this order. Within 60 days of the effective date of this order, the designated official shall submit to the Office of Management and Budget (OMB) a description of the agency's consultation process.

(b) To the extent practicable and permitted by law, no agency shal
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promulgate any regulation that has tribal implications, that imposes substantial direct compliance costs on Indian tribal governments, and that is not required by statute, unless:

(1) funds necessary to pay the direct costs incurred by the India
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tribal government or the tribe in complying with the regulation are provided by the Federal Government; or

(2) the agency, prior to the formal promulgation of the regulation
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(A) consulted with tribal officials early in the process of developing the proposed regulation;

(B) in a separately identified portion of the preamble to th
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regulation as it is to be issued in the Federal Register
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provides to the Director of OMB a tribal summary impact statement, which consists of a description of the extent of the agency's prior consultation with tribal officials
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a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of tribal officials have been met; and

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(C) makes available to the Director of OMB any written communications submitted to the agency by tribal officials.

(c) To the extent practicable and permitted by law, no agency shall promulgate any regulation that has tribal implications and that preempts tribal law unless the agency, prior to the formal promulgation of the regulation,

(1) consulted with tribal officials early in the process of developing the proposed regulation;

(2) in a separately identified portion of the preamble to the regulation as it is to be issued in the Federal Register, provides to the Director of OMB a tribal summary impact statement, which consists of a description of the extent of the agency's prior consultation with tribal officials, a summary of the nature of their concerns and the agency's position supporting the need to issue the regulation, and a statement of the extent to which the concerns of tribal officials have been met; and

(3) makes available to the Director of OMB any written communications submitted to the agency by tribal officials.

(d) On issues relating to tribal self-government, tribal trust resources, or Indian tribal treaty and other rights, each agency should explore and, where appropriate, use consensual mechanisms for developing regulations, including negotiated rulemaking.

Sec. 6. Increasing Flexibility for Indian Tribal Waivers.

(a) Agencies shall review the processes under which Indian tribes apply for waivers of statutory and regulatory requirements and take appropriate steps to streamline those processes.

(b) Each agency shall, to the extent practicable and permitted by law, consider any application by an Indian tribe for a waiver of statutory or regulatory requirements in connection with any program administered by the agency with a general view toward increasing opportunities for utilizing flexible policy approaches at the Indian tribal level in cases in which the proposed waiver is consistent with the applicable Federal policy objectives and is otherwise appropriate.

(c) Each agency shall, to the extent practicable and permitted by law, render a decision upon a complete application for a waiver within 120 days of receipt of such application by the agency, or as otherwise provided by law or regulation. If the application for waiver is not granted, the agency shall provide the applicant with timely written notice of the decision and the reasons therefor.

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(d) This section applies only to statutory or regulatory requirements that are discretionary and subject to waiver by the agency.

Sec. 7. Accountability.

(a) In transmitting any draft final regulation that has tribal implications to OMB pursuant to Executive Order 12866 of September 30, 1993, each agency shall include a certification from the official designated to ensure compliance with this order stating that the requirements of this order have been met in a meaningful and timely manner.

(b) In transmitting proposed legislation that has tribal implications to OMB, each agency shall include a certification from the official designated to ensure compliance with this order that all relevant requirements of this order have been met.

(c) Within 180 days after the effective date of this order the Director of OMB and the Assistant to the President for Intergovernmental Affairs shall confer with tribal officials to ensure that this order is being properly and effectively implemented.

Sec. 8. Independent Agencies. Independent regulatory agencies are encouraged to comply with the provisions of this order.

Sec. 9. General Provisions. (a) This order shall supplement but not supersede the requirements contained in Executive Order 12866 (Regulatory Planning and Review), Executive Order 12988 (Civil Justice Reform), OMB Circular A-19, and the Executive Memorandum of April 29, 1994, on Government-to-Government Relations with Native American Tribal Governments.

(b) This order shall complement the consultation and waiver provisions in sections 6 and 7 of Executive Order 13132 (Federalism).

(c) Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments) is revoked at the time this order takes effect.

(d) This order shall be effective 60 days after the date of this order.

Sec. 10. Judicial Review. This order is intended only to improve the internal management of the executive branch, and is not intended to create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law by a party against the United States, its agencies, or any person.

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WILLIAM J. CLINTON

THE WHITE HOUSE,
November 6, 2000.

# # #

United States
Environmental Protection
Agency

Federal Activities
(2251A)

April 1998

EPA

Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses

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GUIDANCE FOR INCORPORATING ENVIRONMENTAL JUSTICE CONCERNS IN EPA'S NEPA COMPLIANCE ANALYSES

April 1998

U.S. Environmental Protection Agency
Office of Federal Activities
401 M Street S.W.
Washington, D.C. 20460

DISCLAIMER AND ACKNOWLEDGMENTS

The mention of company or product names is not to be considered an endorsement by the U.S. Government or by the Environmental Protection Agency. With the technical assistance of Science Applications International Corporation (SAIC), this document was prepared in partial fulfillment of EPA Contract 68-WE-0026, Work Assignment 72-IV.

This guidance was prepared under the direction of an EPA Workgroup co-chaired by Arthur Totten and Bill Dickerson of the Office of Federal Activities and helped by Karen Norris. The Workgroup members included the following:

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This guidance is intended to improve the internal management of EPA with respect to environmental justice under NEPA. It will not be deemed to create any right, benefit or trust obligation either substantive or procedural, enforceable by any person, or entity in any court against the agency, its officers, or any other person. Compliance with this guidance will not be justiciable in any proceeding for judicial review of agency action.

LIST OF EXHIBITS

APPENDICES

1.0 PURPOSE

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying Presidential memorandum, the President emphasizes existing laws, including the National Environmental Policy Act (NEPA) should provide opportunities for federal agencies to address environmental hazards in minority communities and low-income communities. In April of 1995, the U.S. Environmental Protection Agency (EPA) released the document titled "Environmental Justice Strategy: Executive Order 12898." The document defines the approaches by which EPA will ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed. It establishes Agency-wide goals for American Indian, Alaska Native, and other indigenous peoples (e.g., Native Hawaiian). It also establishes Agency-wide goals for environmental protection, and lists actions the EPA would take to incorporate environmental justice into its mission.

In August 1997, the EPA Office of Environmental Justice released the "Environmental Justice Implementation Plan." The Implementation Plan supplements the EPA environmental justice strategy. It provides estimated time frames for undertaking revisions, identifying the lead agents and determining the measures of success for each action item. Several EPA offices are developing more specific plans and guidance to implement Executive Order 12898 and this Agency-wide strategy.

This document serves as a guidance to incorporate environmental justice goals into EPA's preparation of environmental impact statements (EISs) and environmental assessments (EAs) under NEPA. The National Environmental Policy Act of 1969 (42 U.S.C. §4321 et seq.) serves as the Nation's basic environmental protection charter. A primary purpose of NEPA is to ensure that federal agencies consider the environmental consequences of their actions and decisions as they conduct their respective missions. For "major Federal actions significantly affecting the quality of the human environment," the federal agency must prepare a detailed environmental impact statement (EIS) that assesses the proposed action and all reasonable alternatives. EISs are required to be broad in scope, addressing the full range of potential effects of the proposed action on human health and the environment. Regulations established by both the Council on Environmental Quality (CEQ) and EPA require that socioeconomic impacts associated with significant physical environmental impacts be addressed in the EIS.

Environmental assessments have also become very important components of the NEPA process. Originally intended to serve as a mechanism for determining whether an agency's action was significant, thereby meriting an EIS, EAs are important analyses on their own. As a matter of policy, EAs completed by EPA regularly address socioeconomic effects associated with environmental impacts of Agency actions.

The purpose of this guidance is to assist EPA staff responsible for developing EPA NEPA compliance documentation, including EISs and EAs, in addressing a specific concern -- that of environmental justice.

its programs, policies, and activities on minority populations and low-income populations ..."[1] The Executive Order also explicitly called for the application of equal consideration for Native American programs. To meet these goals, the Order specified that each agency develop an agency-wide environmental justice strategy.

The Presidential Memorandum that accompanied the Executive Order calls for a variety of actions. Four specific actions were directed at NEPA-related activities, including:

1. Each federal agency must analyze environmental effects, including human health, economic, and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA.

2. Mitigation measures outlined or analyzed in EAs, EISs, or Records of Decision (RODs), whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities.

3. Each federal agency must provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility of public meetings, official documents, and notices to affected communities.

4. In reviewing other agencies' proposed actions under Section 309 of the Clean Air Act, EPA must ensure that the agencies have fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

As noted earlier, the purpose of this guidance is to assist EPA personnel in identifying and evaluating disproportionately high and adverse human health or environmental effects in minority communities and low-income communities within the context of NEPA documents prepared by EPA for actions which EPA complies with the procedural requirements of NEPA (*e.g.*, research and development activities, facilities construction, wastewater treatment construction grants, EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for new sources, and programs under the EPA Voluntary NEPA Compliance Policy), including instances where EPA satisfies its NEPA compliance obligation as a cooperating agency. It is also meant to improve the affected communities' access to the NEPA process.

1.2 Principles/Philosophy of this Guidance

This guidance highlights important ways in which EPA-prepared NEPA documentation may help to identify and address EJ concerns. The rationale and associated implications of the guidance will be described in the remainder of this document. This section provides a summary listing of the major implications.

[1] Throughout this guidance, the term "disproportionately high and adverse effects" is used interchangeably with the longer phrase "disproportionately high and adverse human health or environmental effects on minority populations and low-income populations." This is done purely for editorial ease.

- Identifying the "affected community" is particularly important. The effects of the proposed action will often vary depending on the distance of the affected community from the action and the type of effect created by the action (*e.g.*, airborne or waterborne pollution, increased traffic, etc.). Effects on the community should be discussed in terms of reasonable increments from the site of the action.

- Community involvement is particularly important in cases involving potential environmental justice issues. Early and sustained communications with the affected community throughout the NEPA process is an essential component of environmental justice.

- For meaningful community involvement to be achieved in circumstances where environmental justice is an issue, technical assistance supplied by EPA should be available to the community to assist in their full participation (e.g., interpretation of scientific documents, development of alternatives or mitigation measures).

- EISs and RODs, and EAs and FONSIs (Finding of No Significant Impact) should document the analyses used to identify the presence or absence of disproportionately high and adverse effects and present the results of those analyses. The ROD and the FONSI should document the conclusion of these analyses (i.e., whether the action will or will not have a disproportionately high and adverse effect on minority and/or low-income communities) and describe any mitigation that will be undertaken to avoid or minimize such effects.

1.2.1 EPA Actions Requiring NEPA Compliance

EPA is required to comply with NEPA for its research and development activities, facilities construction, wastewater treatment construction grants under Title II of the Clean Water Act and under certain Appropriations Acts, and EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for new sources subject to new source performance standards. The Agency is exempted by statute for actions taken under the Clean Air Act and for most Clean Water Act programs. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), requires EPA to comply only with the substantive, not the procedural, requirements of other environmental laws for on-site responses. In the case of other EPA programs, the courts have found EPA procedures to be "functionally equivalent" to the NEPA process and therefore these EPA programs are exempt from NEPA procedural requirements. Also, EPA voluntarily prepares EISs for a number of actions pursuant to a long-standing statement of Agency policy.

Exhibit 1 identifies EPA's major program areas and indicates which actions are subject to NEPA, which Congress has exempted from NEPA, which have been found to be functionally equivalent to NEPA, and which receive NEPA-like analyses. This guidance is applicable solely to EPA programs and actions subject to NEPA and not those identified as "functionally equivalent" in Exhibit 1. However, this should not preclude its use as reference where "functionally equivalent" programs or actions processes may benefit from the information contained therein.

Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities (continued)

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent	Voluntary EIS Policy
Clean Water Act Programs (continued)			
State Revolving Loan Fund	NEPA-like review by states required for all CWA §212 projects receiving federal funds. 40 CFR 35.3140.	N/A	N/A
National Estuary Program	Exempt per CWA §511(c)(1)	Environmental review for estuary designation and CCMP development are functional equivalent	N/A
Ocean Discharge Program	Generally exempt per CWA §511(c)(1)	§§301(h) and 403 processes are functional equivalent	N/A
Ocean Dumping Program	Exempt on basis of functional equivalency	MPRSA activities are functional equivalent	Ocean dumping site designations and revisions to ocean dumping criteria.
Effluent Guidelines Program	Exempt per CWA §511(c)(1)	Effluent Guidelines rule-making package is functional equivalent	N/A
Safe Drinking Water Act			
Drinking Water and Underground Injection Control (UIC) Regulations	SDWA procedures are functional equivalent	Regulation development process is functional equivalent	N/A
EPA and Authorized State Permitting - UIC Permits	Permitting process is functional equivalent	The UIC permitting process is functional equivalent.	N/A

(continued)

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Exhibit 1. Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities (continued)

EPA Program Areas	NEPA Requirement	Functional NEPA Equivalent	Voluntary EIS Policy
CERCLA/SARA (Superfund)			
CERCLA/SARA (Superfund) (CERCLA 1980 as amended by SARA 1986)	Exempt per CERCLA requirement that EPA only comply with the substantive, requirements of other environmental laws for on-site responses (see *State of Ohio v. EPA*).	Remedial Investigation/ Feasibility Study (RI/FS)	N/A
EPA Research and Development Activities			
EPA Research and Development Activities	Subject per CEQ regulations and 40 CFR 6 Subpart Q.	See NEPA requirement	N/A
EPA Facilities			
EPA Facilities Construction	Subject per CEQ regulations (40 CFR 1500-1508) and 40 CFR Part 6.	See NEPA requirement	N/A
Other EPA Programs			
International Activities	Governed by E.O. 12114, Environmental Effects Abroad of Major Federal Actions (as implemented at 40 CFR Part 6, Subpart J) and, in some cases, NEPA.	See NEPA requirement	US AID-funded projects.
Appropriations Acts may also result in NEPA requirements.			

Source: Adapted from "The National Environmental Policy Act and Environmental Protection Agency Programs," prepared by the EPA Workgroup on NEPA, October 12, 1993.

2.0 KEY TERMS AND FACTORS FOR CONSIDERATION IN EVALUATING ENVIRONMENTAL JUSTICE CONCERNS

The purpose of this section is to introduce key terms and concepts to heighten the EPA analyst's awareness of how disproportionately high and adverse effects may be identified. The discussion is based on guidance prepared by a task force of the Interagency Working Group on Environmental Justice (IWG). The IWG was created by Executive Order 12898 and is comprised of the heads (or representatives) of 17 departments and agencies.

The identification and analysis of disproportionately high and adverse human health or environmental effects on minority communities and low-income communities should occur throughout the NEPA process, from the initial phases of the screening analysis through the consideration and communication of all alternatives and associated mitigation techniques.

In conducting an EPA NEPA analysis that is sensitive to environmental justice concerns, the inter-disciplinary team of EPA NEPA analysts should have an understanding of key terms central to environmental justice and should understand what factors need to be considered to ensure that all relevant concerns are identified and evaluated in a direct and explicit manner. The team should include experts familiar with available and appropriate public participation procedures and strategies and, where such concerns may arise, individuals familiar with the unique concerns of Native American Tribes and populations. Developing a keen sensitivity to potential environmental justice concerns and modifying the scope of the analysis can have a dramatic impact on whether environmental justice concerns are identified and addressed adequately and appropriately. Therefore, the EPA NEPA analyst must be sensitive to what issues and factors to look for to avoid the possibility that disproportionately high and adverse effects may be inadvertently missed, incorrectly characterized, or inappropriately minimized. So as to avoid potential oversights of environmental justice concerns, the EPA NEPA analyst should work closely with the affected community in drafting an EIS or EA, and where the community's concerns warrant, EPA should formalize this interaction (e.g., community advisory boards).

Appendix A includes the Council on Environmental Quality's (CEQ's) "Environmental Justice Guidance Under the National Environmental Policy Act" which incorporates the IWG-developed guidance on key terms in Executive Order 12898 that are pertinent to environmental justice analyses. That guidance was developed to assist federal agencies in conducting analyses of disproportionately high and adverse effects of their programs, policies, and activities. The guidance is not static but provides for informed judgment in every case; this means that EPA NEPA analysts will need to make careful decisions to ensure that environmental justice concerns are identified and addressed.

The remainder of this chapter is organized into two sections. The first section addresses terms that should be considered in identifying the existence of minority communities or low-income communities. The second section identifies factors that often are associated with disproportionately high and adverse effects, including cumulative and indirect impacts, on minority or low-income members of the larger community. Methodological approaches for conducting analyses appear in Chapter 5.

The IWG guidance also advises agencies to consider both groups of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals, where either type of group "experiences common conditions" of environmental exposure or effect within the guidance provided for minority population. This can result from cultural practices, educational backgrounds, or the median age of community residents (*e.g.*, disproportionate numbers of elderly residents, children, or women of child bearing age may be more susceptible to environmental risks).

A factor that should be considered in assessing the presence of a minority community is that a minority group comprising a relatively small percentage of the total population surrounding the project may experience a disproportionately high and adverse effect. This can result due to the group's use of, or dependence on, potentially affected natural resources, or due to the group's daily or cumulative exposure to environmental pollutants as a result of their close proximity to the source. The data may show that a distinct minority population may be below the thresholds defined in the IWG key terms guidance on minority population. However, as a result of particular cultural practices, that population may experience disproportionately high and adverse effects. For example, the construction of a new treatment plant that will discharge to a river or stream used by subsistence anglers may affect that portion of the total population. Also, potential effects to on- or off-reservation tribal resources (e.g., treaty-protected resources, cultural resources and/or sacred sites) may disproportionately affect the local Native American community and implicate the federal trust responsibility to tribes.[5] The EPA NEPA analyst should look at each situation on a case-by-case basis to determine if there may be disproportionately high and adverse effects on a minority population.

The EPA NEPA analyst should make every effort to identify the presence of distinct minority communities residing both within, and in close proximity to, the proposed project, and to identify those minority groups which utilize or are dependent upon natural resources that could be potentially affected by the proposed action. Non-traditional data gathering techniques, including outreach to community-based organizations and tribal governments early in the screening process, may be the best approach for

[5] A distinction must be made between Native American communities that live within their own governmental jurisdictions and those that do not. The CEQ regulations recognize the government-to-government relationship between the federal government and tribal governments, and encourage federal agencies to involve tribal governments in the NEPA process when a proposed project may affect a tribe or tribal lands. See sections 1501.2 [Apply NEPA Early In The Process]; 1501.7(a)(1) [Scoping]; 1502.16 [Environmental Consequences]; 1503.1(a)(2)(ii) [Inviting Comments]; 1506.6(b)(3)(ii) [Public Involvement]; and 1508.5 [Cooperating Agency]. Native American programs include those Federal programs which are to be guided, as appropriate, by the government-to-government relationship, the Federal trust responsibility to federally recognized Indian Tribes, and the role of tribes as governments within the Federal system.

NEPA Compliance Coordinators should consult with the regional Indian Program Coordinator and should request that the Indian Tribes seek participation as a cooperating agency when a tribal government, land, resources, or interest may be affected by a project. While such cases may or may not trigger an environmental justice review, EPA must act consistent with the federal government's trust responsibility to federally recognized Indian Tribes. Each case should be decided individually; if questions arise please consult with the American Indian Environmental Office and the Office of Federal Activities.

Local resources and state governments can both be contacted for information regarding factors that are characteristic of low-income communities and which may assist in identifying these communities. These factors may include: limited access to health care, an inadequate, overburdened or aged infrastructure, and particular dependence of the community, or components of the community, on subsistence living (*e.g.*, subsistence fishing, hunting, gathering or farming). In some cases, these factors can be evaluated directly from traditional information sources. For example, the age and condition of water treatment facilities and presence of lead service lines should be available from municipal utilities. Outreach to community groups may be the most reliable data collection method in other cases, such as those where the degree to which the cultural and dietary habits of low-income or minority families and their economic condition dictate subsistence living. Consequently, where the community median household income may exceed that of the poverty line, conditions generally associated with low-income communities may be present, resulting in cumulative effects that may meet the threshold for environmental justice concerns.

Commercial database firms are often capable of tailoring census data information of human communities and income/poverty level to specified areas of geographic detail. For example, by manipulating specified census bureau tract data with customized buffer areas, statistics can be generated to accommodate current growth estimates from local government agencies or planning departments. Locational/distributional tools are also capable of determining the locations of certain human communities. Examples include maps, aerial photographs, and geographical information systems (GIS). Further explanations of these tools are presented in Chapter 5.

- Potential for aggravated susceptibility due to existing air pollution (in urban areas), lead poisoning, existence of abandoned toxic sites.

- Frequency of impacts.

Source data, including historical, existing, and projected sources, yielding projected effects in concert with that from the resulting proposed action should be analyzed with respect to minority or low-income receptors. As noted above, these include cultural, health and occupation-related variables such as:

- Health data reflective of the community (*e.g.*, abnormal cancer rates, infant and childhood mortality, low birth weight rate, blood-lead levels).

- Occupational exposures to environmental stresses which may exceed those experienced by the general population.

- Diets, or differential patterns of consumption of natural resources[6], which may suggest increased exposures to environmental pathways presenting potential health risk.

The EPA NEPA analyst may have difficulty in determining the point at which stress levels become too great, exceeding risk thresholds. This lack of a definitive threshold should encourage the EPA NEPA analyst to compare the cumulative effects of multiple actions with appropriate community, regional, state, or national goals, standards, etc. to determine whether the total effect is significant.

With respect to natural resources, analysts should look to the community's dependence on natural resources for its economic base (*e.g.*, tourism and cash crops) as well as the cultural values that the community and/or Indian Tribe may place on a natural resource at risk. Further, it is essential for the EPA NEPA analyst to consider the cumulative impacts from the perspective of these specific resources or ecosystems which are vital to the communities of interest.

Several methods for determining cumulative effects are described within CEQ's January 1997 handbook entitled, "Considering Effects Under the National Environmental Policy Act." The EPA NEPA analyst may wish to consider these methods in assessing cumulative effects on low-income and/or minority communities.

In the process of determining future actions, for example, it is essential for the EPA NEPA analyst to apply judgment and experience, to go beyond the number of projects that are funded in the area, and predict which of the actions in the early planning stage have realistic potential to move forward. The EPA NEPA analyst should use the best available information from similar projects in the region and also consult with local government planning agencies which may have master development plans in the region. In addition, private land-owners and organizations may be willing to disclose their future land use plans.

Although cumulative effects analyses commonly involve assumptions and uncertainties, exhausting all applicable analyses will provide the greatest likelihood of accurately depicting the possibility of disproportionately high and adverse effects on low-income and/or minority communities. Analysts should be as resourceful as possible in addition to seeking information from traditional sources. Decisions should

[6] The IWG key terms guidance describes differential patterns of consumption of natural resources as relating to "subsistence and differential patterns of subsistence, and means differences in rates and /or patterns of fish, water, vegetation and/or wildlife consumption among minority populations or low-income populations, as compared to the general population."

The EPA NEPA analyst should include individuals who are familiar with collecting and analyzing data that assesses the potential environmental and human health risks potentially borne by minority and low-income communities as a result of the project or activity. EPA NEPA analysts gain a better understanding of potential environmental risks to the community by directly using effective public participation and consultation techniques. An assessment of such potential risks should then be used to determine whether disproportionately high and adverse effects may be borne by minority communities or low-income communities.

2.3 SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSES

This section provides an overview of many of the factors that should be considered when identifying and evaluating environmental justice concerns. Given the subjective nature of some of the elements that are important to environmental justice analyses, some consideration of the *factors* or characteristics that may lead to disproportionately high and adverse effects to a community may prove to be useful when conducting such analyses. EPA's Office of Environmental Justice points out that an understanding of the underlying factors that contribute to environmental justice concerns allows for a more thorough identification of the concerns and the development of more effective mitigation measures.

In focusing the identification of environmental justice concerns, the EPA NEPA analyst may approach the analysis of environmental justice from three vantage points: 1) whether there exists a potential for disproportionate risk; 2) whether communities have been sufficiently involved in the decision-making process; and 3) whether communities currently suffer, or have historically suffered, from environmental and health risks or hazards. The factors listed in this section are provided within the context of these three approaches for identifying potential environmental justice concerns and provide the EPA NEPA analyst with a starting point in determining what factors to consider in an environmental justice assessment. However, almost every situation will have its own nuances. As such, the EPA NEPA analyst should be prepared to apply these factors flexibly to fit a specific situation, just as the IWG guidance provided above may require judgments to ensure that communities are defined in a fair manner (See Exhibit 3 for Summary of Factors).

Environmental Justice in EPA's NEPA Compliance Analyses

Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

ECONOMIC FACTORS

Economic factors can be divided into two categories: the economic condition of the individuals in the community in question, and the overall economic base of the community. The economic condition of the individuals in the population, if poor, may exacerbate risk factors and may preclude avoidance of risk factors. The economic condition of the community at large may result in situations that preclude the local government's ability to adequately protect the population or may promote the acceptance of disproportionately high and adverse effects. Such factors include, but are not limited to:

Individual Economic Conditions Income Level / Health Care Access	This includes such issues as whether affordable or free quality health care is available and, whether any cultural barriers exist to seeking health care. Many low-income and/or minority communities lack adequate levels and quality of health care, often due to lack of resources or lack of access to health care facilities.
Infrastructure Conditions	Consideration should be given to whether existing infrastructure provides sufficient protection from adverse impacts (*e.g.*, protection of domestic water supply, especially if the community relies on public or non-public drinking wells or surface water; adequacy of sewage facilities) and the effect that new facilities may have on the ability of existing infrastructure development and maintenance.
Life-Support Resources	This includes subsistence living situations (*e.g.*, subsistence fishing, hunting, gathering, farming), diet, and other differential patterns of consumption of natural resources. If a community is reliant on consumption of natural resources, such as subsistence fishing, an additional exposure pathway may be associated with the community that is not relevant to the population at large. Similarly, dietary practices within a community or ethnic group, such as a diet low in certain vitamins and minerals, may increase risk factors for that group.
Distribution of Costs	Consideration of the distribution of costs to pay for environmental projects to the extent that regulations and programs are paid for by user fees on necessary goods and services (*e.g.*, sewer and water bills, garbage services, electric bills, gasoline taxes). These have a substantial negative effect on low-income families who must pay a disproportionate fraction of their income for these goods and services, the addition of user fees for another plant or facility may add to the disparate treatment of these individuals.
Community Economic Base Industrial	Reliance on polluting industries for jobs and economic development. If the community is reliant on polluting industries for jobs and tax revenue, there may be reluctance to take actions that would avoid risk to health and the environment at a cost to the industry. In addition, minority or low-income communities may not enjoy other benefits in proportion to the risks or impacts they bear.
Brownfields	Communities with low revenues may be unable to finance economic rehabilitation efforts that would improve the physical environment of a community.
Natural Resources	Reliance on natural resources for economic base (*e.g.*, tourism, crops; use of resources to create salable items, such as woven baskets among Native Americans; subsistence and commercial fisheries).
Other	Other indirect effects which a low-income or minority population, due to economic disadvantage, may not be able to avoid, that will have a synergistic effect with other risk factors (*e.g.*, vehicle pollution, lead-based paint poisoning, existence of abandoned toxic sites, dilapidated housing stock).

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Exhibit 2. SUMMARY OF FACTORS TO CONSIDER IN ENVIRONMENTAL JUSTICE ANALYSIS

FACTORS RELATED TO CULTURAL AND ETHNIC DIFFERENCES AND COMMUNICATIONS CONCERNS

When determining whether communities have been afforded opportunity for meaningful involvement, broad factors for consideration include the following. Other considerations for public participation are discussed in Chapter 4 of the *" Guidance on Environmental Justice in EPA's NEPA Compliance Analyses."*

Public Access	Whether community members have access to the decision making process (*i.e.*, whether the community is fairly represented on commissions, boards, etc., and whether the community is fairly made aware of their role in the decision making process).
Cultural Expectations	Cultural expectations and understanding of the decision-making process.
Meaningful Information	Access to meaningful and understandable information, such as clear presentation of what a facility produces, what pollutants it releases, how these are managed, and the potential risk to the population.
Job Security	Potential for fear within the community that participating in the process may jeopardize job security.
Literacy Rate	If a low literacy rate exists, consideration should be given to the clarity and accuracy of presentations to the community and whether non-written materials, such as videos, have been considered for use in presentations.
Translations	Consideration of non-English translations, both written and oral during community presentations or public meetings.
Community Representatives	Consideration should be given to whether representatives were selected by community decree or by outside sources without proper consultation with the community.
Community Identification	Whether identification of minority and/or low-income communities took into account all potentially-impacted communities. If communities were geographically defined rather than culturally defined, certain communities that are impacted, given other cultural factors, may be unfairly excluded.
Indigenous Populations	In addition, when projects or activities may affect tribal lands or resources or Native American communities, the NEPA analytical team should include one or more analysts familiar with Native American issues and culture, and the Agency should formally request the affected Indian Tribe(s) to seek participation as a cooperating agency. Specific factors to consider in such situations include, but are not limited to: • The trust responsibility to and treaties, statutes and executive orders with federally-recognized Indian Tribes. • Effect of insufficient financial and technical resources for the development and implementation of tribal environmental programs. • Impacts to treaty-protected resources, cultural use of natural resources, and/or sacred sites. • Government-to-government relationship with affected Indian Tribes as well as meaningful participation of the affected tribal community. • A dispute resolution process may be appropriate to ensure that resources are not diminished. • Health and socioeconomic effects due to cultural, subsistence, and commercial use of natural resources. • Potential for risk assessment to underestimate relationship between environmental degradation and human health concerns, especially in low population density areas. • Fundamental differences in "world view" ; where the values placed on resources vary significantly between cultures (i.e., some Native American cultures dispute the ability to "own" land and other resources.

3.0 INCORPORATING ENVIRONMENTAL JUSTICE INTO THE NEPA PROCESS

3.1 OVERVIEW OF THE NEPA PROCESS

A general framework for implementing NEPA requirements is presented in regulations (40 CFR Parts 1500 through 1508) promulgated by the Council on Environmental Quality (CEQ). Federal agencies, in turn, have developed their own rules for NEPA compliance that are consistent with the CEQ regulations while addressing the specific missions and program activities of each agency. EPA's regulations are found at 40 CFR Part 6. Over the past 25 years, the NEPA framework for environmental review of proposed federal actions has been substantially refined, based on further congressional directives, action by CEQ, and an extensive body of case law.

As stated in Section 1.0, an EIS is required for major federal actions significantly affecting the quality of the human environment. The basic analytical planning process for EISs required under NEPA and its implementing regulations for assessing the environmental impacts that may result from a government action includes:

1. **Definition:** Define the purpose and need for the action.
2. **Screening:** Preliminary delineation of potential impacts.
3. **Scoping:** Outline proposed action; define objectives; define scope; identify decisions that need to be made; focus resources; initiate public participation.
4. **Affected Resources:** Define the resources that may be affected if the action meets the proposed objectives.
5. **Alternatives:** Identify and define practical alternatives for meeting objectives.
6. **Mitigation**: Identify possible mitigation measures to minimize or avoid potential impacts.
7. **Consequences:** Predict the environmental impacts and other consequences of the proposed action and alternatives.
8. **Decisions:** Make decisions regarding a course of action, including mitigation measures developed to address environmental effects threatened by proposed actions.
9. **Monitoring:** Observing, recording, and documenting mitigation measures to evaluate their effectiveness.

CEQ regulations (40 CFR Part 1502) dictate the process that federal agencies must follow for all EISs, except where compliance with the regulations would be inconsistent with statutory requirements or where agency procedures allow for exceptions for national security reasons. Public participation and involvement is required throughout the NEPA process, beginning with scoping.

Proposed actions predicted to present less significant impacts often are analyzed in environmental assessments (EAs). As mentioned in Section 1.0, EAs are important analytical tools, originally intended to aid in the determination of significance of the effects of a proposed action. Compared to EISs, there are

3.2 Incorporating Environmental Justice Concerns into this Process

One of the most important means by which EPA can ensure that disproportionately high and adverse effects on minority and/or low-income communities are identified and analyzed, is to "institutionalize" the process of identification and analysis. The next sections of this Chapter describe the screening-level analysis that begins the process, and how environmental justice considerations can be integrated into later steps and activities required under CEQ and EPA regulations.

As noted in Chapter 1, one effect of incorporating environmental justice considerations into NEPA analyses will be to more sharply focus these analyses. To do this, it is necessary to assess the distribution of environmental impacts demographically and/or geographically, as well as to assess the overall impacts to the affected communities. As described in Chapter 5, the analytical tools commonly used for analyzing potential impacts may have to be modified to allow this more refined focus. Overall, the evaluation of environmental justice concerns raises a number of issues related to "significance" and to other NEPA procedures. The discussion below describes several issues that are relevant to the determination of significance and the consequent level of analysis; also included are discussions of how consideration of such issues should affect the determination and subsequent analyses. The analytical team should keep in mind that the presence of disproportionately high and adverse effects may or may not necessarily change the final decision, but will change the focus of the analysis and may result in additional mitigation measures.

3.2.1 Environmental Justice Screening Analysis

In preparing for any proposed action, one of the first actions is a preliminary delineation of potential impacts and of the potentially affected area. A screening for environmental justice concerns should be incorporated into this initial NEPA screening analysis. This section describes a two-step screening process, the results of which then guide subsequent actions related to environmental justice.

The first step in identifying potential environmental justice concerns should be a screening-level analysis to determine the existence of a low-income and/or minority population. Depending on the outcome, it may then be necessary to enhance public participation to gain a fuller understanding of the potential environmental justice issues (see Chapter 4), initiate development of alternatives and mitigation options, and/or initiate analyses to identify and assess disproportionately high and adverse human health or environmental effects (see Chapter 5).. In addition, if the proposed project may affect tribal lands or resources, then EPA, in keeping with federal and EPA policies of government-to-government relations, will formally request that affected Indian Tribe(s) seek to participate as a cooperating agency.

The screening analysis should occur as soon as the proposed action is well understood, around the time planning for scoping begins for EISs and planning begins for EAs. Although neither the impacts nor the full area to be affected may be fully understood at this point, it is usually possible to make fair approximations. In the screening analysis, two questions should be addressed, as described below.

counties in the Mississippi Delta region represent areas where African Americans comprise a majority of the total population.

Question 2

Are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community and/or tribal resources?

A positive response should trigger both an enhanced outreach effort to assure that low-income and minority populations are engaged in public participation and an analysis designed to identify impacts on both the larger population and on minority and/or low-income members of the population. A positive response could result from any of several factors, including the following:

- Within a potentially affected area, minority and/or low-income populations could be unevenly distributed, thus subject to different levels or intensity of impacts than the larger population. This pattern should cause concern for cumulative impacts. An example would be subsistence dependence on an affected resource by members of a community.

- The impacts may affect a cultural, historical, or protected (*e.g.*, treaty) resource of value to an Indian Tribe or a minority population, even when the population is not concentrated in the vicinity.

If the answer to both screening questions is "no," then the environmental justice screening analysis should be documented in scoping notices and in EISs/EAs and RODs/FONSIs. In addition, certain unique cultural, geographic, or economic factors may exist within an area that could warrant additional investigation. Also, later information and analyses may show that the screening analysis was mistaken. Indeed, analysts should re-examine the screening questions (and the key factors identified in Chapter 2) at key steps in the NEPA process (*e.g.*, following scoping, in drafting the EIS/EA, in soliciting comments on draft EISs, in responding to comments, and in preparing RODs and FONSIs).

3.2.2 Environmental Justice and the Determination of Significance

CEQ regulations (40 CFR 1508.27) detail factors that should be considered in making a determination of whether a proposed action is significant, thereby requiring a "detailed statement" (*i.e.*, an EIS). Economic or social effects alone do not trigger an EIS [40 CFR 1508.14].

According to CEQ's *Guidance for Considering Environmental Justice under the National Environmental Policy Act*, the "...Executive Order does not change the prevailing legal thresholds and statutory interpretations under NEPA and existing case law. For example, for an EIS to be required, there must be a sufficient impact on the environment to be 'significant' within the meaning of NEPA. Agency consideration of impacts on low-income populations, minority populations or Indian tribes may lead to the identification of disproportionately high and adverse human health or environmental effects that are significant and that otherwise would be overlooked." CEQ requires that significance be evaluated in terms of "intensity" or "severity of impact." Here too, the narrowed focus could affect the determination. Several factors that affect the evaluation of intensity are relevant to situations involving environmental justice issues. These include the degree of scientific controversy, uncertainty (since distributional analysis is relatively new in the NEPA context and this introduces an element of uncertainty in impact assessment), and cumulative significance of related actions.

a minority community or low-income community and the effects are not likely to fall disproportionately on a minority and/or low-income community, and/or on tribal resources), then the scoping notice should state this finding and request additional information on whether there may be disproportionately high and adverse effects that were overlooked during the screening analysis.

If the environmental justice screening analysis concludes that there is a potential for disproportionately high and adverse effects, then the EPA NEPA analyst should ensure that the EIS scoping process raises environmental justice concerns and that sufficient data and information are generated to evaluate these potential effects. Prior to the full-scale scoping process, public outreach strategies should be developed and implemented. The public participation process should be used to define and evaluate environmental justice concerns by:

- Consulting with community leaders and members of the surrounding communities to seek their assistance in identifying all minority and/or low-income communities that may be affected by the proposed action.

- Consulting with officials in tribal, state and/or local government agencies over the environmental and human health concerns within the region and who may be familiar with the demographics of the affected populations. Where environments of Indian tribes may be affected, agencies must consider pertinent treaty, statutory or executive order rights and consult with tribal governments in a manner consistent with the government-to-government relationship.

- Soliciting information from the local community on potential environmental justice issues through public participation efforts (see Chapter 4 for a discussion of public participation).

- Soliciting public comment on environmental issues through formal public notice and comment procedures tailored to the community (see Chapter 4).

- If the proposed activity is deemed significant to warrant the development of an EIS, or if the community has raised significant concerns to be addressed in an EA, EPA should establish a community advisory board to work with EPA in the development of the respective NEPA documents.

The public participation efforts designed as part of the scoping effort for an EIS should clearly describe any environmental justice concerns identified by EPA, and should specifically ask the public to suggest alternatives and mitigation measures aimed at reducing or avoiding disproportionately high and adverse effects. The Agency also should design comparative socioeconomic, environmental and health analyses of all reasonable alternatives and mitigation measures that are tailored and/or scaled to evaluate the impacts to the affected minority and/or low-income community and/or tribal resources.

The EPA NEPA analyst should keep in mind that the goal of identifying and developing alternatives for mitigating disproportionately high and adverse effects is not to distribute the impacts proportionally or divert them to a non-minority or higher-income community. Instead, alternatives should be developed that mitigate or avoid effects to both the population at large and any disproportionately high and adverse effects on minority or low-income communities. In other words, the goal of developing reasonable alternatives is not to move the impacts around, but to identify viable alternative actions that meet program goals and avoid or reduce the environmental, socioeconomic, human health and/or ecological effects associated with the preferred action. Generally, the types of alternatives that may potentially lead to the avoidance or reduction of effects include: a) the identification of alternate locations or sites where impacts to susceptible populations or environments will be avoided; b) altering the timing of planned activities or periodic emissions to account for seasonal dependencies on natural resources; c) the adoption of pollution prevention practices and policies to reduce or mitigate emissions and/or impacts; d) reducing the size or intensity of an action; and e) taking no action.

3.2.6 Prediction of Environmental Consequences

CEQ regulations require government agencies to identify, predict and describe reasonably foreseeable beneficial as well as adverse changes to existing conditions that may result from implementing either the proposed action or alternative actions. Impacts across alternatives must be compared. The prediction and description of potential disproportionately high and adverse effects must begin during the screening and scoping stages of the process, as noted above. Throughout the NEPA process, environmental justice concerns should be identified, disclosed, and discussed with affected communities.

In preparing an EIS or EA, ecological and human health risk assessments are conducted to identify and evaluate potential environmental and human health impacts that may be imposed. In addition, interrelated socioeconomic impacts that would result from a proposed action and alternatives are analyzed. Chapter 5 provides an overview of the types of analyses and analytical tools that may be used to analyze these issues and approaches that may be appropriate to assess disproportionately high and adverse effects. Again, throughout the development and public disclosure of EPA NEPA analyses and findings, full discussions of the analytical process undertaken to identify environmental justice concerns and all findings and conclusions should be disclosed to and discussed with all affected and interested parties.

In evaluating the environmental impacts of the proposed action and alternative actions in an EIS, CEQ regulations (40 CFR 1508.25) require EPA to consider: three types of actions (connected actions, cumulative actions, and similar actions); three types of alternatives (no action, other reasonable course(s) of actions, and mitigation measures not in the proposed action); and three types of impacts (direct, indirect, and cumulative). Environmental justice concerns should be identified and analyzed within the context of all actions, alternatives and impacts. Exhibit 4 provides examples of how environmental justice issues could arise and/or be considered for each of these variables.

3.2.8 Decisions

The two NEPA decision documents identified in CEQ regulations are: 1) a ROD following an EIS and, 2) a FONSI following an EA. All EPA NEPA decision documents should include a concise summary of all steps undertaken to identify environmental justice concerns and the results of those steps. In cases where environmental justice concerns are identified, the decision documents should fully discuss these concerns, explain all alternatives and mitigation options that were analyzed, and explain how environmental justice concerns factored into the decision. In cases where effects to tribal lands or resources have been identified and the Indian Tribe and EPA disagree as to the preferred alternative or mitigation measures, the Indian Tribe may request that the EPA initiate a dispute resolution process to resolve this conflict. In addition, public participation efforts related to environmental justice concerns should be documented in the decision document. Finally, mitigation measures that are evaluated, disclosed to the public, and chosen in conjunction with the alternative to be implemented should be identified and discussed. If no concerns are identified, this finding should be stated along with the basis of EPA's conclusion.

4.0 PUBLIC PARTICIPATION

Adequate public participation is crucial to incorporating environmental justice considerations into EPA's NEPA actions, both to enhance the quality of the analyses and to ensure that potentially affected parties are not overlooked and excluded from the process. Public participation under NEPA involves two-way communications, with EPA receiving information, comments, and advice, as well as disseminating information on possible approaches, analyses, and decisions. This is particularly important when there are potential environmental justice issues involved. To sufficiently and adequately address potential environmental justice concerns and communicate with potentially affected communities, the EPA NEPA analyst should include one or more persons who are familiar with environmental justice issues and appropriate communications strategies. It is important that EPA take steps to encourage and facilitate more active participation by low-income communities and minority communities in its NEPA process. This goal can be accomplished through careful identification of target audiences and aggressive community outreach beyond the traditional forms.

There are established procedures for public participation in NEPA actions and decision-making processes (as in other federal actions). However, these procedures have not always been successful in informing or gaining participation by minority communities and low-income communities. Although they may be most affected, they may be the least informed, simply because of the means of communications used: this can be for any number of obvious reasons, such as language, culture, educational level or geographic location. In most cases, relatively simple approaches—well within the purview of "standard" public participation techniques—can overcome most barriers to informing and seeking involvement of interested or affected communities. This in turn can ensure that federal decisions are consistent with Executive Order 12898 and enhance the actual and perceived fairness of federal actions.

The first subsection below briefly describes public participation that is required during the NEPA process by CEQ and EPA regulations. The next subsection then identifies a number of the special concerns and unique issues that may arise in addressing environmental justice issues, and identifies several mechanisms that may be used in EPA's NEPA process to address those special concerns and issues.

4.1 PUBLIC PARTICIPATION UNDER NEPA

Public participation is one of the hallmarks of NEPA, and is reflected in CEQ's and EPA's NEPA regulations. According to 40 CFR 6.400(a), "EPA shall make diligent efforts to involve the public in the

4.2 MECHANISMS TO ENHANCE PARTICIPATION

The public participation provision in Executive Order 12898 and its accompanying memorandum are designed to ensure that there is adequate and effective communication between federal decision makers and affected low-income communities and minority communities. This is consistent with the NEPA mandate to involve the public. The involvement of low-income communities and/or minority communities, however, presents some challenges to what has come to be the "normal" pattern of formal public participation under NEPA. In order to establish trust with all types of stakeholders, interaction with the affected community should:

- Encourage active community participation.
- Recognize community knowledge.
- Utilize cross-cultural formats and exchanges.

In all cases where EPA's initial screening indicates that there is a potential for disproportionately high and adverse effects on low-income and/or minority communities, the Agency should make a concerted effort to identify stakeholders in the affected community and include the following groups and organizations in their outreach efforts:

- Environmental organizations and agencies
- Minority businesses, associations and trade organizations
- Civic associations and public interest groups
- Grassroots/community-based social service organizations
- Federal elected officials and agencies
- Homeowners' or tenants' associations, neighborhood watch groups and resident organizations
- Labor unions and organizations
- State and local elected officials and agencies
- News media, the Internet and other electronic media
- Tribal governments and Tribal organizations
- Religious groups and organizations
- Libraries, vocational and other schools, colleges and universities
- Medical community
- Legal aid providers
- Rural cooperatives

Exhibit 4. Communications Issues of Particular Concern in Low-Income and/or Minority Communities

Challenge	Possible Approaches to Overcoming
Language or Communication barriers	• Provide assistance to hearing or sight impaired individuals • Provide simultaneous translation of meetings • Use local translators where possible • Translate key documents in entirety (notices, summaries, etc.) • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Advertise meetings/process in alternative-language medium • Design communication strategy to reach all segments of population • Use facilitated meeting rather than conventional stand-up comments to encourage comments
Distance to meeting or inconvenient access (e.g., rural or cross-town)	• Arrange for "comment line" (*e.g.*, 800 number) to provide remote access to meeting or to allow callers to leave recorded comments • Arrange for telephone tie-in from several locations (*e.g.*, from several schools, religious centers) • Hold series of shorter meetings (down to 1-2 hours each) in multiple locations • Arrange for alternative transportation (possibly through proponent) • Ensure location is accessible to public transportation and identify itinerary in notices • Use local cable-channel broadcast with telephone call-in • Have proponent provide transportation vouchers • Seek advice of local groups/individuals • Arrange for satellite link-up (perhaps funded by proponent)
Unfamiliar surroundings (government buildings, luxury hotel, etc.)	• Use schools or other local facilities including religious centers, churches, temples, mosques • Have several smaller decentralized meetings, including open-air meetings (possibly with tent backup) in season • Seek advice from local groups/individuals • Use local facilitator • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments or to participate from remote locations
Outside normal EPA communications loops (i.e., *Federal Register*, newspapers)	• Use pro-active approach to identify stakeholder (both groups and affected individuals). Consult with local advocates/public interest groups to identify outreach mechanisms and refer to the *People of Color Environmental Groups Directory*. • Disseminate information through alternative media (neighborhood organization newsletters, religious centers, fliers, local cable access channel, local radio broadcasts, etc.). • Co-sponsor public meetings with local community groups to nurture trust and credibility. • Make announcements to those on the mailing list; make follow-up phone calls to encourage attendance. • Direct consultation with tribal governments and public meetings at tribal facilities or on/near tribal lands.
Forms of Meetings	• Use town hall type meetings. • Avoid "panel of experts" • Use small focus-group seminars or workshops. • Use community "experts" and comments as part of communication strategy • Seek advice of local groups. • Use a trained facilitator who is sensitive to environmental justice issues.
Schedule conflicts (i.e., conflict with working hours, working days)	• Conduct personal interviews using audio or video recording devices • Hold after-hours and/or weekend meetings or sessions • Hold meetings on successive days • Hold multiple shorter meetings at diverse times/days • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Arrange for child-care (possibly funded by proponent)
Technically complex issues	• Provide sufficient background explanations beyond the usual means • Use plain language in meetings and printed material • Seek advice of local groups/individuals • Provide hands-on demonstrations/participation (*e.g.*, tours of similar facilities/locations) • Use visual presentations (*e.g.*, pictures, videos) • Provide two-way communication - Q & A • Use background summary reports, fact sheets, and abstracts • Provide technical and/or financial assistance to community, local organization, and/or tribal government to review, evaluate, and comment on the NEPA documents and provide meaningful input throughout the NEPA process.
Trust	• Clearly present goals of NEPA, the proposed action, the public involvement process, and what is expected to be gained from the process • Do not oversell: present uncertainties and limitations • Goals should be written and in clear language • Present experiences and track record, successes and failures

and capacity to provide input and full participation, as well as an equal voice in the decision-making process. Dr. Bullard further points out that an effective communications strategy accounts for different groups weighing and acting upon government actions and policies differently. An effective communications strategy recognizes, respects, and values cultural diversity of communities and stakeholders that represent a specific race, ethnic group, gender, age, geographic region, and a host of other characteristics.

As mentioned above, a recommended approach to ensure adequate public participation by minority and/or low-income communities when the screening analysis indicates there may be disproportionately high and adverse effects is to include a person familiar with environmental justice public participation issues on the "project review team." CEQ "Guidance Regarding NEPA Regulations" recommends that an interagency project review team be used when appropriate, with the team functioning as a source of information, a coordination mechanism, and an expert review team. When environmental justice issues must be faced, the review team should consult with the local community (including but not limited to organized groups concerned with environmental justice) during and following scoping, and should provide specialized expertise to EIS preparers.

The following are additional mechanisms for enhancing participation in the NEPA process: 1) allow public review of RODs; 2) government-to-government consultation with tribal governments, including formal requests for Indian Tribes to seek participation as cooperating agencies; 3) Community Advisory Boards for the development of NEPA documents; 4) community consultants; and 5) technical assistance to affected communities to enhance understanding of proposed action, technical documents, and full range of potential alternatives and mitigation measures.

In general, the effort expended in actively soliciting community involvement after the initial screening process should reflect the potential significance of the effects. As noted above, however, there should be some effort to communicate with stakeholders in all cases, including EAs, where the screening analysis identifies potential disproportionately high and adverse effects. Although the health or environmental impacts analyzed in EAs may not be "significant," from the NEPA standpoint, they may be perceived as significant by affected parties. Although this concern would not trigger an EIS, it should trigger more EIS-like scoping and public participation prior to and following EA preparation. To the extent practicable and consistent with regulations, an EIS-like public participation process should be undertaken for EAs when social or economic impacts will be or are perceived to be substantial, even when the impacts are not expected to be significant.

5.0 METHODS AND TOOLS FOR IDENTIFYING AND ASSESSING DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

A fundamental step for incorporating environmental justice concerns into EPA NEPA compliance activities is identifying minority and/or low-income communities that may bear disproportionately high and adverse effects as a result of a proposed action. Once these minority and/or low-income communities are identified and located, the potential for disproportionately high and adverse effects to these communities must be assessed. It is important to understand where such communities are located and how the lives and

following sections provide an overview of some of the available tools and the types of analyses that may be useful for identifying and assessing disproportionately high and adverse effects (by evaluating both total effects and effects on a smaller scale). It is not an exhaustive listing of available tools, since many tools for identifying and assessing environmental justice concerns are still being developed, and it is not meant to promote or endorse one type of tool or analysis over any other. The application of any tool is dependent upon the type of study, the particular attributes of the area under study, and the data available to undertake the study.

5.1 LOCATIONAL/DISTRIBUTIONAL TOOLS

Maps, aerial photographs, and geographical information systems (GIS) can be used to locate geographical areas where potential environmental justice issues may exist. Local maps and aerial photographs may provide a "snap shot," or general overview, of the locations of minority or low-income populations or communities and the proximity of the proposed project to these populations or communities. They also can identify key natural resources that may be affected. Although such tools are relatively simplistic, they may be useful for identifying distinct communities within a geographical area surrounding a candidate site, and for identifying clusters of facilities or sites that may contribute to cumulative impacts to a given region or community. By consulting maps or photographs that depict the locations of minority or low-income communities, as well as maps of the same geographical area that depict the locations of hazardous waste facilities, Superfund sites, Toxics Release Inventory facility sites, and/or wastewater discharges, analysts and EPA decision makers can gain a general understanding of the spatial relationships between the proposed project and the surrounding communities. These tools can assist the EPA NEPA analyst in identifying existing sources of environmental pollution and their proximity to minority and/or low-income communities.

By consulting maps or photographs that depict the locations of minority or low-income communities, as well as maps of the same geographical area that depict the locations of hazardous waste facilities, Superfund sites, Toxics Release Inventory facility sites, and/or wastewater discharges, analysts and EPA decision makers can gain a general understanding of the spatial relationships between the proposed project and the surrounding communities. Aerial photographs can be used to effectively depict the boundaries of an identified community and the spatial relationship that exists between the community and natural resources and known pollutant sources.

Geographic information systems provide a much more powerful tool for identifying and locating populations of concern. GIS technologies are useful for characterizing environmental justice issues by identifying the locations of minority communities that potentially may be affected by proposed actions and providing a visual understanding of how potential impacts may be distributed within a geographical area. GIS provides the technology for displaying and overlaying locational information and population and site characterization information on one or more maps. GIS allows for the visual display of vast amounts of spatially oriented information. In addition, GIS systems can be used to display alternative "what if" scenarios and provide for relatively quick and easy general comparisons of the potential impacts presented by alternative locations.

To enhance the applicability of GIS technologies to NEPA assessments, including the assessment of potential cumulative impacts from existing and proposed projects, the geographical and demographic information provided in Census databases can be integrated with other available EPA information (*e.g.*, facilities located within particular zip codes or counties that reported releases or emissions of a particular chemical in TRI reports, locations of NPL sites, etc.) and integrated with other NEPA factors using digitized data sets on soils, power lines, roads, streams, sources of electricity, locations of threatened and endangered species, and existing archaeological sites. These additional data sets are readily available from the U.S. Forest Service, the U.S. Geological Survey, the Department of Commerce, and state and local government agencies. Additional maps depicting community-specific issues (*e.g.*, locations of subsistence farmers and locations of water bodies supporting subsistence fishing activities) also can be compiled, digitized and incorporated into a GIS system to further depict and analyze more specific environmental justice issues and concerns.

Other GIS, or computer mapping, systems that may enhance NEPA analyses of environmental justice concerns include CAMEO (Computer-Aided Management of Emergency Operations), ALOHA (Aerial Locations of Hazardous Atmospheres) and AILESP (American Indian Lands Environmental Support Project). CAMEO includes chemical-specific information, facility-specific information from EPA's Chemical Inventory database and TRI database, and transportation information. CAMEO integrates MARPLOT, a mapping application tool that generates maps from U.S. Bureau of Census TIGER files. ALOHA is a modeling tool for estimating the movement and dispersion of gases and estimating pollutant concentrations downwind from the source of a potential spill or emission. ALOHA files can be saved and used in a format compatible with CAMEO. AILESP includes permitted facilities on or near Indian lands from various EPA databases (e.g., AIRS, BRS, NCDB, PCS, RCRIS, TRI, CERCLIS), pounds of chemicals released, 1994 spill and one time release data, pesticide use by county, toxic weighting factors for TRI chemicals, two year inspection and compliance information, 1990 population and census statistics, and stream reaches with fish advisories, contaminated sediments and contaminated fish tissue.

5.2 Ecological and Human Health Risk Assessments

Executive Order 12898 provides for agencies to determine if a proposed action will result in disproportionately high and adverse effects to minority or low-income populations. Due to the fact that the characteristics of these populations may differ significantly from the characteristics of the larger affected population, analyses should address both the minority or low-income population and the comparison populations. See Chapter 2 for a discussion of the environmental and socioeconomic factors that should be considered in identifying and assessing disproportionately high and adverse effects.

EPA has a formal risk analysis process which consists of two related, but separate, processes: risk assessment and risk management. Risk assessment characterizes the likelihood for a chemical or substance to cause adverse health effects to humans and can provide a means for assessing the possible impacts on a population, if exposure occurs. Risk assessment provides an estimate of the probability that human exposure to a chemical agent will result in an adverse health effect to the exposed individual, or an estimate of the incidence of the effect upon an exposed population. Risk management is the process whereby it is decided what actions are appropriate, given an estimate of potential risks and due consideration to other

affected environments (*e.g.*, watersheds, wetlands, wildlife habitats) that may be impacted by the proposed project (including alternatives). After a general cataloging and description of the surrounding environmental and ecological resources is compiled, the potential changes and impacts of the proposed action and alternative actions are assessed. Often, these analyses do not fully substantiate the beneficial or adverse effects on the surrounding geographical area or communities within the area. Instead, impacts may be described generally, with an assumption that they are distributed equally across all communities or residents within the affected region or area. As a consequence, the analysis may overlook or ignore environmental justice concerns. If adverse impacts are not quantified, then special consideration should be given to whether potential impacts could be borne by minority communities or low-income communities residing within the larger area and, if necessary, separate analyses should be designed and conducted to assess this. As discussed above, GIS systems can sometimes be used to identify such populations and to characterize the environments where the populations reside. In addition, county and state planning agencies and housing authorities may be useful sources of information for characterizing the unique aspects and vulnerabilities of these populations.

If environmental, ecological, or human health impacts to the affected geographical area are quantified, the distribution of such impacts should be assessed. The study should attempt to estimate the proportion of impacts borne by low-income and/or minority populations within the area of a project's impact compared to the general population in and around the project, or the project's region of influence. While traditional risk modeling may not always be used in the NEPA process, impact assessments and risk management tools should be tailored to reflect the characteristics of these communities and study assumptions should reflect the characteristics of the individuals residing in low-income communities and minority-populated communities (*i.e.*, model assumptions should reflect the general health of these individuals and their general living conditions and unique locations relative to pollutant sources). When tailoring risk management tools to consider the distribution of impacts to low-income and/or minority communities, differential patterns of subsistence consumption of natural resources should be considered, including differences in rates of consumption for fish, vegetation, water, and wildlife among ethnic groups and among cultures. Further, it should be recognized that land and water resources not predominantly used by the general population may be important sources of consumption , economy, cultural use, and/or recreation for minority and/or low-income communities. Degradation of these resources may result in direct and disproportionately high and adverse effects to minority and/or low-income communities.

5.3 SOCIOECONOMIC ANALYSES

The analysis and understanding of potential socioeconomic impacts is also important. CEQ regulations note that economic or social effects alone do not trigger an EIS (40 CFR §1508.14). However, if environmental justice concerns are identified during the screening analysis or during the development of an EA, the potential interrelated socioeconomic impacts to both the total affected population (or a "control" population) and to the low-income and/or minority communities of concern should be evaluated, to the extent practicable. Cultural or Social Impact Assessments are additional tools that can be used for analyzing specific socioeconomic impacts to a community that shares a common cultural or spiritual environment.

hearings for other government projects within the same region. In some cases, analysts may need to conduct interviews of local community leaders and members of the targeted population.

One option for modifying or tailoring socioeconomic analyses to identify and evaluate environmental justice concerns is to develop index or ranking systems for identifying and scoring potential disproportionately high and adverse effects to minority and/or low-income communities. Such an index or ranking system could be applied to specifically defined or targeted areas and used as a screening tool to identify environmental justice concerns in communities surrounding one or more candidate locations. Candidate locations that result in high index scores or rankings can either be dropped from consideration, targeted for additional and more thorough socioeconomic and risk analyses to investigate further potential disproportionately high and adverse effects, or development of additional alternative actions or projects designed to mitigate identified impacts.

An environmental justice screening index may be as simple as defining several levels or categories of potential impacts (*e.g.*, changes in employment levels, changes in income levels, and changes in overall health levels) or defining and scoring several socioeconomic indicators (*e.g.*, dependence on subsistence farming or fishing, percent of population below poverty level, average property value) and weighing each category of impact as to its importance to contributing to environmental justice issues. Decision criteria (*e.g.*, undertake further detailed social impact analyses, drop candidate location from consideration) could then be set for different ranges of index scores or rankings. The index also may combine preliminary information on potential economic impacts with information on other potential impacts (*e.g.*, environmental degradation, air emissions) to assign decision criteria for additional targeted analyses or studies.

EPA Region 6[11] developed a relatively sophisticated ranking scheme to determine whether an environmental justice indicator exists. The formula provides a means for determining whether an environmental justice situation exists and includes factors such as population exposed, degree of impact and degree of vulnerability.

Region 6 evaluates sites using an environmental justice formula and ranks facilities or actions on a scale of 0 to 100. Regional officials point out that although higher scores can indicate greater potential environmental justice concerns, the population density, percent minority population, and percent of economically depressed household data are the more important analytical factors. When evaluated independently, they often provide greater insight into potential environmental justice concerns and can be used alone to rank sites. Also, the user should realize that even a location with an index ranking of zero can have significant environmental justice concerns. For example, an unpopulated area will rank a zero, but if owned and/or used by minority and/or low-income groups, the site may have significant environmental justice importance. Recent examples of EPA's use of the EJ index include the draft EIS for Eagle Pass Mine, in Maverick County, Texas, and the Supplemental Draft EIS for Expansion of the Oak Hill Surface Lignite Mine into the DIII Area, Rusk County, Texas. Utilizing the EJ index on a scale of 1

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U.S. EPA Region 6, Office of Planning and Analysis. "Computer Assisted Environmental Justice Index Methodology." July, 1994.

APPENDIX A
Council on Environmental Quality
Guidance for Addressing
Environmental Justice Under the National Environmental Policy Act

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U.S. General Accounting Office. June 1, 1983. Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities.

Environmental Protection Agency (EPA), April 16, 2002

1. This comment is noted.

2-3. All comments received on the QSA PEIR have been responded to in the Final PEIR, as required by CEQA. To the extent that the comments included in the attached letter addressed to U.S. Bureau of Reclamation (Reclamation) regarding the Implementation Agreement Draft Environmental Impact Statement (IA EIS) are similar to comments made on the QSA Draft PEIR, responses to those comments are included below. All comments on the IA EIS are being addressed by Reclamation, the lead agency with control over decisions related to the IA EIS. Responses to comments will be provided in the Final EIS. All comments on the Draft EIR/EIS for the IID Water Conservation and Transfer Project are being addressed by the federal and state lead agencies for that project, IID and Reclamation, and responses to comments will be included in the Final EIR/EIS.

4. The long-term environmental impacts of the Proposed Project are addressed in Chapter 3. The potential growth-inducing impacts of the Proposed Project are addressed in Chapter 6. As noted in that chapter and addressed in the response to Department of Fish and Game comment No. 42, the Project would not *increase* the reliability of Southern California's water supply; rather, it would *maintain* its reliability. The details regarding the methods of allocation and distribution of Colorado River water are contained in Chapter 2 of the PEIR.

The QSA would not by itself reduce California's Colorado River use to 4.4 million acre-feet per year (MAFY), nor would it alone be able to maintain MWD's historic use of 1.25 MAFY. As noted in Chapter 1 of the PEIR:

> The QSA would implement *major components* of California's draft Colorado River Water Use Plan (California Plan) and provide *part* of the mechanism for California to reduce its diversions of Colorado River water to the state's normal year apportionment of 4.4 million acre-feet (MAF) (italics added).

As noted in section 2.5.3:

> Implementation of the Proposed Project would affect the amount of Priority 3a, 4, and 6a water carried in the CRA. During the quantification period, and particularly after the 15-year Interim Surplus period, the total amount of water carried by the CRA in a normal year *may be less* than current operations as California would be limited to 4.4 MAFY, and previously used surplus and unused apportionment water may not be available. *MWD has a number of projects in the planning or pilot project stage that would assist in maintaining delivery of Colorado River water to the MWD service area* (refer to section 1.5, Related Plans, Programs and Actions) (italics added).

The long-term sustainable balance between water supply and water demand is more appropriately addressed in the Urban Water Management Plans prepared by each of the four co-lead agencies rather than in the QSA PEIR. These plans include such measures as water conservation, including the use of Best Management Practices (e.g., financial

incentives for the installation of low-flow toilets and high-efficiency appliances; distribution of low-flow showerheads; residential surveys, leak detection programs, landscape programs, public information programs, school education programs, water waste prohibitions, etc.) and Agricultural Efficient Water Management Practices. Water recycling (the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-potable reuse) is also a key component of these Urban Water Management Plans, which include provisions for low interest loans, financial assistance, and public education.

5. The QSA PEIR (section 3.1) does evaluate the impacts of the Proposed Project on physical resources managed or affected by Indian tribes on the lower Colorado River, within the Salton Sea watershed, and those affected by lower Colorado River changes. As noted in section 2.4.1, use of the water by the Indian bands affected by the San Luis Rey Indian Water Rights Settlement is not included in this analysis. Copies of the Notice of Availability and Draft PEIR were provided to those tribes most likely to be concerned with the QSA's potential impacts: the Agua Caliente Band of Cahuilla Indians, Augustine Band of Mission Indians, Barona Band of Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Mission Indians, Campo Band of Mission Indians, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Cuyapaipe Band of Mission Indians, Fort Mojave Indian Tribe, Inaja Cosmit Reservation, Jamul Band of Mission Indians, La Jolla Band of Luiseno Indians, La Posta Band of Mission Indians, Los Coyotes Reservation, Mananita Band of Mission Indians, Mesa Grande Band of Mission Indians, Morongo Band of Mission Indians, Pala Band of Mission Indians, Pauma Band of Mission Indians, Pechanga Indian Tribe, Quechan Tribe, Ramona Band of Mission Indians, Rincon Band of Mission Indians, San Manuel Band of Mission Indians, San Pasqual Band of Diegueno Indians, Santa Ynez Band of Mission Indians, Santa Rosa Band of Mission Indians, Santa Ysabel Band of Mission Indians, Soboba Band of Mission Indians, Sycuan Band of Mission Indians, Torres Martinez Band of Desert Cahuilla Indians, Twenty-Nine Palms Band of Mission Indians, and Viejas Band of Mission Indians.

   Although CEQA does not require formal government-to-government tribal coordination or consultation, such consultation may be required under Executive Order 11-6-00. Reclamation, as the federal lead agency for federal actions needed to implement the QSA and the IID/SDCWA Water Transfer, has undertaken tribal coordination as part of the EISs prepared for these actions. Reclamation sent a memorandum to 55 Indian Tribal representatives on April 26, 2001, inviting them to enter into government-to-government coordination pursuant to CEQ regulations for implementing the procedural provisions of NEPA; the National Historic Preservation Act; and Executive Order 13175 of November 6, 2000, pertaining to consultation and coordination with Indian tribal governments. The Twenty-Nine Palms Band of Mission Indians was inadvertently not included in the distribution of the memorandums; a letter has been sent to the tribal chairperson to remedy this oversight.

   A Reclamation staffperson has also met with representatives of the Torres Martinez Band of Desert Cahuilla Indians to discuss potential impacts to the Salton Sea and the Tribe's reservation. A government-to-government consultation meeting was held on April 12, 2002 that was attended by representatives of the Torres Martinez Band of Desert Cahuilla Indians, Reclamation, U.S. Fish and Wildlife Service, Bureau of Indian

Affairs, and the EPA. In addition, Reclamation has met with Colorado River Indian Tribes (CRIT) staff and had numerous telephone conversations to discuss potential impacts to the CRIT from the proposed action, and is providing a grant to CRIT under which CRIT has hired an independent consultant to review the hydropower-related studies conducted for the IA EIS. At CRIT's request, a formal government-to-government consultation meeting will not occur until after this review has been completed. None of the other tribes has requested a formal government-to-government meeting with Reclamation.

6. This comment is noted.

7. This comment is noted. Responses to specific concerns identified by the EPA are included in responses to EPA comments 10-43, as well as 1-5.

8. This comment is noted. Responses to specific concerns identified by the EPA are included in responses to EPA comments 10-43, as well as 1-5.

9. This comment is noted.

10. Please see response no. 4. Also note that the PEIR evaluates the IID/SDCWA water transfer, as implemented by the QSA. Under the QSA, the IID/SDCWA transfer is limited to 200,000 AFY, even though the IID/SDCWA Agreement provides for a potential 300,000 AFY. The additional 100,000 AFY would be used by CVWD and/or MWD under the QSA.

11. With regard to monitoring, accounting, enforcement, and assurance as it relates to the water transfer, Reclamation, under the "Law of the River" and specifically the 1964 Supreme Court Decree in *Arizona v. California*, has the responsibility to prepare and maintain complete, detailed, and accurate records of diversions of water from the mainstream, return flow of such water to the stream that is available for consumptive use in the United States or in satisfaction of the Mexican treaty obligation, and consumptive use of such water. This use is provided separately for each diverter from the mainstream, each point of diversion and each of the states of Arizona, California, and Nevada. The results are provided in an Annual Decree Accounting Report prepared by Reclamation's Lower Colorado Region.

12. It is unclear what long-term policy implications are being addressed in this comment. As noted in EPA response no. 4, the long-term sustainable balance between water supply and water demand is more appropriately addressed in the Urban Water Management Plans prepared by each of the four co-lead agencies rather than in the QSA PEIR.

13. The proposed shortage sharing provisions are a part of the QSA. Long-term (75-year) impacts of the implementation of the QSA are addressed in the PEIR. This is the length of the agreement; thus, this is an appropriate timeframe for analysis. The QSA indicates that after 75 years, the agreements would be terminated (see Appendix A). Attempting to determine what water sources might be available to MWD and SDCWA and whether additional transfer agreements would be in place 75 years from now would be speculative and is not required by CEQA. The long-term sustainable balance between water supply and water demand is more appropriately addressed in the Urban Water

Management Plans prepared by each of the four co-lead agencies rather than in the QSA PEIR.

14. See response to California Department of Fish and Game (CDFG) comment 42 regarding the potential for the QSA to cause growth-inducing effects. Also, the PEIR does not state that transferred water will be used for existing development and not future growth; rather, the QSA would maintain the reliability of Colorado River water supplies as one component of meeting current *and projected* water demand in the MWD and SDCWA service areas (section 6.1.4.1). Water supply sources and quantities assumed for existing, planned, and projected growth are described fully in MWD's *Integrated Resources Management Plan* and *Regional Urban Water Management Plan*, and SDCWA's *Urban Water Management Plan*, which were used as background documents in preparing Chapter 6 of the PEIR (Growth-Inducing Impacts).

15. The EPA's view regarding growth principles and water use efficiency are noted. Water conservation measures in the MWD and SDCWA service areas are being implemented aggressively and are addressed in their respective Urban Water Management Plans and in MWD's Annual Progress Report to the California State Legislature, Achievements in Conservation, Recycling, and Groundwater Recharge (February 2002). Specific types of measures that are being implemented in these service areas are described in response no. 4 above.

16. State CEQA Guidelines, Section 15143, states that "the EIR shall focus on the significant effects on the environment." Section 3.1.2.3 of the PEIR addresses potential impacts to groundwater and salinity in Mexico, but concludes that impacts would not be significant. No other potentially significant impacts were identified.

    Reclamation performed detailed hydrologic modeling of potential impacts to Mexico from the proposed water transfers. The results of this analysis are included in the Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions Draft EIS (USBR 2002), in section 3.12 and Appendix G. The analysis concludes that deliveries to Mexico are basically unaffected by the proposed water transfers, and that transfers would have an indiscernible effect on the magnitude and frequency of excess flows to Mexico. Thus, no significant impacts to Mexico's biological resources would occur.

    No additional baseline information regarding the lower Colorado River delta is required in the QSA PEIR given the lack of potential impacts.

17. Implementation of the Proposed Project would not interfere with implementation of Total Maximum Daily Load (TMDL) programs in the IID water service area. Correspondence from the Regional Water Quality Control Board (RWQCB) states that: "It is our understanding that the proposed selenium TMDL would focus on selenium throughout the upper and lower Colorado River Basin States (Colorado River Watershed), and would address selenium reduction at the sources, but could also include management practices to address concentrating of selenium in Imperial Valley."[1] This statement is consistent with the co-lead agencies' view that mitigation to

[1] Correspondence from Teresa Newkirk Gonzales, dated April 18, 2002.

meet numerical criteria is not practical unless it is carried out within the context of a more extensive mitigation effort. In particular, if the aquatic life criterion were reduced to 2 μg/L, this would establish a concentration criterion that is below the selenium concentration of water received by IID from the Colorado River.

18. The PEIR recognizes that the impact on groundwater quality in certain parts of the Coachella Valley groundwater basin is anticipated to be significant because of the higher concentrations of Total Dissolved Solids (TDS) and other chemical constituents in Colorado River water than some local groundwater. Wells located up to 2 to 3 miles downgradient of the proposed CVWD recharge sites are most likely to experience elevated TDS as a result of the Proposed Project. Groundwater quality near the recharge basins would gradually change over time and may approach the quality of Colorado River water in the affected areas.

Please refer to EPA response no. 17 regarding selenium TMDLs. As noted in that response, it is the co-lead agencies' view that it is only practical to carry out mitigation for selenium within the context of a more extensive mitigation effort.

Since the TDS of the local groundwater in portions of the basin is higher than Colorado River water, the magnitude of the water quality change would vary with location. The anticipated TDS increase would not impair any beneficial uses of the water, as defined by established state and federal primary (or health-based) drinking water standards. The higher salinity could exceed recommended secondary water quality standards that deal with aesthetics, such as taste and hardness. Mitigation to reduce the higher TDS concentrations of Colorado River water to the equivalent of groundwater was evaluated and found to be financially and environmentally infeasible, as discussed below.

CVWD evaluated the feasibility of reducing the higher TDS of Colorado River water to the equivalent quality of groundwater. Two alternatives were considered: (1) construction of an extension of the State Water Project (SWP) into the Coachella Valley and (2) construction of desalination facilities for Colorado River water. The capital cost of extending the SWP to the valley ranged from $205 million to $390 million depending on the size of the facility. Total costs (including capital and operations) would range from $322 to $406 per acre-foot, in addition to the cost of acquiring SWP water (about $200 per acre-foot). The capital cost of desalting Colorado River water ranged from $284 million to $1.19 billion depending on the size of the facilities and the method of brine disposal. The highest cost identified involved treating all Colorado River water entering the Coachella Valley. The cost of the desalted water ranged from $184 to $330 per acre-foot, in addition to the costs of acquiring the water supplies and delivering them to customers in the valley. On the basis of economics alone, these options were found to be economically infeasible (CVWD unpublished data).

In addition to the economic considerations, each of these options has significant environmental impacts of its own. Environmental impacts include the disturbance of 300 to 400 acres of desert land for pipeline construction, loss of 500 to 3,500 acres of land for brine evaporation ponds, loss of habitat and biological resources, loss of cultural resources along facility alignments, air quality impacts from construction and generation of additional energy for the pump and treatment facilities, additional energy for pumping SWP water or running the desalters, and impacts related to salt disposal

(CVWD unpublished data). Considering both costs and environmental impacts, these mitigation measures are considered infeasible.

IID has been actively involved in development of the referenced TMDLs, and is working with the RWQCB on development and implementation of TMDLs that apply exclusively to rivers flowing through IID's water service area. IID is also participating with the RWQCB to formulate a nutrient TMDL for the Salton Sea and foresees a similar compliance program based on Best Management Practice implementation.

19. Skorupa (1998) recognized that the primary selenium bioaccumulation pathway in the Salton Sea is from the Salton Sea itself rather than the New and Alamo rivers and the drains. Most of the selenium within the Sea occurs within the sediments and not the water column. Furthermore, Setmire et al. (1996) also states that there is no current research that correlates specific selenium concentrations with wildlife impairment at the Salton Sea. Current studies at the Salton Sea have not linked specific selenium concentrations in the water with avian egg concentrations that relate directly to reproductive success. Therefore there is no evidence to conclude that any increase in selenium in the drains would result in significant adverse impacts to biological resources.

20. The PEIR, Tables 3.1-15, 3.1-17 and 3.1-21 in particular, contain specific information on changes in total dissolved solids, sediment (TSS), and selenium in the New River, Alamo River, Whitewater River/Coachella Valley Stormwater Channel (CVSC), and Salton Sea due to the Proposed Project. However, a summary table has been added to the PEIR to better describe overall trends in water quality in the service areas of IID and CVWD with implementation of the Proposed Project. Refer to response 23 immediately below for additional detail regarding potential perchlorate impacts.

21. The co-lead agencies already are working with other agencies to develop measures that protect critical fish and wildlife habitat. As noted in section 3.2.2.3 of the PEIR (also section 4.2.17), CVWD is participating in a multi-agency, multi-species habitat conservation plan with others in the Coachella Valley (the Coachella Valley Multiple Species Habitat Conservation Plan [CVMSHCP]). Potential impacts to sensitive species from CVWD's use of water related to the Proposed Project will be addressed in the CVMSHCP, which is currently under development. As discussed in sections 2.4 and 3.2.2.3 of the PEIR, IID has prepared a draft Habitat Conservation Plan in support of IID's application for incidental take permits in conformance with the federal and California Endangered Species Acts (ESAs) for impacts of the IID Water Conservation and Transfer Project within the IID service area, the All American Canal right-of-way, and the Salton Sea.

22. Mitigation Strategy 2 is designed to mitigate the impacts of reduced flow volume on Salton Sea elevation and the impacts of reduced flow volume on Salton Sea salinity. The salinity of drainage water is currently less than the concentration of salinity in the Sea itself. Therefore, maintaining drainage flows adds lower salinity water to the Sea.

Conserved water can come from a variety of sources, including drainage water. Selenium in drainage water is significantly *higher* (by one or two orders of magnitude) than the concentration in the Sea. If conservation water were obtained through fallowing, the delivered water would still have a higher selenium concentration

(approximately 2.0 μg/L) than the Sea itself (0.74 μg/L). The delivery of conservation water to the Sea would simply add water with a higher concentration of selenium to the Sea. Therefore, the objective of maintaining the volume of water to the Sea through conservation could conflict with the objective of decreasing selenium. Also refer to EPA response no. 40 below.

23. The California Department of Health Services (DHS) set a provisional action level for perchlorate at 18 ppb until January 18, 2002, when it was lowered to 4 ppb. An action level is not an enforceable drinking water standard, but a health-based advisory level for chemicals that do not have formal maximum contaminant levels. DHS establishes an action level as a guidance tool when they do not have a regulation for a contaminant and want to provide some guidance for utilities. If an action level is exceeded, state law requires the public water system operator to inform its governing body and the regulatory agency. DHS recommends but does not require public notification as well.

In March 2002, the State Office of Environmental Health Hazard Assessment proposed a public health goal (PHG) of 6 ppb for perchlorate. A PHG is the first step in developing a Maximum Contaminant Load (MCL) (DHS's goal is to have an MCL for perchlorate by 2004). A PHG is a concentration at which no adverse health effects would occur after a lifetime of consumption of water at this concentration. No federal drinking water standard has yet been set for perchlorate.

Perchlorate enters the Colorado River water system along Las Vegas Wash, which drains into Lake Mead. Perchlorate concentrations are diluted in Lake Mead as Colorado River water flows downriver, because of other incoming flows. Water from MWD's Colorado River Aqueduct had perchlorate concentrations ranging from 4 to 8 ppb between 1997 and 2001. IID reports perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. The CVWD water samples found no perchlorate in water from the Coachella Canal (the detection limit is 4 ppb). In 2001, CVWD tested all its active wells in May and in October/November. Only one well near Avenue 54 and Jefferson had detectable perchlorate (5.0 and 5.9 ppb from two different laboratories).

At the same time, the Nevada company responsible for the perchlorate entering Las Vegas Wash constructed and is operating a perchlorate treatment system. The treatment processes are anticipated to decrease perchlorate concentrations in Las Vegas Wash, and thus in the Colorado River water, significantly over the next approximately 6 years. The date cannot be predicted exactly as the concentration is also a function of the volume in Lake Mead and flow in the river, which is dependent on rainfall. Additionally, perchlorate is already in the Las Vegas Wash sediments and will be flushed out over time at a rate that also depends on rain events. By the time the Dike 4 area recharge basin goes on line, in roughly 2005, the perchlorate level in the Colorado River water from the Coachella Canal will be lower than at present. In addition, CVWD groundwater modeling estimates that the recharge at Dike 4 will take approximately 10 to 20 years to reach the Torres Martinez wells. (The wells of other Indian tribes in the Project area would not be affected. Those of the Augustine, Cabazon, and Twenty-Nine Palms tribes are located too far from the proposed recharge facilities. Those of the Morongo and Agua Caliente tribes are located up-gradient from any Colorado River water deliveries associated with the Proposed Project.)

A mitigation measure has been added to section 3.1.3 that would reduce any potential impacts to the Torres Martinez drinking water supply as a result of groundwater recharge to less than significant.

24. As noted, there currently is no water quality criterion for salinity in the Salton Sea. While the RWQCB has been directed by the EPA to develop a TMDL for salinity in the Salton Sea, there is currently no schedule to do so. RWQCB has yet to develop background levels, which is one of the first steps in the process, nor have the load enforcement mechanisms been determined. Thus, it is premature to attempt to integrate this TMDL action into the proposed QSA action and to speculate what impacts the Proposed Project would have on the development and implementation of the TMDL.

    Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Because the volume of tilewater produced under the Proposed Project is similar to that produced under the existing conditions, it is unlikely that the mass of nutrients, particularly ammonia, that may enter IID drains through tilewater would be greatly affected by implementation of the Proposed Project. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Salton Sea and support Best Management Practices introduced under a future Salton Sea nutrient TMDL.

    In general, programs such as the U.S. Department of Agriculture/EPA-funded National Water Quality Evaluation Project[2] have recommended management of nutrient applications as the most effective measures for controlling nutrient loadings. Implementation of this type of Best Management Practices would not be influenced by the Proposed Project.

25. Under Alternative 2A, relative to the Proposed Project, water for delivery to MWD would flow the additional length of the Colorado River between Parker and Imperial dams and the length of the Coachella Canal. This would increase evaporation of water and increase the likelihood of concentrating constituents such as selenium and perchlorate. Under Alternative 2B, water for delivery to SDCWA would flow the additional length of the Colorado River between Parker and Imperial dams. Evaporation of water may or may not increase under Alternative 2B, depending on the final design and operation of the pipeline linking the All American Canal to the SDCWA system (should a decision be made to design and construct such a pipeline).

    Assuming that both Alternative 2A and 2B increase evaporation, evaporation would not occur to the extent that selenium concentrations or perchlorate concentrations would drastically increase. Selenium has not been a problem in either the Coachella or All American canals. For example, selenium in the Coachella Canal averaged 3.3 μg/L for

[2] Priorities, the Key to Nonpoint Source Pollution, Final Report for the Project: "Guidance Document on Targeting of NPS Implementation Programs to Achieve Water Quality Goals, USEPA Office of Water Regulations and Standards, Washington, D.C., July 1987.

the period 1987 to 1999; selenium in the All American canal averaged 2.5 μg/L for the period 1970 to 1999; both canals are under the EPA Aquatic Life Criteria, Criterion Continuous Concentration standard of 5.0 μg/L. Average selenium at Parker Dam is 2 μg/L. Thus while evaporation and concentration of selenium could occur, additional evaporation would not cause selenium levels to exceed the 5.0 μg/L standard.

As described in EPA response 23, perchlorate concentrations would decrease in the Colorado River and thus would not be of concern for this alternative.

26. No actions have been taken with regard to the National Stream Quality Accounting Network (NASQAN), but the co-lead agencies would support efforts to obtain funding to continue the monitoring.

27. Analysis of available information and experience at Owens Lake and at the Salton Sea shows a substantial difference in driving forces that create dust emissions, as well as substantial differences in the composition of Owens Lake sediments versus those at the Salton Sea. The frequency of higher wind speeds is greater at Owens Lake than at the Salton Sea. Experience at Owens Lake has shown that there is a strong correlation between sand motion and PM_{10} emissions. There are substantial deposits of sand on the Owens Lake bed surface and numerous sand dunes surrounding the area. There is very little sand in the areas of the Salton Sea that would be exposed by the drop in sea elevation. Soil chemistry and temperature ranges at the Salton Sea differ markedly from those at Owens Lake. The combination of weaker driving forces for emissions at the Salton Sea and different soil chemistry support the conclusion that exposed sediments at the Salton Sea will probably not be as emissive as they have been at Owens Lake. As identified in section 3.7.3, implementation of Mitigation Strategy 2 would reduce significant air quality impacts at the Salton Sea.

28. Please see response no. 27.

29. Please see response no. 27.

30. Please see response no. 27.

31. The level of analysis provided in the QSA PEIR is appropriate for a program-level document. The IID Water Conservation and Transfer Project EIR/EIS is a project-level document and describes the water conservation and transfer project in greater detail than the QSA PEIR. It is appropriate that more specific details regarding impacts be included in the IID EIR/EIS. The QSA PEIR identifies the maximum air quality impact that could occur as a result of the decreased surface elevation of the Salton Sea, however, and identifies a measure that would mitigate this impact. This measure (Mitigation Strategy 2) would mitigate impacts to affected tribal land.

32. The QSA PEIR is not required to identify mitigation measures for all projects considered in the cumulative impact analysis. Each project considered in this analysis must undergo its own environmental review, at which time mitigation measures specific to the impacts of that project would be identified as required. Similarly, the QSA PEIR identifies mitigation measures that would reduce the impacts of the Proposed Project to less than significant levels. These mitigation measures would reduce the significant cumulative impact created by the combined impacts of the Proposed Project and other projects in the area to less than significant.

33. The use of water conservation and fallowing is technically feasible and therefore identified as a mitigation measure. It also is considered a part of the alternatives to the Proposed Project, including Alternative 4, which could involve fallowing in addition to that which is part of the Proposed Project in order to lessen impacts to the resources of the Salton Sea. It will be up to the decisionmakers for the co-lead agencies to determine which mitigation measures are to be implemented. Additional measures to reduce potentially significant air quality impacts are included in section 3.7.3.2.

34. The Final PEIR has been revised to include a discussion of the new $PM_{2.5}$ and 8-hour ozone standards in section 3.7.1.2.

    The impacts of proposed construction activities are assessed qualitatively in the PEIR since specific information related to equipment usage needed to perform these activities is unknown at this time. These impacts will be quantitatively analyzed in subsequent project-specific environmental documentation with the use of criteria that will determine the significance of the impact of project emissions to ambient ozone and $PM_{2.5}$ levels. These criteria will be applicable to both the one- and eight-hour ozone averaging periods. However, the Final PEIR includes additional measures to minimize $PM_{2.5}$ emissions from proposed construction activities that would be implemented in the event that these activities exceed an emission significance threshold.

    The IID Water Conservation and Transfer Project EIR/EIS includes quantitative analyses of proposed construction activities. The results of these analyses show that the only significant air quality impacts from proposed construction actions would occur if the construction of on-farm measures were undertaken to conserve more than 25 to 30 KAFY in any given year. If this were to occur, the action would be evaluated under the General Conformity Rule to ensure that emissions from the action would conform to the State Implementation Plan and would therefore be less than significant.

35. Please see the response to comment 5 above.

36. Please see the response to comment 5 above.

37. The discussion of using formerly submerged land for agriculture or other purposes, such as recreational uses, has been deleted from section 3.4 of the PEIR.

38. See response to comment 5 above. Figure 1.1-2 has been modified to include more tribes that may be concerned about potential QSA impacts. Copies of the NOA or the Draft PEIR were provided to the Indian bands or tribes most likely to be concerned with the QSA's potential impacts, listed under response no. 5 above.

39. Section 3.2.16 of the PEIR describes the resources of the Salton Sea and the decline that is expected to occur as a result of the Proposed Project. In response to this comment, additional information involving bird and fish kills has been added to this section. Section 1.5 describes the Salton Sea Restoration Project.

40. The mitigation strategies referenced in the comment were developed as a part of the discussions with the U.S. Fish and Wildlife Service regarding compliance with Section 10 of the federal Endangered Species Act and, as such, were intended to mitigate for the impacts of the Proposed Project on species listed as threatened or endangered under that Act. They have secondary beneficial effects to ameliorate the impacts to other environmental resources, such as water quality. Please note that Mitigation Strategy 1

(development and maintenance of foraging ponds) has been removed from consideration due to U.S. Fish and Wildlife Service and California Department of Fish and Game concerns regarding the potential for the ultimate success of this approach and the absence of a suitable back-up position if the foraging pond approach failed. Mitigation Strategy 2 is still considered a viable mitigation measure, and a more detailed discussion of the feasibility of using conserved water to minimize impacts to the Salton Sea is provided below.

CEQA requires that there be a clear nexus between the impact and the mitigation measure (*Nollan vs. California Coastal Commission* [1988] 107 S.Ct. 3141). The implementation of Mitigation Strategy 2 would mitigate significant, project-specific impacts that were identified in the PEIR as a result of the declining water volume or water surface elevation of the Salton Sea (as noted in EPA response 19, significant impacts from the bioaccumulation of selenium would not occur). There is no requirement under CEQA to develop mitigation measures for less than significant impacts.

Under Mitigation Strategy 2, water that would reach the Salton Sea would maintain salinity and elevation changes on the baseline trajectory and thus avoid biological, recreational, air quality, and cultural resources impacts resulting from Project-related inflow reductions. The amount of such water used to mitigate effects of the Proposed Project on biological resources and the number of years over which that conserved water would reach the Salton Sea would be based on the projection of when salinity concentrations would reach a level at which forage fish (principally tilapia) can no longer complete their life-cycle in sufficient numbers to sustain fish-eating bird populations. By maintaining suitable salinity conditions in the Salton Sea, IID would ensure continued persistence of fish (and therefore fish-eating birds) for a period consistent with that projected under the no-project alternative.

Two elements of uncertainty were considered in defining the increment of impact associated with the water conservation and transfer component of the Proposed Project: (1) the uncertainty associated with the projection of when the salinity threshold (i.e., 60 ppt) for reduced fish reproduction would be reached and (2) the uncertainty associated with the accuracy of the threshold. The uncertainty associated with defining when the threshold would be reached was addressed through the modeling of the salinity in the Salton Sea. To account for the variability in the factors that influence salinity (e.g., hydrology), multiple runs of the Salton Sea model were made in which the variables were allowed to differ in each iteration. From these model runs, the probability (mean and 5/95 percent confidence bounds) of the projected salinity trajectory under No-Project (Future Baseline) was determined (Figure 1). These projections indicate a 90 percent probability that the actual salinity trajectory will fall between the lines representing the 5 and 95 percent confidence bounds. The mean of the modeled projections indicated that salinity in the Salton Sea would reach 60 ppt under the No-Project (Future Baseline) in the year 2023.

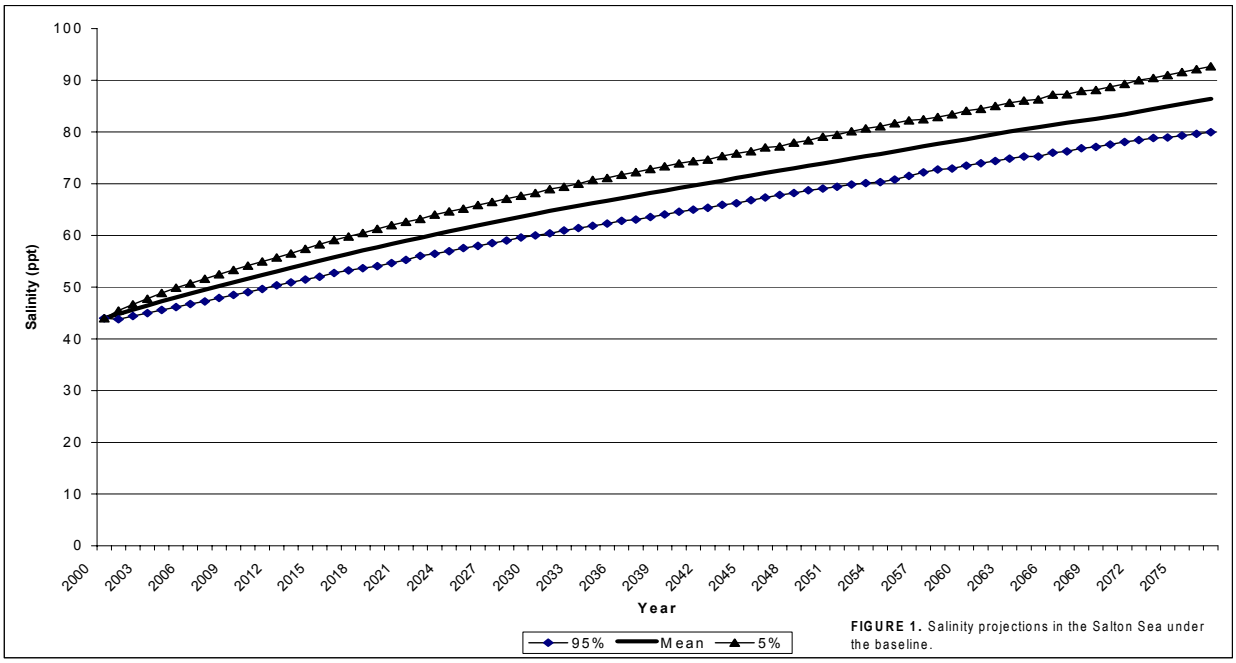

FIGURE 1. Salinity projections in the Salton Sea under the baseline.

The best available information suggests that growth, survival, and reproduction of tilapia would begin to decline at a salinity of about 60 ppt (Costa-Pierce and Reidel 2000). However, because of the complexity of the Salton Sea ecosystem and other factors that contribute to reproductive success of tilapia, the actual threshold could be lower or higher than 60 ppt. Available data are insufficient to gain better precision on the threshold or to calculate confidence bounds. Therefore, to account for the uncertainty regarding the actual threshold, IID, U.S. Fish and Wildlife Service, and California Department of Fish and Game (for permitting and Endangered Species Acts compliance purposes) agreed to counteract the uncertainty by extending the period that such water would be released to the Salton Sea by 7 years. In lieu of using the mean projection of the year in which 60 ppt would be reached in the Salton Sea (i.e., 2023), IID would use the year corresponding to the 95 percent confidence bound (i.e., 2030). Given the anticipated variation in precipitation, hydrology, and other factors, the model projected a 95 percent probability that a salinity of 60 ppt would be reached in the Salton Sea in 2030 or earlier under the No-Project condition (Future Baseline).

Under this revised strategy, the potential for take of covered fish-eating birds resulting from implementation of the water conservation and transfer component of the Proposed Project would be avoided by water reaching the Salton Sea. The amount of such water would be sufficient to offset the reduction in inflow to the Salton Sea caused by the Proposed Project and to maintain salinity in the Salton Sea at or below 60 ppt until the year 2030. The annual amount of water would be equal to the actual inflow reduction caused by the water conservation and transfer component of the Proposed Project plus or minus an amount of water necessary to maintain the target salinity trajectory. This trajectory would correspond to the salinity projection for the 95 percent confidence bound (see Figure 1) until 2030. However, because of the continued threat of potential flooding of lands adjacent to the Salton Sea, IID would not be required to have such water reach to the Salton Sea if that water would increase the surface elevation of the Salton Sea above the levels established by the projected elevation change associated with

the Proposed Project (Figure 2). That is, IID would not be required to have water reach the Salton Sea in years in which the water surface elevation was at or above the elevation projection for the Proposed Project described in Figure 2 due to unforeseen increases in elevation (e.g., increased inflow from a major storm event). In addition, IID could discontinue having water reach the Salton Sea if a Salton Sea restoration project were implemented or if it could be demonstrated that tilapia were no longer successfully reproducing in the Sea.

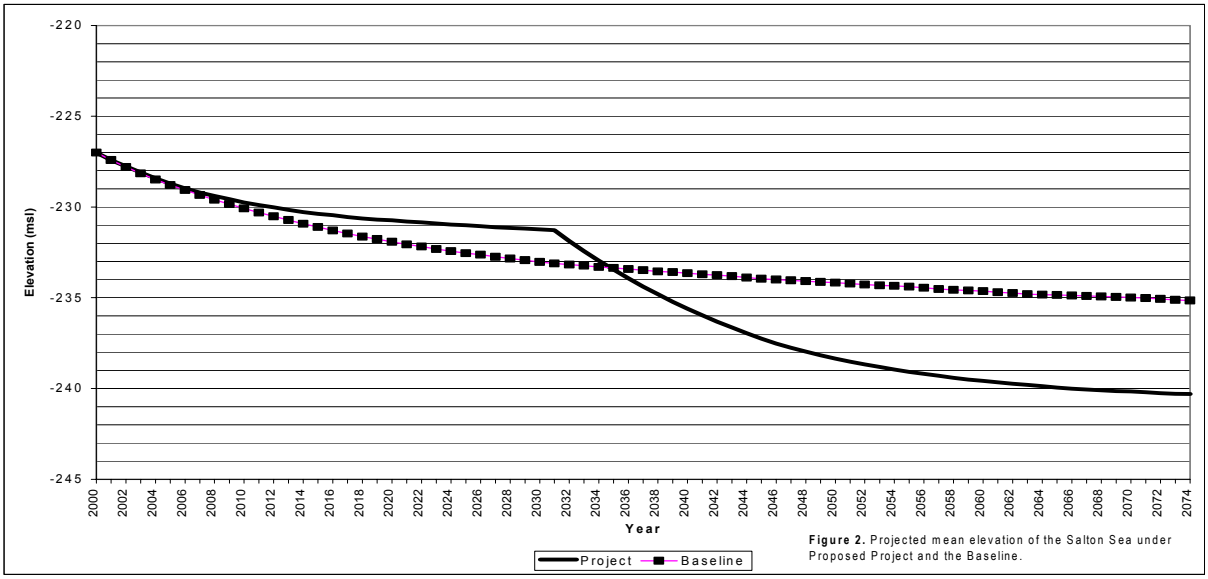

Figure 2. Projected mean elevation of the Salton Sea under Proposed Project and the Baseline.

Water sources to offset Proposed Project-related inflow reductions could be acquired by IID by fallowing in the Imperial Valley or by using any other legally permissible water provided to IID for this purpose by other parties to the QSA, by state or federal agencies, or by any other third parties willing to contribute to the mitigation effort, or any combination of the foregoing, after any appropriate subsequent environmental review. The co-lead agencies recognize that fallowing is controversial. The purpose of the PEIR is to evaluate the impacts of different conservation methods so that relative impacts can be compared and the co-lead agencies can make an informed decision on whether and how to proceed with the QSA.

The amount of water reaching the Sea would be calculated annually based on the proportion of efficiency conservation (e.g., system and on-farm) and fallowing used to generate the water for transfer. As previously described, the amount of water reaching the Sea annually would match the anticipated Project-related reduction in inflow plus or minus any increment necessary to maintain the salinity trajectory, but not to exceed the elevation levels projected for the Project as described above.

By maintaining suitable salinity conditions in the Sea, IID would ensure continued persistence of fish (and therefore fish-eating birds) for a period consistent with that projected under the Future Baseline. Under this approach, the level and duration of use of the Salton Sea by fish-eating birds would be expected to be the same as under the Future Baseline. In addition, maintaining the salinity trajectory associated with the 95 percent confidence bound until 2030 would result in a deceleration in the rate of salinization in the Sea. This improvement over the Future Baseline likely would provide

indirect benefits to salt-sensitive species, including several of the sport fish species that comprise the basis for the recreational sport fishery.

Avoiding salinity impacts also would result in the avoidance of biological impacts associated with changes in surface elevation. Because water surface elevation in the Salton Sea under this strategy would be held at or above the No-Project (Future Baseline) projections, conservation-related changes in the use of nesting islands by covered species would not occur as a result of the Project. Likewise, potential impacts on the tamarisk scrub community adjacent to the Sea (e.g., shoreline strand) would not be affected by the Project. Implementation of this strategy also provides the ancillary benefit of allowing time for a Salton Sea restoration project to be developed.

41. A portion of the activities to be implemented by the Coachella Valley Water Management Plan (CVWMP) (published in 2000) is considered part of the QSA; the remainder is not. The Draft PEIR evaluating the environmental impacts of the CVWMP is expected to be released in June 2002. Section 2.5.2 of the PEIR states that "With the implementation of the Proposed Project, from 52 to 152 KAFY of additional Colorado River and exchanged SWP water *would be used to replace current groundwater use, or would be used for direct groundwater recharge*" (italics added). The non-QSA portion of the CVWMP is described in section 4.2.16, as one of the projects considered in the cumulative impact analysis. As noted in section 4.2.16, the need to pump groundwater would be reduced by increased use of Colorado River water, implementation of various water recycling programs, and conservation measures to decrease the consumption of water in the Coachella Valley. Water also would be gained through a number of sources other than the Colorado River, including recycled water, desalted agricultural drain water, municipal and industrial conservation, and golf course conservation. CVWD does not have legal authority to impose any pumping restrictions on the area. Thus, no additional information is necessary.

42. The commenter correctly notes that CEQA does not require an environmental justice analysis. This analysis is, however, included in both the IA EIS and the IID Water Transfer and Conservation EIR/EIS, as required by NEPA.

43. This comment is noted. In the interest of consolidating the analysis pertaining to a given resource in one location, the original formatting has been retained.

References/Persons and Agencies Contacted

Curtis, Dave. U.S. Bureau of Reclamation, Realty Specialist, Environment and Lands Group.

Muth, Steve. U.S. Bureau of Reclamation, Wetlands Division.

Setmire, J.G., A. Hurlbert, and C. Roberts. 1996. *Selenium in Water, Sediment, and Transplanted Corbicula in Irrigation Drainage and Wildlife Use of Drains in the Imperial Valley, California, 1994-1995*. National Irrigation Water Quality Program. United States Department of the Interior.

Skorupa. 1998. "Selenium Poisoning of Fish and Wildlife in Nature: Lessons from Twelve Real-World Examples" in W.T. Grankenberger, Jr. and R.A. Engberg (eds.), Environmental Chemistry of Selenium. Marcel Dekker, Inc. New York.

STATE AGENCIES

Comments and Responses

CONTENTS

Gray Davis
GOVERNOR

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
State Clearinghouse

Steven A. Nissen
DIRECTOR

ACKNOWLEDGEMENT OF RECEIPT

DATE: February 7, 2002

TO: Robert D. Thomson
Colorado River Water Quantification Settlement Agreement Co-lead
816 State Street
Suite 500
Santa Barbara, CA 93101

RE: Implementation of the Colorado River Water Quantification Settlement Agreement
SCH#: 2000061034

This is to acknowledge that the State Clearinghouse has received your environmental document for state review. The review period assigned by the State Clearinghouse is: 1

Review Start Date: January 30, 2002
Review End Date: March 15, 2002

We have distributed your document to the following agencies and departments:

Caltrans, Division of Transportation Planning
Colorado River Board
Department of Conservation
Department of Fish and Game, Region 5
Department of Fish and Game, Region 6
Department of Food and Agriculture
Department of Parks and Recreation
Department of Water Resources
Office of Historic Preservation
Regional Water Quality Control Board, Region 7
Resources Agency
State Lands Commission
State Water Resources Control Board, Division of Water Quality
State Water Resources Control Board, Division of Water Rights

The State Clearinghouse will provide a closing letter with any state agency comments to your attention on the date following the close of the review period.

Thank you for your participation in the State Clearinghouse review process.

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 WWW.OPR.CA.GOV/CLEARINGHOUSE.HTML

Office of Planning and Research, California State Clearinghouse, February 7, 2002

1. This comment is noted.

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

Gray Davis
GOVERNOR

Steven A. Nissen
DIRECTOR

Memorandum

Date: March 6, 2002

To: All Reviewing Agencies

From: Scott Morgan, Project Analyst

Re: SCH # 2000061034
Implementation of the Colorado River Quantification Settlement Agreement

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The State Clearinghouse (SCH) distributed the above named EIR to your agency on January 30, 2002. On February 13, 2002 the SCH distributed a memorandum stating that the review period had been extended to April 14, 2002, that information was incorrect. The correct review period is: 1

Review period began: January 30, 2002
Review period ends: March 26, 2002

I apologize for this error, and request that you note the above information for your files.

CC: Robert D. Thomson
Colorado River Water Quantification Settlement Agreement Co-Lead
816 State Street, Suite 500
Santa Barbara, CA 93101

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-322-2318 FAX 916-324-9936 www.opr.ca.gov

Office of Planning and Research, California State Clearinghouse, March 6, 2002

1. This comment is noted.

Administrative Office
1001 S. Valley View Blvd.
Las Vegas, Nevada 89153
Telephone: (702) 258-3939
Fax: (702) 258-3268

Project Office
1900 E. Flamingo, Ste. 170
Las Vegas, Nevada 89119
Telephone: (702) 862-3400
Fax: (702) 862-3470

Southern Nevada Water System
243 Lakeshore Road
Boulder City, NV 89005
Telephone: (702) 564-7697
Fax: (702) 564-7222

March 13, 2002

SOUTHERN NEVADA
WATER AUTHORITY

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

SUBJECT: DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

The Coachella Valley Water District, Imperial Irrigation District, Metropolitan Water District of Southern California, and San Diego County Water Authority have issued a Draft Environmental Impact Report for the proposed Colorado River Quantification Settlement Agreement (QSA). The QSA is a framework that will assist these agencies in reducing diversions of Colorado River water in normal years to California's basic apportionment.

The Southern Nevada Water Authority (Authority) represents the major water and wastewater purveyors in southern Nevada, including the Las Vegas Valley Water District, the Cities of Boulder City, Henderson, Las Vegas, and North Las Vegas, the Clark County Sanitation District, and the Big Bend Water District in Laughlin. These agencies serve over 1.5 million people in the southern Nevada region. The Authority and its members control over 90% of the State of Nevada's 300,000 acre-foot consumptive right from the Colorado River.

The Authority strongly supports completion of the QSA. The QSA is an important component for long-term management on the Lower Colorado River. In addition to providing a framework for reducing diversions of Colorado River water to California's basic apportionment, execution of the QSA is required for continued implementation of the Interim Surplus Guidelines. These guidelines were approved by the Secretary of the Interior in 2001 to provide a greater degree of predictability for California and the other Lower Basin States regarding surplus determinations on the Colorado River. 1

The Authority welcomes the leadership of the lead agencies in addressing the issue of their Lower Colorado River water demands and diversions. If you have any questions about these comments, please contact Kay Brothers at (702) 258-3176.

Sincerely,

David A. Donnelly
Deputy General Manager, Engineering/Operations

DAD:KB:LL:sh

Southern Nevada Water Authority, March 13, 2002

1. This letter indicates support for the QSA. No comments on the content of the PEIR were submitted.

State of California - The Resources Agency
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
Eastern Sierra-Inland Deserts Region
330 Golden Shore, Suite 210
Long Beach, California 90802
(562) 590-5113

GRAY DAVIS, *Governor*

March 25, 2002

RECEIVED
MAR 27 2002
SAIC SANTA BARB CA

QSA PEIR Co-lead Agencies
c/o Science Applications International Corporation
Mr. Robert D. Thomson, Vice President
816 State Street, Suite 500
Santa Barbara, CA 93101

Dear Mr. Thomson:

Comments on the 2002 Draft Program Environmental Impact Report for Implementation of the Colorado River Quantification Settlement Agreement (SCH2000061034)

The California Department of Fish and Game (Department) has reviewed the above-referenced Draft Program Environmental Impact Report (DPEIR) and provides comments on fish and wildlife resources that may be affected by the proposed project. The Department is reviewing this document as a Trustee Agency with jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. In that capacity, the Department provides the following comments on the proposed Quantification Settlement Agreement DPEIR.

The Department includes, by reference, our Notice of Preparation comment letter dated July 6, 2000. That letter identified issues which should be addressed.

The Department has the following comments regarding the DPEIR:

- The project as described uses an incorrect baseline;
- The DPEIR fails to adequately discuss the extent of currently utilized habitat for 21 birds which are threatened, endangered, or Species of Special Concern;
- The DPEIR should address how reduced groundwater levels will affect habitat conditions, and, in turn, suitability, availability, and reproductive success;
- The loss of the Salton Sea sportfishery will be a significant, yet mitigable impact;
- The DPEIR should address cumulative impacts of all past, current, and future projects, including the1.574 mafy transfer.

These points and other issues will be discussed in more detail on the following pages.

Conserving California's Wildlife Since 1870

Project Description - Baseline Environmental Condition

As proposed, the project is comprised of 14 components (A thru N), which are summarized in Table 2.4-1 of the DPEIR. The proposed project is based on a series of agreements, which include water conservation/transfer and exchange projects among the Imperial Irrigation District (IID), Coachella Valley Water District (CVWD), Metropolitan Water District (MWD), and San Diego County Water Authority (SDCWA) (referred to collectively as the participating agencies). The proposed project quantifies the amount of Colorado River water available to the participating agencies and calls for specific, changed distribution of that water among the agencies for a 75-year period. The Department's position is that the project description is inadequate because it uses the incorrect baseline for the water level in the Colorado River. 1

The water amounts proposed for transfer as they appear in Table 2.5-1, on Page 2-23 are not accurate. The *IID/MWD 1988 Agreement, IID/MWD/Palo Verde Irrigation District/CVWD 1989 Approval Agreement, and MWD/CVWD 1989 Agreement to Supplement Approval Agreement* (1988 Agreement) is included in the baseline, yet no project-level CEQA document ever analyzed the effects of that transfer to the Colorado River. In addition, the DPEIR now states that 20 kafy should be subtracted from the DPEIR total water volume in Table 2.5-1 (*Amendment to the IID/MWD 1988 Agreement and Subsequent Agreements*). There is no justification for the proposed 20 kafy credit. 2

The DPEIR states that the current diversion volumes remain unchanged and implies that the diversion is, therefore, exempt from CEQA. As proposed, in various CEQA documents, this replacement water volume will come from water conserved from downstream sources and transferred upstream to the existing facility. This will result in modification to the current source and volume of water diverted by MWD. The project description should include the diversion of the "new" water as a related activity. The proposed project involves not only the conservation of water, the transfer of water, and the delivery of water, but also the diversion of the "new" water. 3

Affected Environment and Environmental Impacts

The DPEIR states that it is appropriate to measure impacts of the proposed project against both current baseline and projected baseline conditions in order to provide a more accurate description of proposed project effects. The DPEIR asserts that this methodology will facilitate the process of isolating effects caused by the proposed project from those that are reasonably expected to result from existing conditions and trends. The Department disagrees with the proposed methodology. The impacts associated with implementing the DPEIR should not be compared only with those that would ultimately occur with build out, under adopted or on-going programs (e.g., increased water uses by 4

other Lower Division states and flood control operations). Rather, the analysis should focus on existing physical conditions and how those conditions will be impacted by the proposed project, as required by CEQA. In this case, it may be appropriate to use the environmental conditions that existed prior to implementing the 1988 Agreement, before comparing the eventual future conditions that would result under build out (CEQA Guidelines, Section 15125(e)). The Department recommends that the Final QSA PEIR address this "shifting baseline" issue. 4

A. *Lower Colorado River*

1. *Special Status Biological Resources*

This portion of the lower Colorado River (approximately 150 river miles) supports several hundred species of wildlife. Over 100 of these are special status species. The Lower Colorado River is an extremely important migratory corridor for birds including neo-tropical migrants, waterfowl, and migratory raptors. This portion of the lower Colorado River plays an invaluable role in fulfilling life history requirements and portions thereof for the above-mentioned species, providing vital breeding, foraging, migration, thermal regulation, and escape cover habitats. 5

The Department concurs with the DPEIR's description of the seriously degraded conditions that currently exist along the lower Colorado River. The DPEIR also states that the current condition of the lower Colorado River is a result of past and on-going human and natural factors leading to the current status of biological resources within the lower Colorado River (Page 3.2-26). Although there are existing environmental problems, it is the Department's position that the additional incremental effects from the project should nonetheless be considered significant. Moreover, the mere fact that the proposed project may be consistent with reasonably foreseeable future conditions, given well-defined trends and other parameters such as adopted or on-going programs (e.g., increased water uses by other Lower Division states and flood control operations), does not mean that its effects cannot be significant. 6

Knowledge of the regional setting is critical to the assessment of environmental impacts. Special emphasis should be placed on environmental resources that are rare or unique to the region that would be affected by the proposed project. The DPEIR fails to include an adequate discussion of the extent of currently utilized habitats (breeding, foraging, migratory, etc.) for the following California endangered and threatened species: 7

southwestern willow flycatcher (*Empidonax trailli extimus*)
willow flycatcher (*Empidonax traillii*)
western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Arizona bell's vireo (*Vireo bellii arizonae*)
elf owl (*Micrathene whitneyi*)
Gila woodpecker (*Melanerpes uropygialis*)
gilded flicker (*Colaptes auratus*)
gilded northern flicker (*Colaptes auratus chrysoides*)
California black rail (*laterallus jamaicensis coturniculus*)
Yuma clapper rail (*Rallus longirostros yumanensis*)
Swainson's hawk (*Buteo swainsoni*)
Greater Sandhill crane (*Grus Canadensis tadiba*)

7

In addition, the DPEIR fails to adequately discuss the extent of currently utilized habitats (breeding, foraging, migratory, etc.) for the following California Species of Special Concern:

8

Brown crested flycatcher (*Myiarchus tyrannulus*)
Cooper's hawk (*Accipiter cooperii*)
Crissal thrasher (*Toxostoma crissale*)
Fulvous whistling-duck (*Dendrocygna bicolor*)
Harris hawk (*Parabuteo unicinctus*)
Long-eared owl (*Asio otus*)
Summer tanager (*Piranga rubra*)
vermillion flycatcher (*Pyrocephalus rubinus*)
Yellow warbler (*Dendroica ptechia*)

The Department has documented reports and records of all of the above-mentioned species being present within and utilizing this portion of the lower Colorado River that the project will impact. The DPEIR does not show that the significant environmental impacts of the proposed project were adequately investigated and discussed and does not to consider the significant effects of the proposed project in the full environmental context (CEQA Guidelines, Section 15125(c)).

9

The change in points of diversion (less water traveling between Parker and Imperial Dams) will cause a drop in ground water levels. It is unclear from the DPEIR how this drop in ground water will affect the quality and extent of currently existing utilized riparian (defined by cottonwood, willow, tamarisk and their structural types) and wetland habitat, specifically micro-habitat components, for the above-listed Species of Special Concern and threatened and endangered species. Moisture in the soils likely benefits species distribution, abundance, and success by providing the proper humidity, ground cover, solar protection, and/or insect populations for food. The continued loss of existing riparian habitat, specifically micro-site conditions, must be considered in the

10

context of species habitat suitability and the effects that the proposed project imposes on this habitat suitability and availability. 10

The Department recommends that the DPEIR address habitat modification resulting from drops in ground water elevations, specifically as it relates to micro-site habitat modification and effects to habitat suitability and availability for each of the above-listed threatened and endangered species and Species of Special Concern. Factors influencing habitat quality and thus nest site selection may include predation, competition, macro- and micro-habitat characteristics, or combinations of these factors. Because nest site selection is closely associated with fitness through reproduction, birds select habitats to maximize probability of nest success. Therefore, various micro-habitat characteristics important for quality nesting sites may ultimately determine nest success and productivity (Morrison et al. 1992). The Department recommends that the DPEIR address the proposed project's impacts on nest-site characteristics, suitability, quality, and availability as they relate to reproductive success for the above-listed threatened and endangered species and Species of Special Concern. The LCR MSCP includes species information which may be relevant; the Department recommends that the DPEIR incorporate information from that document as appropriate. 11

The Department provides the following additional comments:

- Species which are fully protected under California law cannot be taken or possessed, except in limited circumstances. 12
- Page 3.2-29 in the document states that the proposed project has the "potential" to reduce wetland and riparian habitat along the lower Colorado River that is used by amphibians, reptiles, riparian and marsh obligate birds, and mammals. The document also states that the "potential" loss of habitat would potentially be a significant impact, but can be fully mitigated by habitat restoration. The document should specify the impact that the project will have; for example, whether it will have "significant" environmental impact or "less-than-significant" environmental impact. 13
- The Department has a "no net loss" policy for riparian and wetlands habitat which is not recognized or addressed within the DPEIR. The DPEIR should address the potential impacts to the remaining 1,500 acres of existing cottonwood/willow habitat, and the existing acreage of wetlands within this reach of the river as it relates to the lowering of the groundwater table, resulting from the implementation of the proposed water transfer along the Colorado River. 14
- The reduction in groundwater levels may also increase the difficulty and the ability to be successful in future restoration efforts. The Department recommends that this 15

issue be assessed as it relates to the successful implementation and feasibility of the proposed conservation measures. 15

- What are the potential affects to vegetation communities as you move away from the river and depth to groundwater increases. Can the assumption be made that roots have unlimited growth potential and will continue growing downward at rates commensurate with the rate of groundwater lowering? 16

2. *Special Status Fish*

Razorback sucker and bonytail chub are fully protected under California law, and therefore cannot be taken or possessed, except as authorized by the Fish and Game Commission for necessary scientific research. To ensure that take is completely avoided requirements and conditions of the Department's *Statewide Fish Screening Policy* (June 2001) and the Department's *Fish Screening Criteria* must be included and incorporated into the DPEIR. Those documents are available on the Department's website, as follows: 17

Statewide Fish Screening Policy is located at http://www.iep.ca.gov/cvffrt/DFGpolicy.htm
Fish Screening Criteria is located at http://www.iep.ca.gov/cvffrt/DFGCriteria2.htm

A change in flow and location of diversions could alter water quality and mortality rates associated with entrainment of fish and other aquatic organisms. The DPEIR should include a thorough assessment of entrainment rates and reduced water quality and subsequent increases in mortality. These issues should be further addressed, and the DPEIR should discuss how potential take will be alleviated. 18

Table 3.2-2 incorrectly states the status of razorback sucker in California. Razorback sucker are California Endangered and California "Fully Protected". 19

Table 3.2-1 incorrectly lists the desert pupfish as California "Fully Protected" species; please remove that designation from the table. 20

3. *Biological Resources*

Under CEQA the lead agency must consider, among other things, impacts to wildlife (both game and non-game) subject to the jurisdiction of the Department of Fish and Game and the ecological communities in which they reside. This document should acknowledge and address impacts to species not carrying special designation (threatened, endangered, rare, fully protected, Species of Special Concern, etc.). Please address, with specifics, potential impacts and mitigation measures for these species. 21

Unavoidable impacts should be mitigated through acquisition and protection, in perpetuity, of high-quality biological habitat. 21

4. *Recreation*

Boating, hunting, and fishing opportunities will be affected by this Project. Confluence zones between the mainstream and the backwaters could be compromised for wildlife and boats due to the lowered water surface elevations. Launch ramps will be further exposed and at times unusable due to the lowered water surface elevations and reduced duration of peak flows. Loss of hunting and fishing opportunities could be directly attributable to loss of moist soil units, marsh, and backwater habitats for sportfishing and waterfowl hunting. Lowered water surface elevations and reduced duration of peak flows will further expose mainstream sandbars and reduce navigational safety. 22

B. *Salton Sea*

The Department believes that the exacerbated loss of the Salton Sea sportfishery, which will result from this project, will be a significant, yet mitigable impact. The Department's determination that there will be "significant impacts" is described as follows. The DPEIR has conflicting statements regarding this issue that need to be resolved in the document. For example, the "Executive Summary", Page ES-7, supports the Department's contention, yet in the same section, Table ES-1 on Page ES- 45 (Summary of Impacts and Mitigation, Biological Resources), the statement is made that "The impact to fisheries (more rapid loss) is considered less than significant since these species are not native to the Salton Sea." In Table ES-1, under the Recreational Resources section, Page ES-46, the document states that "Increased salinity would hasten the decrease in the number of fish that live in the Salton Sea, adversely affecting sportfishing opportunities. This would be a significant impact." These and other sections of the DPEIR should be modified to accurately reflect the on-going discussions between the participating agencies and the Department regarding mitigation strategies (described below) for the exacerbated loss of the Salton Sea sportfishery. 23

Fully protected species at the Salton Sea cannot be taken or possessed under California law, except in limited circumstances. 24

Mitigation Measures

A. Lower Colorado River

The mitigation measures on page 3.2-37 state that they were developed using a habitat-based approach with the federally listed southwestern willow flycatcher as a 25

representative riparian species, that the two-tiered conservation plan was intended to minimize the impact to southwestern willow flycatcher and other riparian species, and that implementation of the proposed mitigation measures would mitigate potential impacts to species using similar habitat types along the lower Colorado River to less-than-significant. The proposed mitigation measures are inadequate for the following reasons: first, the U.S. Fish and Wildlife Service (USFWS) only has the ability to consult on federally threatened, endangered, and candidate species. Therefore, their consultation was limited to only the southwestern willow flycatcher, Yuma clapper rail, razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*). Second, the mitigation measures were not developed using a habitat-based approach and were only intended to mitigate for effects to these four species on a species-by-species basis. Pages 45 through 50 of the USFWS 2001Biological Opinion (BO) (ref: 2-21-00-F-273) elaborate and clarify the intent and applicability of the proposed mitigation measures identified on Page 3.2-37 of the DPEIR. It is the Department's position that the mitigation (in both the BO and the DPEIR) will not mitigate to a level of less-than-significant for all of the California threatened, endangered, and Species of Special Concern listed in Table 3.2-3 of the DPEIR. 25

B. Salton Sea

The Salton Sea Mitigation Strategy 1, on Page 3.2- 38, should be changed to read as follows: "A hatchery would be constructed in phases, if needed, for the following three purposes (key points): 1) to produce and stock into the Salton Sea current sportfish species, once egg and larval survival can no longer naturally occur and to provide a put-and-grow sportfishery and forage base for fish-eating birds until sportfish can no longer grow or survive; 2) should the Sea's sportfish be unable to survive elevated salinities, to provide a genetic stock for re-population of the Sea, in the event of the implementation of a long-term Salton Sea restoration project; and 3) to utilize the hatchery to produce tilapia or some other fish for placement in artificially constructed grow-out and/or feeding ponds to maintain the presence and use of the area by fish-eating birds." 26

The Biological Resources Section - Impacts, on page 3.2-31, first paragraph, states that "This impact to fisheries (more rapid loss) is considered less than significant since these species are not native to the Salton Sea." The Department disagrees with this statement for the following reasons. Department of Fish and Game-published reports document that the sportfish of the Salton Sea make up one of California's highest-quality sportfisheries (Black 1974; Black 1985). This self-sustaining fishery has been utilized by anglers, 75% of whom come from outside of Imperial and Riverside counties, for approximately 50 years. The Department believes that shortening the life span of the existing sportfishery at the Salton Sea by as much as 19 years, due to the transfer of conserved water out of the Salton Sea Basin, is a significant impact that must 27

be addressed in the DPEIR and in any subsequent CEQA documents. Therefore, the Department requests that the above-referenced portion of the DPEIR and all pertinent sections be modified to reflect that unless mitigated, significant impacts to the sportfishery of the Salton Sea will occur from this project. 27

Unless the second paragraph on Page 3.2-38 is amended to include the purposes of the hatchery as listed above, there will be significant unavoidable adverse impacts to the Salton Sea sportfishery. If these changes are not made to this section of the document, then Section 3.2.4 on page 3.2-38 should be amended to reflect these impacts. 28

Cumulative Impact Analysis

The DPEIR should discuss whether the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Section 15065(c)). As it is described in the DPEIR, when viewed in connection with the effects of other projects, the proposed project will have an incremental effect which is "cumulatively considerable." Therefore, the effect of the project must be considered significant. The DPEIR fails to include an adequate discussion of all projects warranting attention as required by CEQA Guidelines Section 15130(b)(1)(A) and (B). 29

Lower Colorado River

The DPEIR constitutes a portion of a much larger project which involves a 1.574 mafy change in point of diversion from Imperial Dam to Parker Dam (1.574 mafy water transfer). The Final QSA PEIR should include the 1.574 mafy water transfer project in the Cumulative Impact Analysis and re-evaluate cumulative impacts according to the CEQA Guidelines to adequately address cumulatively considerable impacts and develop appropriate proportional mitigation measures necessary to reduce impacts to a level of less-than-significant. 30

The USFWS confirmed that the QSA must be looked at as only part of the larger transfer of 1.574 mafy. The USFWS relied on the U.S. Bureau of Reclamation (USBR) *2000 Final Biological Assessment for the Interim Surplus Criteria, Secretarial Implementation Agreements for California Water Plan Components and Conservation Measures* (BA) and the projections presented therein, as the basis for the issuance of the USFWS 2001 (BO) (ref: 2-21-00-F-273) pursuant to Section 7 of the Federal Endangered Species Act. The BA states: 31

"... impacts of smaller amounts of diversions are calculated proportional to the 1.574 maf for the following reasons: 31

Future changes in point of diversion may occur in increments from as little as 25 kaf initially to much larger figures. It could be argued, for instance, a change in point of diversion of 25 kaf annually is hardly measurable with insignificant environmental impacts; . . . The argument could then be made for the next 25 kaf (no measurable impact) and so on. Eventually, however, the sum total of these changes in point of diversion will result in measurable ecological changes, even though individually each change is insignificant."

The 1.574 mafy water transfer clearly qualifies as a "probable future project" under CEQA. The proposed DPEIR project and associated water transfers constitute approximately one third of the 1.574 mafy water transfer project. As stated above, the DPEIR should reevaluate cumulative impacts to determine whether the effects are "cumulatively considerable" under CEQA. Once all cumulative effects are identified, the impacts to biological resources of the lower Colorado River may not be fully mitigated through the implementation of the identified mitigation measures (DPEIR, Page 3.2-37), because the DPEIR failed to include the transfer of the 1.574 mafy in the *Cumulative Impact Analysis* and may have underestimated the impacts to biological resources along the lower Colorado River (CEQA Guidelines, Section 15130(b)(3)). 32

The 1988 Agreement and the effects of those projects on the Colorado River should be included in the Cumulative Impact Analysis of the DPEIR. 33

The Department recommends that the DPEIR incorporate relevant information from the draft Lower Colorado River Multi-species Conservation Plan (LCR MSCP) as for the following reasons: 1) participating agencies were parties to the planning and development of the LCR MSCP and its associated covered actions; and 2) much of the needed impact analysis and mitigation measures (not limited to federally listed species) are reasonably well developed, and would apply to the DPEIR. 34

<u>*Salton Sea*</u>

The DPEIR should include an analysis of the cumulative effects of the proposed project along with the 1988 Agreement on the Salton Sea and its resources. The Final EIR for that project determined that the impacts of lowered elevation and higher salinity of the Salton Sea resulting from reduced inflows were a significant environmental effect of the project which could not be avoided. Overriding considerations were adopted for that effect (Final Environmental Impact Report for Proposed Water Conservation Program and Initial Water Transfer Memorandum 12-3-96, Exhibit A: Findings and 35

Statement of Overriding Considerations for the Proposed Water Conservation Program). The DPEIR does not address the cumulative effect of this past project on the resources of the Salton Sea. The Department requests that an analysis be done that determines the effect of this past project on the Salton Sea combined with the proposed project. This should include data in the form of modeled salinity increases and year in which they would have been reached without the 1988 Agreement. 35

In Section 4.2.15 (Mexicali Wastewater System Improvements), the DPEIR concludes that the Mexicali Wastewater System Improvements project, along with the proposed project, could result in potentially significant cumulative impacts to biological resources and recreational resources of the Salton Sea as a result of increased salinity. It further concludes that the mitigation associated with the proposed project (that provided by the Imperial Irrigation District Water Transfer and Conservation Project) would reduce the significant cumulative impacts to less-than-significant levels. The Department requests that data in the form of modeled salinity increases, and the year in which they will be reached, be provided to support this conclusion. The mitigation provided in the IID project only addresses the increased salinity from that project. The additional increase from the Mexicali project also needs to be modeled and provided. The conclusion of less-than-significant would then need to be based on that data. 36

In Section 4.2.16 [Coachella Valley Water Management Plan (Non-QSA Part)], the DPEIR states that the Coachella Valley Water Management Plan (CVWMP) may produce net beneficial impacts to the Salton Sea through an increase in flows of lower salinity water in the drains, yet the Draft EIR for the Imperial Irrigation District Water Transfer and Conservation Project and the Coachella Valley Water Management Plan both state that the CVWMP will result in increased salinity in the drains and, therefore, an increase in the salinity of the Salton Sea. This needs to be corrected in the DPEIR, and the cumulative impacts need to be modeled along with the Mexicali project and the 1988 Agreement before a determination can be made that the proposed project has mitigated the impacts to less-than-significant. 37

Alternatives to the Proposed Projects

The Department commends the participating agencies for exploring several alternatives in order to minimize and/or avoid significant impacts to biological resources and ecological processes associated with the proposed project. Alternative 2A, in combination with alternative 4, offer substantial environmental advantages (as described below) over the proposed project, while not limiting the ability to accomplish most of the basic objectives of the proposed project (CEQA Guidelines, Section 15126.6(c)). These alternatives should be examined more closely. 38

Lower Colorado River

As proposed, Alternative 2A would meet most of the basic project objectives and would avoid cumulatively, considerable biological impacts to the lower Colorado River. Ultimately, Alternative 2A would keep the water in the lower Colorado River, therefore avoiding cumulatively considerable impacts which would no longer require costly mitigation measures. Furthermore, the financial obligation that would have otherwise been spent on mitigating for impacts along the lower Colorado River could now be spent on construction costs associated with connecting the Coachella Canal to the Colorado River Aqueduct. The biological impacts associated with this construction corridor are relatively minor compared to that of the lower Colorado River, and the current degraded environmental conditions of the lower Colorado River would be spared additional incremental impacts from the DPEIR. The DPEIR identifies potential biological impacts to the Coachella Valley fringe-toed lizard, desert tortoise, and the peninsular bighorn sheep. The proposed construction corridor in Alternative 2A is outside the known range of the Coachella Valley fringe-toed lizard and the peninsular bighorn sheep, thus impacts to these species would be avoided. Project impacts to the desert tortoise within this 7-10 mile long, 150- to 200-foot construction corridor can be avoided and/or minimized to a less-than-significant impact with appropriate mitigation measures. 39

Salton Sea

The Department agrees with the comments made on Pages 3.2 -38 and 3.6 - 13 that state that the implementation of Mitigation Strategy 2 (Use of Conserved Water as Mitigation) for the proposed project would avoid biological impacts to fish-eating birds and to the sportfishery of the Salton Sea. The Department concurs that the "proposed project may be environmentally superior to the other alternatives" (page 5-22), but only if Mitigation Strategy 2 is selected as the mitigation measure, not Mitigation Strategy 1. If the latter is selected, then the Department supports the selection of Alternative 4 as the "environmentally superior alternative". 40

Growth-Inducing Impacts

The reliability of water facilitated by this transfer could be construed as growth inducing even though there is potentially no "new" water in the SDCWA or MWD service areas. Section 1.1 of the DPEIR states that the region of influence (ROI) is comprised of the areas that are affected by the QSA water conservation and transfer components, i.e., the water service areas of the four co-lead agencies. The ROI also includes areas adjacent to the Colorado River between Lake Mead and Imperial Dam and the areas of conveyance and distribution of Colorado River water by the co-lead agencies, particularly the Colorado River Aqueduct (CRA), All American Canal (AAC), and Coachella Canal. 41

Accordingly, both the indirect and direct effects of the transfer on all of these areas needs to be addressed.

The DPEIR should discuss: 1) the ways in which the project could foster economic or population growth; 2) how having a reliable water source could remove obstacles to population growth; and 3) how the reliable source of water may encourage and facilitate other activities which could significantly affect the environment, either individually or cumulatively (CEQA Guidelines Section 15126.2(d)). The participating agencies to the QSA have determined that the QSA fulfills the objective of facilitating agreements and actions which, when implemented, would enhance the certainty and reliability of Colorado River water supplies and would assist these agencies in meeting their water demands within California's apportionment of Colorado River water. Section 1.2, Pg. 1-4 of the DEIR/DEIS IID/SDCWA Transfer Agreement (which is included in the QSA DPEIR by reference) fulfills the SDCWA objective of acquiring an independent, alternate, long-term water supply that provides drought protection and increased reliability for municipal, domestic, and agricultural uses. 42

Fish and Game Permits

In connection with this project, the Department will be acting as a Trustee Agency for fish, plant, and wildlife resources, and as a Responsible Agency to issue an incidental take permit (California Endangered Species Act (CESA) Permit) for threatened and endangered species, and to issue a Streambed Alteration Agreement. 43

The Department requests that the participating agencies conduct a Property Analysis Record (PAR) for all properties that they intend to purchase and/or manage for mitigation. The PAR program can be obtained from the Center for Natural Lands Management, a non-profit corporation whose purpose is the long-term stewardship of lands set aside for the mitigation of native species and their habitats. The PAR program will allow the participating agencies (and the Department) to evaluate the management tasks and accompanying costs of conservation and mitigation properties based on their biological requirements and your permit requirements. A review of existing documentation on the properties and field surveys (to be conducted by the participating agencies) are to be used to determine the restoration and management activities necessary to maintain the resource as an integrated functioning ecosystem in perpetuity. Each management activity can be budgeted according to its timing, incidence, labor supplies, and administration. From this information, annual costs appropriate for enhancements, endowments, and any special conditions that may exist, can be estimated. 44

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A. CESA

The take of threatened and endangered species is prohibited under CESA . The Department may authorize the take of a listed species for a project if the project has the potential to take a species listed under CESA. Certain conditions must be met for a permit to be issue; all impacts of the take must be minimized and fully mitigated. In addition, the impacts to the species and mitigation measures must be addressed on a species-by-species basis. Early consultation with the Department is encouraged, as modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. 45

When an agency makes findings on significant effects identified in an EIR, an agency must also approve a program for reporting or monitoring mitigation measures that were adopted or made conditions of project approval (CEQA Guidelines Section 15097). A plan to monitor compliance with minimization and mitigation measures and the effectiveness of those measures will also be required as part of the CESA Permit. As the Responsible Agency under CESA, the Department may rely on that plan when it issues the CESA Permit. 46

Page 3.2-37 of the DPEIR lists the biological conservation measures from the USFWS 2001BO (ref: 2-21-00-F-273) to offset potential impacts from the change in point of delivery (400 kafy from Imperial Dam to Parker Dam), which were developed and agreed to by the United States Bureau of Reclamation (USBR) and the USFWS for potential impacts that could occur to federally listed fish and wildlife species and their associated critical habitats. State-listed species and those species under the purview of CEQA were not the subject of that consultation. The consultation for the BO occurred without Department participation. The conservation measures identified in the BO do not meet the standard of CESA , which requires full mitigation, nor do they consider all of the species and habitats which must be considered under CEQA and CESA . CESA conservation and avoidance measures must be fully developed, and the Department is committed to working closely with the participating agencies to develop and identify acceptable conservation opportunities which meet the criteria for both CEQA and CESA . 47

All conservation measures (mitigation) need to be labeled in "perpetuity".

B. Streambed Alteration Agreement - Fish and Game Code 1600 et seq.

A Streambed Alteration Agreement may be needed if a project will divert, obstruct, or change the natural flow of any river, stream, or lake designated by the Department, and that project will affect existing fish or wildlife resources. 48

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The Department appreciates the opportunity to comment on this project. The Department requests responses for comments raised in this comment letter. Questions regarding this letter should be directed to Mr. Chris Hayes, Senior Environmental Scientist, at (760) 922-6508.

Sincerely,

Curt Taucher
Regional Manager

cc: State Clearinghouse

Mr. Chris Hayes
Department of Fish and Game
Blythe, CA

California Department of Fish and Game, March 25, 2002

1. The California Department of Fish and Game (CDFG) accurately describes the major components of the Proposed Project. The project description is adequate, and the PEIR uses the correct baseline in the environmental analysis. Specific responses to this issue are provided in CDFG responses 2, 3, and 4.

2. The water amounts for the proposed transfer are correct as shown in Table 2.5-1. The referenced agreements were analyzed in project-level CEQA documents. As noted in Table 2.4-1 of the PEIR, project-level CEQA analysis for the IID/MWD 1988 Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR; project-level CEQA analysis for the IID/MWD 1988 Agreement was included in the 1994 IID Modified East Lowline and Trifolium Interceptors, and Completion Projects EIR; and project-level CEQA analysis for MWD's use of conserved water for the 1989 Approval Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR. The existing IID/MWD Agreement is not part of the QSA and the CEQA process for that Agreement has already been completed. There fore, it is not appropriate to include consideration of this Agreement in the PEIR. However, under the Proposed Project a change in the existing IID/MWD program would result. This change would provide to CVWD 20,000 acre-feet of water conserved under this ongoing program. This proposed modification is included as a QSA component and is evaluated in the PEIR.

   The CDFG's assertion that the baseline condition for the QSA PEIR should reflect the pre-1988 IID/MWD water conservation program is inconsistent with the methodology established under CEQA. The existing environmental setting reflects the ongoing IID/MWD water conservation program. Water has been made available to MWD under this program since 1990. The actual measured flow in the River during 1999, or based on a 10-year average from 1990-1999 below Parker Dam, reflects the changes in flow volume associated with the 1988 IID/MWD program. Therefore, it is appropriate to use these values as the baseline condition in the QSA PEIR. The proposed project would modify the terms of the 1988 IID/MWD program (included in the baseline) so that CVWD would receive an additional 20 thousand acre feet per year (KAFY) of water conserved by that program that is currently being diverted at Parker Dam for the benefit of MWD users. Under the proposed project this 20 KAFY would continue to be conserved by the IID/MWD program but would be diverted at Imperial Dam and transported to the CVWD service area via the All-American and Coachella Canals. Thus, there will be an increase of 20 KAFY in the river reach from Parker Dam to Imperial Dam that does not exist today. Table 2.5-1 accurately accounts for the potential changes in Colorado River flows between Parker and Imperial dams as a result of the proposed project.

3. The commenter is incorrect in the assumption that the source and volume of water diverted by MWD would be modified. As described in the PEIR, California is required to reduce its diversion from the Colorado River in years designated as shortage, normal, or partial surplus under the Law of the River. The Proposed Project provides mechanisms for California to reduce its diversions. These mechanisms include water conservation and water exchanges. MWD would continue to divert from Lake Havasu on the Colorado

River, and no new facilities would be required. Furthermore, the quantity of water diverted by MWD would not increase from its current or recent levels. The decrease in flows between Parker and Imperial dams represents the effect of conservation and water transfers from "downstream sources," but is not "new" water and should not be treated as such in terms of MWD's diversions. The potential environmental impacts resulting from the proposed change in point of diversion from Imperial Dam to Parker Dam have been adequately analyzed in the PEIR.

4. State CEQA Guidelines (Section 15125) state that the existing environmental setting at the time the NOP is published is *normally* the baseline used to determine whether impacts are significant. This means there are some circumstances in which a different baseline is appropriate. For example, see *Save our Peninsula v. Monterey County Board of Supervisors* (2001) 87 Cal.App.4th 99, in which the court held that an acceptable baseline could differ from conditions at the time the NOP is published. In the QSA PEIR, different baselines were selected for different resources to most accurately describe the QSA's impacts.

   For analyzing impacts of the QSA on the Salton Sea, a future baseline was selected to account for changes in the Salton Sea that are reasonably certain to occur by the time the project is fully implemented and during project implementation. For the QSA, full implementation would start in 25 years. Over the QSA period, incremental impacts of the QSA are most appropriately compared to a forecasted future environmental baseline, which is different from the existing setting.

   For analyzing impacts on the Colorado River, an existing baseline was selected, representing conditions at the time the Notice of Preparation was published in the year 2000. It is not appropriate to use a past baseline of 1988 conditions for the reasons explained in the response to CDFG comment 2.

5. This comment is generally consistent with the discussion of the biological resources along the Colorado River provided in section 3.2 of the PEIR. No additional response is necessary.

6. The impact analysis in the PEIR does specifically address the incremental impact of the change in flows of the Colorado River associated with the implementation of the Proposed Project (see section 3.2.2.3). It also identifies significant impacts to certain habitats and identifies measures to mitigate these impacts to less than significant levels in section 3.2.3.

7. The PEIR provides baseline information regarding these species in section 3.2.1.6 and analyzes impacts in section 3.2.2.3 using a habitat-based approach. Hydrologic modeling performed by the Bureau determined that potential impacts were primarily confined to four habitat types: open water, riparian vegetation with moist soils, backwaters and emergent marsh. A variety of species utilize these habitat types. Some of these species have protected status under state and federal endangered species acts. As noted in section 3.2.2.3, the discussion in the PEIR is not meant to be exhaustive, but rather to highlight a few high-profile species that utilize certain habitats likely to be affected by the Proposed project. Additional discussion on selected species using these same habitats is provided below, as requested. However, this information is provided as clarification only and does not change the conclusions of the impact analysis, which indicates that impacts to such

species are potentially significant. Mitigation measures were included in the PEIR (section 3.2.3) to reduce this potentially significant impact to less than significant.

Arizona Bell's vireo — Along the lower Colorado River, this subspecies is closely associated with early-successional cottonwood-willow habitat. Any impacts to the habitat of the species would be mitigated by measures included in the PEIR.

California black rail – Key habitat components for this species include shallow water, with a preference for saturated versus inundated soil conditions, and high stem density (Rosenberg *et al*. 1991, Flores and Eddleman 1995 in MSCP 2001). Consideration of these habitat variables can be incorporated into the design of the proposed mitigation of creating backwater/marsh habitat, thus benefiting this species.

Elf owl – Elf owls are associated with woodland habitats in the arid southwest, including saguaro, cottonwood-willow, and arboreal mesquite habitats (Rosenberg *et al*. 1991). As with other listed bird species inhabiting riparian forests along the lower Colorado River, protection, followed by enhancement of riparian habitat, is a management priority (SAIC 2001). This is the intent of the proposed mitigation measures.

Gila woodpecker – This species has fairly broad habitat uses with the common denominator of patches of woodland. For instance, they occupy mature riparian forests along the lower Colorado River, saguaros, mesquite bosques, and orchards (Rosenberg *et al.* 1991). Patch size is apparently an important component for riparian nesting, with a minimum patch size of at least 20 ha (49 ac) (Rosenberg *et al.* 1991). The preservation, restoration, and enhancement of riparian woodland as a proposed mitigation strategy would be beneficial to this species.

Gilded flicker – This species occupies woodland, saguaro, and mesquite habitats, but is strongly associated with saguaros for nesting, although riparian trees with nesting cavities may be used (Rosenberg *et al*. 1991, Steinhart 1990). Because of the preference for nesting in saguaros, there are probably few gilded flickers in the riparian habitat along the Colorado River below Parker Dam except, perhaps, in the non-breeding season. As such, any improvement in riparian habitats from the proposed mitigation measures will have a marginal effect on this species.

Gilded northern flicker – The gilded northern flicker occupies riparian and mesquite habitat along the Colorado River. No impact would occur to the mesquite habitat, and mitigation measures identified within the PEIR would mitigate for any impact to its riparian habitat.

Greater sandhill crane – While reproductive activities occur further north, this species winters in the lower Colorado River Valley and elsewhere. They roost in wetlands and shallow marshes, especially sites adjacent to fields cultivated for grain. The largest wintering area in the lower Colorado River Valley is Cibola National Wildlife Refuge. The Lower Colorado River Multi-Species Conservation Plan (MSCP) (SAIC 2001) identifies the shortage of suitable roosting sites adjacent to foraging areas as a major threat to the species. Creation and preservation of suitable marsh habitat under the proposed mitigation measures may enable the species to expand into new areas.

Southwestern willow flycatcher – This species is a riparian obligate requiring a dense canopy and understory, with a midstory of variable density (Sogge and Marshall 2000). Vegetation patch size may be an important correlate of productivity and must be larger than approximately 10 yards wide (Sogge and Marshall 2000). Nest sites usually include or are near open water, cienegas, marshes or saturated soil in normal to wet years, although there may be a total absence of water or saturated soil in dry years (Sferra *et al*. 1997, Sogge and Marshall 2000). Dense vegetation and surface water may be important in both buffering against extreme air temperatures and reducing cowbird nest parasitism. The proposed mitigation measures to preserve and restore riparian habitat along the lower Colorado River would mitigate offset impact to riparian habitat suitable for this species.

Swainson's hawk – This species occurs along the Colorado River in a variety of habitats, including marsh, riparian, mesquite, and upland habitats. Any impact to its foraging or nesting habitat would be mitigated by the measures provided in the PEIR.

Western yellow-billed cuckoo – This species requires broad habitat patches of mature cottonwoods with a subcanopy layer of willows (Rosenberg *et al*. 1991). Optimal stand size is >198 acres and at least 1,900 feet wide (Laymon and Halterman 1989 in SAIC 2001). The proposed mitigation measures to preserve and restore riparian habitat, would benefit this species.

Willow flycatcher – The willow flycatcher occupies essentially the same habitat as the southwestern willow flycatcher. Therefore, the mitigation measures provided in the PEIR also apply to this species.

Yuma clapper rail – Suitable habitat factors include uneven-aged stands of cattails and bulrushes, interspersed with open water of variable depths (Conway *et al*. 1993). As a relatively opportunistic species (Rosenberg *et al*. 1991), creation of suitable marsh habitat under the proposed mitigation measures may enable the species to occupy new sites.

8. The PEIR addresses the habitat for these species in section 3.2.1.6. Additional clarification has been provided below in response to this comment, but the conclusions of the analysis regarding the impacts to wildlife species have not been changed. Also refer to response no. 7.

Brown-crested flycatcher – Occurs in riverine areas containing willow and other riparian species. Implementation of the mitigation measures will compensate for any alteration of the habitat for the species.

Coopers hawk – Forages and nests throughout the lower Colorado River area. Implementation of the Proposed Project would not directly impact the species. Potential impacts to riparian and marsh habitat may affect the species.

Crissal thrasher – Occurs in dense brush, including mesquite. The Proposed Project may affect this habitat, but mitigation proposed would mitigate this impact.

Fulvous whistling duck – Occurs in marsh areas along the lower Colorado River. Wetlands affected by the change in river elevation would be replaced under the proposed mitigation measures, mitigating potential impacts to this species.

Harris hawk – Forages throughout the lower Colorado River in riparian and upland habitats. Any impacts to the habitat of the species would be mitigated by the measures included in the PEIR.

Long-eared owl – Occurs in willow habitat along the lower Colorado River. Mitigation measures identified in the PEIR would mitigate for any changes in the owl's habitat.

Summer tanager – Occurs within dense willow riparian habitat. Mitigation measures identified in the PEIR would mitigate for any changes in the tanager's habitat.

Vermillion flycatcher – Occurs in dense willow riparian habitat. Mitigation measures identified in the PEIR would mitigate for any changes in the flycatcher's habitat.

Yellow warbler – Occurs in dense riparian habitat. Mitigation measures identified in the PEIR would mitigate for any change in habitat.

9. The analysis adequately investigates and discusses the potential significant impacts of the Proposed Project on the biological resources of the Colorado River (section 3.2.2.3) using a habitat-based approach. While the species listed by the commentor may not be specifically addressed in the PEIR, the analysis focused on the potential impacts to habitats used by these species. Implementation of the Proposed Project would not result in any direct physical impacts to species or habitats due to construction or alteration of any facilities, although short-term impacts could result from the implementation of mitigation/conservation measures, as noted in section 3.2.3 of the PEIR. Areas of potential impact were associated with the reduction of up to 388 KAFY of river flow between Parker and Imperial dams. Mitigation measures are identified in the PEIR that reduce any potentially significant impact to less than significant levels.

10 An analysis of potential effects on the Colorado River between Parker and Imperial dams was prepared by Reclamation in 1999-2000. This analysis was based on a cumulative assessment approach using a change in point of diversion volume of 1.574 million acre feet per year (MAFY) taken from the ongoing Lower Colorado River MSCP process, and scaled to attribute effects to the 400 thousand acre-feet per year (KAFY) proposed IID transfer and QSA actions[1].

[1] Although the IID Transfer and QSA volume of 400,000 acre-feet per year is well understood, the source of the 1.574 MAFY figure (a figure which implies significant precision for all possible future transfer volumes) is not defined in the BA, except as attributed to general estimates made by the three Lower Division States (Arizona, California, and Nevada) when queried regarding all possible actions that may reduce river flows that could be taken over the next 50 years (the list of actions is briefly described on page 39 of the BA, and actions are listed without quantification on pages 40 and 41). In contrast to the precision implied, the 1.574 MAFY value is a very conservative estimate and is not necessarily representative of reasonably expected projects or other conditions that would occur in the next 50 years.

Based upon these assumptions, the analyses determined that the river flow reductions would produce *median* water surface elevation reductions ranging from a *maximum* of up to 0.4 feet near Parker Dam, to less than one-quarter inch downstream at Imperial Dam, over a period of 10 years or more with equivalent groundwater changes in adjoining backwaters and sloughs. These levels of *monthly median* water surface elevation change are less than the variations that occur now in response to weather, and variable water releases to meet annually and seasonally variable irrigation water demands.

The assumptions used in the analysis of potential impacts to habitats thus was very conservative and represents a worst-case analysis. This is especially true when addressing the potential effects associated with the decline of groundwater on riparian habitat. The analysis of impacts assumed a one-to-one ratio of the decline in river level to groundwater level, which is very conservative since there would likely be less change in groundwater level. Additionally, the riparian area that was impacted was probably overestimated since each area examined was assumed to be suitable habitat, and it probably was not. Thus, the mitigation measures identified in the PEIR actually mitigate for the maximum potential impacts.

The identification of impact to microhabitats utilized by individual species is beyond the scale of impact assessment required by CEQA. Further, the model developed by the Bureau of Reclamation to identify the impacts to riparian habitats and obligate riparian species was not designed to be sufficiently sensitive to determine the extent and impact to individual riparian microhabitats. Therefore, it is not feasible to determine impacts to microhabitats. However, several microhabitats are specifically identified as contained within the riparian habitats identified in the model. The species of concern listed in the comment and threatened and endangered species are adaptable with regard to their habitat characteristics. They frequently occupy and utilize sites that are subject to conditions that vary remarkably within seasons and between years in the arid Southwest. These species also show a wide range of tolerance to the specific character of microhabitats occupied. Finally, the mitigation measures described are broad habitat types that will include establishment of varied microhabitats to serve the needs of each of the species identified.

11. The information addressing the proposed project's potential impacts to groundwater elevation and the resulting effects on biological resources is based on a habitat approach. The potentially affected habitats include all of the components and characteristic that enable the species to survive and complete all portions of their life-cycle that are associated with the project area. While specific microhabitat characteristics may be important to consider when developing specific restoration plans for specific species the broader habitat based approach is sufficient for program-level CEQA impact analysis. The current analysis provides a qualitative evaluation of species survival and therefore overall reproductive success but need not provide an evaluation of specific details on the impacts to specific nest sites. This approach is consistent with the approach and level-of detail provided in the current edition of the administrative draft Conservation Plan for the Lower Colorado River MSCP. The MSCP conservation strategy is based on a habitat-level approach not micro-site characteristics. The strategy developed in the PEIR is consistent with the MSCP approach.

12. This comment is noted.

13. It is uncertain whether this impact would occur (refer to response nos. 10-11). The analysis conservatively assumes that the impact could occur, however, and that if it did, the impact would be significant. Mitigation measures were identified to reduce the impact to a less than significant level. The designation of "potentially significant" was made because of the uncertainty of the impacts; however, the impacts were considered significant from a CEQA perspective and fully mitigated to a less than significant level.

14. In August of 1993, Governor Pete Wilson signed Executive Order W-59-93, creating the nation's first statewide comprehensive wetlands program. The California Wetlands Conservation Policy (Policy) established a framework and strategy to:

    - ensure no overall net loss and achieve a long-term gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property;

    - reduce procedural complexity in the administration of state and federal wetlands conservation programs; and

    - encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

    The Policy calls for the implementation of 33 specific actions, ranging from performing wetland inventories, to developing mitigation banking policies, to creating regional wetlands restoration and enhancement efforts. Governor Wilson's December 1998 State of the State Report on Wetlands found that, of the initial 33 actions to protect and conserve wetlands, 17 actions were implemented in full and 12 actions in part.

    One of these actions was to conduct a statewide wetlands inventory to serve as a baseline from which to determine losses and gains to the state's wetlands base. The Policy states that the inventory will not be used for regulatory purposes.

    Another action called for by the Policy is to use the inventory information to identify regional and statewide goals for conserving, restoring, and enhancing wetlands. The achievement of these goals will emphasize maintenance of economic uses of restored and enhanced lands and will be done through the voluntary participation of landowners. The Policy stresses that these goals are not meant to be achieved on a permit-by-permit basis.

    We have not found anything in the foregoing two actions or any of the other actions contained within the Policy that would require it to be recognized or addressed within an EIR. Potential project related impacts to riparian and wetland habitats are discussed in the PEIR (see section 3.2.2.3).

15. Any reduction in groundwater levels is anticipated to be small and would primarily occur near the edge of the River. As a matter of course, a restoration plan would consider groundwater levels and account for any localized groundwater conditions in designing the restoration effort.

16. Roots of riparian species certainly do not have unlimited growth potential. However, any potential changes in groundwater levels would be small and would not cause substantial impacts to riparian species beyond those described in the PEIR for which mitigation has been identified.

17. A review of historical data establishes that no entrainment of the razorback sucker and the bonytail chub has occurred at the intake facilities at Lake Havasu or Imperial Dam. Under the Proposed Project, there would be no changes in the quantity of water diverted by MWD at its intake facility at Lake Havasu, and there would be a reduction in diversions at the intake facility at Imperial Dam. Accordingly, the Proposed Project would have flow impacts to the Colorado River, but would not have environmental impacts at any intake facilities. Therefore, no take of the razorback sucker or the bonytail chub would occur at these facilities as a result of the Proposed Project. Fish screening, thus, will not be addressed in this PEIR, but separate and apart from the Proposed Project, we will coordinate with CDFG with respect to its fish screening policy and criteria.

18. A discussion of the changes in water quality associated with the Proposed Project is provided in section 3.1 of the PEIR; any changes were projected to be small and less than significant. Because the overall diversion of water from the Colorado River would be reduced and the diversions by MWD would not be increased over current or recent levels, there would be no impact associated with increase of entrainment rates of fish and other aquatic organisms.

19. Thank you for the information. Table 3.2-2 has been corrected.

20. Thank you for the information. Table 3.2-1 has been corrected.

21. Section 3.2.2 does discuss the impacts to species not carrying special designations and assesses the significance of these impacts relative to the significance thresholds provided in the document. See also response nos. 7, 8, and 9.

22. As noted in the PEIR (e.g., section 3.1.2.3), the Proposed Project would result in only a small decrease in river flow even if the full transfer of water were implemented. The median annual surface water elevation would decrease by a maximum 0.4 feet, which is within the historical hourly, daily, and weekly fluctuation of water levels for the area. (As noted in section 3.2.2.3, at Parker Dam the daily fluctuation is approximately 5 feet during the peak irrigation season in the summer and about 2.5 feet in the winter. The daily fluctuation is about 6 inches at Imperial Dam.) Recreational facilities such as launch ramps would not be significantly impacted by the changes in water surface elevation, nor would boating safety. As noted in section 3.2.2.3 of the PEIR, no adverse impacts to sport fisheries would occur; thus no significant impacts to recreational fishing would occur. Impacts to waterfowl hunting are not considered significant because only small areas would be affected, resulting in subtle habitat changes that would not significantly affect recreational opportunities.

23. The statements referenced in the comment are not in conflict; rather, they refer to impacts to two separate resources. The impact to sport fishing at the Salton Sea is considered a significant *recreational* impact due to the reduction in numbers of fish. The *biological*

impact to the Sea's sport fishery is not considered significant since non-native fish would be affected. The PEIR reflects the mitigation strategies that were current at the time that the document was issued.

24. This comment is noted.

25. The BA and BO focused on mitigation for potential impacts on habitat types that can be identified with the species that could be affected by the proposed project. The anticipated changes in habitat due to reduction in river flow between Parker and Imperial dams were modeled conservatively (see response nos. 10-11). Once impacts on the habitats were determined, potential impacts to special status species were assessed. Mitigation measures were developed based on the potential impact to habitats. State-listed threatened and endangered species occupy similar habitats. The mitigation measures outlined in the PEIR were developed to reduce to a less than significant level the impacts that have been identified associated with implementation of the proposed project.

26. After the release of the Draft PEIR, IID continued to work with the U.S. Fish and Wildlife Service and the California Department of Fish and Game regarding refining Mitigation Strategy 1 to meet the concerns over this strategy. The resource agencies subsequently removed the strategy from consideration when the U.S. Fish and Wildlife Service and California Department of Fish and Game notified IID that incidental take permits would not be granted if this mitigation strategy were chosen. Section 3.2.3 has been modified to reflect that avoidance and minimization of impacts to biological resources at the Salton Sea would be accomplished by Mitigation Strategy 2.

27. Significant impacts to *sport fishing* were identified in the Recreational Resources section (section 3.6), but impacts to *sport fish* were considered less than significant in the Biological Resources section (section 3.2). The lead agencies believe that this is an appropriate finding in that the loss of the fishery itself would not reach a level of significance because the species are non-native; however, the loss would result in a significant impact to the recreational resources of the Salton Sea. This finding is consistent with the comments provided.

28. As explained in the response to California Department of Fish and Game comment 26 Mitigation Strategy 1 has been dropped from consideration and the implementation of Mitigation Strategy 2 is proposed exclusively.

29. The CDFG's comment letter on the QSA PEIR states "The DEIR fails to include an adequate discussion of all projects warranting attention as required by CEQA Guidelines Section 15130(b)(1)(A) and (B)." The co-lead agencies disagree with this comment.

In defining the other related projects to be considered in the cumulative impact assessment, the focus is identifying probable current or future projects. Generally, a project may be included as a related project if it is (1) previously approved by a public agency but not yet implemented; (2) proceeding with the environmental review, approval, or permitting processing; (3) adopted as part of a regional planning or capital investment program or subsequent phases of an approved project; or (4) public agency projects for which money has been budgeted. Speculative future activities are not considered in the cumulative

impact assessment. The PEIR identified 29 related projects meeting this criteria that were considered in the cumulative impact analysis (see Chapter 4).

30. See response to comment no. 29. The commentor is incorrect in assuming that the 1.574 MAFY represents "projects" requiring cumulative impact analysis in the PEIR (which would result in the estimated cumulative change in the point of diversion between Parker and Imperial dams of no more than 500 million acre feet) do not adequately capture the cumulative changes that would occur, as required by CEQA. The 1.574 MAFY was used in the MSCP based on a series of worst-case assumptions regarding conceptual transfers and changes in points of diversion that would maintain full aqueducts for urban users and provide for possible federal program uses. This number is a working estimate subject to change and is being refined through the MSCP planning process. While the 1.574 MAFY is appropriate for long-term conservation planning purposes of the MSCP, some of the projects and assumptions used to develop this number represent highly speculative projects and assumptions that are not reasonably foreseeable from a CEQA prospective. The list approach used in Chapter 4 of the PEIR addresses all of the reasonably foreseeable projects on the Colorado River and provides an adequate analysis under CEQA.

31. The commenter cites the 2000 Biological Assessment and 2001 Biological Opinion as authority for justifying a cumulative impact analysis for 1.574 MAFY. The Biological Assessment and relied on the impact modeling by Reclamation for the Lower Colorado River MSCP process, and except as indicated in the PEIR, the number does not represent projects that should be included in a cumulative impacts analysis, as such projects are described in CEQA Guideline 15130.

    The Bureau of Reclamation statement cited in the comment was directed at the fact that a 25 KAFY change in the point of diversion, or some other relatively small number, may not result in a habitat change, although modeling of 1.574 MAFY would show a habitat change. The Service's point was that an incremental change in habitat would occur due to changes in the point of diversion even if it were not detected by the model. The PEIR concurs with the comment; thus, significant impacts to biological resources along the lower Colorado River were identified, and mitigation measures were established to reduce those impacts to a less than significant level.

32. Please refer to response no. 30 above.

33. It is not appropriate to identify the 1988 Agreement as a project to be included in the cumulative impact analysis. The CDFG's letter also indicates that the IID/Metropolitan 1988 Agreement should be included in the cumulative impact analysis of the PEIR as a related project.

    This program has been implemented for over 10 years. The potential effects of this program to resources along the Colorado River have occurred over the period of its implementation. Any effects would be reflected in the existing environmental conditions. As discussed above, the cumulative effects of this program have been factored into the cumulative impact analysis for the QSA PEIR through consideration of the existing environmental setting against which the impacts of the Proposed Project and other related projects were assessed.

To identify the IID/MWD 1988 Agreement as a separate related project for cumulative impact analysis would lead to a "double counting" of any related effects – once as reflected in the baseline and as a cumulative project.

34. Please refer to response nos. 10-11, and response no. 30 above.

35. It is not necessary to include an additional analysis of the cumulative effects of the 1988 Agreement. The baseline conditions included the overall trend of increased salinity, which also included any "effect" from the 1988 Agreement.

36. Additional detail regarding the Mexicali Wastewater System Improvements is provided in section 4.2.15. According to U.S. Environmental Protection Agency (EPA) and the International Boundary Water Commission (IBWC), after the system improvements are complete, the treated water would be discharged into the New River. At the time of publication of the Draft PEIR, neither EPA nor IBWC was aware of any plans to redirect the treated water for use in Mexico (McNaughton 2002, Torrez 2002, Pena 2002). Similarly, the environmental documentation for the wastewater system improvements states that all wastewater collected for treatment will be discharged to the New River (EPA and IBWC 1997). Therefore, the Draft PEIR incorrectly stated that 55 KAFY could be redirected for use in Mexico. This discussion has been revised. The improvements would result in a beneficial impact on the water quality of the New River and thus the water quality of inflows to the Salton Sea.

37. It is correct that the salt levels in the drainage water would increase somewhat. However, there would be a greater flow of water, which would increase dilution of the Sea since the inflow salinity concentration would be much lower than that of the Sea.

38. Under CEQA, EIRs must provide enough detail about an alternative to allow an adequate evaluation, analysis, and comparison with the proposed project. CEQA Guidelines (Section 15126.6[d]) state, however, that the discussion of environmental effects of the alternatives can be less detailed than that of the impacts of the Proposed Project. The analysis in the PEIR is provides sufficient detail to permit a meaningful evaluation of the alternatives and complies with CEQA requirements.

39. Thank you for the additional information. The discussion of Alternative 2a has been modified to reflect this information.

40. Thank you for your input. No additional response is required because this comment is consistent with the conclusions of the PEIR.

41. The PEIR does analyze reasonably foreseeable direct and indirect impacts within the regions of influence listed in the comment, including the potential for growth inducing impacts. Growth-inducing impacts are addressed in Chapter 6. Other direct and indirect impacts are discussed under individual resources in Chapter 3. The EIR concludes that maintaining current deliveries of Colorado River water is not growth-inducing, for the reasons discussed in response to CDFG comment 42.

42. Under the State CEQA Guidelines (Section 15126[20][d]), a project may have a growth-inducing effect if it would foster economic or population growth or the construction of new housing, remove obstacles to population growth (such as major expansion of a water treatment plant), require the construction of additional community service facilities that could cause significant environmental effects, or encourage and facilitate other activities that could cause significant environmental effects.

Section 6 of the PEIR analyzes in detail whether the QSA would meet any of these criteria. The analysis concludes that none of the criteria would be met, and therefore that the QSA is not considered growth inducing. As summarized in section ES-7 of the PEIR:

> The QSA does not directly or indirectly provide new water supplies to Southern California. Instead, the QSA changes the distribution of existing Colorado River water supplies among the co-lead agencies, thereby assisting California in reducing its use of Colorado River [water] from an average of 5.0 MAFY to 4.4 MAFY in normal years… QSA implementation will merely assure that delivery of Colorado River Water to the MWD/SDCWA service areas will be identical, at best, to the historical averages for the last 15 years or more.

The comments suggest that the QSA would be growth-inducing because it would increase the reliability of water supplies to the SDCWA and MWD service areas. However, as explained in Chapter 6 of the PEIR, the QSA would *maintain*, not increase, the reliability of current Colorado River water supplies as one component of meeting current and projected water demand in the MWD and SDCWA service areas.

It is important to recognize that under the QSA, total Colorado River water deliveries to California agencies will be reduced from an average of 5.0 MAFY to 4.4 MAFY in normal years. The QSA maintains the reliability of MWD and SDCWA Colorado River water supplies that these agencies have experienced in the past.

Within the MWD service area, as explained in section 6.2.3 of the PEIR, the Proposed Project would allow MWD to *maintain* its water supplies as the amount of water available to California is reduced. The QSA is not growth-inducing within the MWD service area because no new water deliveries are proposed, no increase in the amount of water carried by the Colorado River Aqueduct is proposed, and no expansion of aqueduct capacity is proposed. Without the QSA, MWD would need to implement other methods to meet service area water demands, as described in section 6.2.3.2 of the PEIR. A recent analysis (Report on Metropolitan's Water Supplies, MWD, February 11, 2002) demonstrated that MWD has sufficient resource reserves to meet projected demands as a "margin of safety," in case water programs such as the QSA are slowed in implementation.

Within the SDCWA service area, as explained in section 6.2.4.2 of the PEIR, the QSA and IID/SDCWA water transfer would not cause SDCWA to receive any more water than it received prior to the transfer, but would *maintain* reliability of past deliveries to SDCWA. Under the QSA, SDCWA would continue to receive the same quantity of water, at the same point of diversion, and through the same facilities as it does presently. The only

difference would be that the water delivered to SDCWA would be water of a more senior priority, helping to ensure the future reliability of that water supply during drought years.

Without the QSA, SDCWA would rely on continued delivery of imported water from MWD, water transfers, recycling, and seawater desalination, and would pursue the IID/SDCWA transfer as a separate project. Based on population forecasts prepared by the San Diego Council of Governments (SANDAG), SDCWA has projected that in 2002 there would be an average total water requirement for its service area of 813,000 acre-feet per year (AFY). To meet that need, SDCWA has projected that local supplies would provide only 223,500 AFY, with the remaining 589,500 AFY consisting of imported water. Measured against over 650,000 AFY that SDCWA has purchased from MWD in the past, and the fact that SDCWA imported water purchases currently exceed 600,000 AFY (the estimate for FY 2002 is 635,000 acre-feet), this clearly indicates that the primary source of water to meet increasing demands is not imported water, but local water.

Also, comment 42 states the QSA objective as "enhancing" certainty and reliability. As stated in section 2.2 of the PEIR, one QSA objective is to "ensure the certainty and/or reliability of Colorado River water supplies"; this objective is achieved through *maintaining* the historic reliability of Colorado River water supplies. Another objective is to "assist [the co-lead] agencies in meeting their water demands without exceeding California's apportionment of Colorado River water"; such assistance would be provided not through creating a new water supply, but rather through redistribution of reduced Colorado River water supplies.

Because the QSA water transfers have been described elsewhere as "enhancing" or "increasing" water supply reliability, it is helpful to explain such statements in the context of the PEIR statement that the transfers "maintain" historic reliability of current water supplies. Until now, the reliability and availability of the Colorado River supply for MWD and its member agencies, including SDCWA, have been constant, even when imported water from the State Water Project and local supplies has been curtailed. For many years, MWD's Colorado River Aqueduct has operated at or near full capacity, and the SDCWA supply from MWD has been largely Colorado River water (from FY 1991 through 2000, 84 percent of MWD deliveries to SDCWA consisted of Colorado River water). Although about 700,000 AFY of water required to fill the aqueduct is not within California's normal year apportionment of 4.4 million acre-feet, that water was available until 1996 due to the availability of the unused apportionments of Arizona and Nevada. As those states are now at or near full use of their apportionments, surplus declarations have filled the Colorado River Aqueduct since 1997. The QSA components are designed to help keep the aqueduct full into the foreseeable future. This will allow MWD and SDCWA to continue to rely on Colorado River water to the extent they have relied on it in the past and rely on it today. Therefore, in the context of historic and present availability of Colorado River water, the purpose of the QSA is to maintain the availability and reliability of that supply. If the QSA or other actions providing sources of water to ensure a full aqueduct in the future were not implemented, the ability to fill the aqueduct would be dependent on the availability of surplus water as determined on a year-to-year basis. MWD has proposed a number of actions, including water transfers and storage projects, that would help fill the aqueduct, but it is uncertain at this point, absent the QSA, which of

those projects would be implemented. In the context of a future in which without the QSA a full Colorado River Aqueduct is uncertain, the QSA actions would increase or enhance the reliability of future Colorado River supplies, particularly in drought years when the river system supplies less water.

Additional discussion regarding the potential for growth inducement in the SDCWA service area is included in Attachment 1.

43. The CDFG will serve as a trustee agency and, potentially, as a responsible agency for the Proposed Project.

44. If appropriate, a Property Analysis Record (PAR) will be prepared.

45. This comment is noted.

46. This comment is noted.

47. California Endangered Species Act (CESA) Section 2081 was amended by SB 879 (Johnston) to state:

> The impacts of the authorized take shall be minimized and fully mitigated. The measures required to meet this obligation shall be roughly proportional in extent to the impacts of the taking on the species [emphasis added]. Where various measures are available to meet this obligation, the measures required shall meet the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation. For purposes of this section only, impacts of taking include all impacts on the species that result from any act that would cause the proposed taking (Fish and Game Code Section 2081.(b.).(2.)).

The above italicized language indicates that . the "full mitigation" requirement is one that is proportional to the impacts of the take, i.e., mitigation that is sufficient to offset the take. A legislative declaration added to CESA by SB 879 .confirms this. In that regard, Section 2052.1 provides:

> The Legislature further finds and declares that if any provision of this chapter requires a person to provide mitigation measures or alternatives to address a particular impact on a [listed] species, the measures or alternatives required shall be roughly proportional in extent to any impact on those species that is caused by that person. Where various measures or alternatives are available to meet this obligation, the measures or alternatives required shall maintain the person's objective to the greatest extent possible consistent with this section. All required measures or alternatives shall be capable of successful implementation. This section governs the full extent of mitigation measures or alternatives that may be imposed on a person pursuant to this chapter. This section shall not affect the state's obligations set forth in Section 2052 (emphasis added).

While Section 2052.1, which governs the extent of mitigation that may be required under CESA, echoes the rough proportionality standard set forth in Section 2081(b), it does not include the term "fully mitigate." Accordingly, that phrase .should not have any independent significance and .should not be interpreted to require more mitigation than is allowed under Section 2052.1.

The federal ESA definition of "take" is broader than CESA's definition in several important respects. First, the federal ESA definition is "[t]he term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The CESA definition of "take" is much narrower and does not include "harass," "harm," or "wound." Rather, under Fish and Game Code Section 86 "[t]ake means hunt, pursue, catch, capture, or kill, or to attempt to hunt, catch, capture, or kill." Under federal regulations and federal case law, the federal inclusion of "harm" within the ESA definition of take implicates impacts on a listed species habitat. .While there may be very limited circumstances in which habitat modification might result in "take" under CESA, those circumstances are much narrower than under the federal definition of "take."

AB 21 (Olberg) added Section 2080.1 to CESA in the same year that SB 879 amended CESA. Section 2080.1 provides that if a person has been issued an incidental take permit under Section 10(a) or an incidental take statement under Section 7 of the federal ESA for a species that also is listed under CESA, no further authorization or approval in required under CESA unless the director of DFG, based upon substantial evidence, determines that federal incidental take permit or statement is inconsistent with CESA. It also is noteworthy that Section 2080.1 contains a "sunset" provision if the federal ESA is amended to alter the requirements for issuing an incidental take permit or statement. Accordingly, Section 2081.1 also makes it clear that the incidental take mitigation required under CESA is no greater than required under the federal ESA. Since the enactment of Section 2080.1 DFG has applied Section 2080.1 many times, resulting in no mitigation being required under CESA beyond what issuance of the federal permit or statement was conditioned on.

48. A Streambed Alteration Agreement will be applied for if required.

ATTACHMENT 1:
SDCWA GROWTH INDUCEMENT ANALYSIS

INTRODUCTION

SDCWA is a regional resource agency mandated by state law to provide water necessary to meet demands of its public agency customers. SDCWA does not regulate land use in San Diego County; it is powerless to do so. SDCWA currently receives virtually all of its imported water supply from MWD. MWD supplies water through a variety of sources, including Colorado River water ("CRW"). Historically, the water delivered by MWD to SDCWA has been CRW; even after construction of the State Water Project, over three- quarters of MWD supplies delivered to SDCWA have come from CRW. Of the total amount imported from MWD, only 303 KAFY is considered firm supply, according to the SDCWA 2000 Urban Water Management Plan[2]. The remainder of the water currently supplied is comprised of water that cannot be relied upon on a year in-year out basis over the long term. The proposed project would give SDCWA a firm supply of 200 KAFY to service existing demands by providing SDCWA with a senior priority entitlement to Colorado River water instead of the less reliable MWD water it currently receives. Because of capacity limitations to MWD's Colorado River Aqueduct, which currently runs at or near full capacity, the project would not increase the amount of water into MWD's service territory.

MWD currently receives approximately 1.2 million acre-feet per year (MAFY) of CRW through a 4th and 5th priority entitlement. MWD's 5th priority supply is dependent on yearly surplus declarations made by the Secretary of the Interior. These surplus declarations have enabled SDCWA to receive a larger amount of CRW than would be possible through normal-year supply. Due to circumstances discussed elsewhere in the EIR, MWD and SDCWA can no longer reasonably rely on these surplus declarations for future years.

In Fiscal Years 2000 and 2001, SDCWA required approximately 600 KAFY of imported MWD water to service its existing customers. In FY 2002, this number is projected to be 635 KAFY. SDWCA's highest imported water requirement was approximately 672 KAFY to service its customers during drought conditions (July 1989-July 1990). Even with the project, SDCWA will not be able to meet all of its existing demands with firm water; however, the project does provide greater assurances against the potential for devastating economic, social and environmental hardship in the event of drought or other extraordinary circumstances.

Existing SDCWA aqueducts are sufficient to permit SDCWA to meet imported water requirements through approximately 2015, assuming imported water supplies (both firm and non-firm) are within the range of maximum historic imported water usage and assuming existing treated water constraints are mitigated by increasing local treatment capacity and

[2] See Appendix I, SDCWA 2000 Urban Water Management Plan. SDCWA's current preferential right as determined by MWD is 15.03% of MWD supplies. This equates to approximately 320,000 acre-feet of water using the same base as in the 2000 UWMP, i.e., MWD representations that it has 2.1 maf of dry year supply. For purposes of this discussion, the 2000 UWMP amount of 303,000 is used.

decreasing potable water demand through conservation.[3] The proposed project has no effect on this projection.

In order to meet regional water needs, SDCWA must plan for future water supplies today. State law mandates that SDCWA plan its water supply based on regional growth management plans prepared by the San Diego Association of Governments (SANDAG).[4] In 1992, SANDAG and SDCWA entered into a Memorandum of Agreement requiring SDCWA to use SANDAG's most recent regional growth forecasts in determining water demands and the amount, type and phasing of facilities needed to serve the forecast population.[5] Since then, SDCWA has planned its future water supply based on SANDAG's regional growth forecasts.

As a resource agency having no land use authority of its own, SDCWA simply meets the demands of its public agency customers, some of which are cities that have constitutional and statutory authority to regulate the pace, location, and quantity of land development and some of which are water districts serving cities or unincorporated areas of the county. Any water supply that SDWCA brings into its service area is subject to apportionment by each member agency and is distributed at the discretion of the member agency. Except in unique circumstances of a declared water shortage emergency, SDCWA has no control or authority over ultimate use of water by its member agencies; SDCWA simply delivers the water.

The proposed project will alleviate the shortage of firm water currently experienced by SDCWA. It will not provide an additional source of water or change the amount of imported water delivered to SDCWA; rather, the water delivered to SDCWA as a result of the project will be the same water as is currently delivered but with senior water rights. The proposed project will bring SDCWA closer to meeting existing municipal, domestic and agricultural water demands with firm water supplies, but it will not increase total water supply or even completely close the gap between water demands and firm water entitlement.

CEQA STANDARDS FOR GROWTH INDUCEMENT ANALYSIS

The California Environmental Quality Act (CEQA) requires examination of the potential for proposed actions to cause growth-inducing impacts.

CEQA Guidelines, Section 15126.2(d) states:

(d) Growth-inducing impact of the Project. Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a wastewater

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3 See Appendix II, Outline of Supplemental Expert Testimony of Maureen Stapleton.

4 See Appendix III, Text of Proposition C -- November, 1988, Regional Planning and Growth Control Measure; see also, Appendix III, Water Code § 10915 as added by Stats. 1995, c. 881, Sec. 4 (SB 901); Gov't Code § 66473.7(k) as added by Stats. 2001, c. 642, Sec. 4 (SB 221); Water Code § 10915 as amended by Stats. 2001, c. 643, Sec. 8 (SB 610).

5 See Appendix IV, Memorandum of Agreement Between the San Diego County Water Authority and the San Diego Association of Governments Establishing Implementation of the Regional Growth Management Strategy's Section on Water (1992); Appendix V, SANDAG Regional Growth Management Strategy (1993) and Water section (updated January 2002); Appendix VI, SANDAG 2020 Regionwide Forecast (July 1998); Appendix VII, San Diego Association of Governments (SANDAG) and San Diego County Water Authority (CWA): Regional Growth and Water Demand Forecasting.

treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

DESCRIPTION OF PROJECT AS IT RELATES TO POSSIBLE GROWTH INDUCEMENT

The QSA includes the water transfer provided for in the IID/SDCWA Transfer Agreement modified to provide conservation and transfer by IID of up to 200,000 acre-feet per year (AFY) of CRW to SDCWA, and up to 100,000 AFY of CRW to CVWD and/or MWD. These water transfers are key elements in the satisfaction of California's legal mandate to reduce its diversion of Colorado River water from its historic diversions of up to 5.2 MAFY to its normal-year allotment of 4.4 MAFY. Consistent with existing water allocations under the Law of the River, the California parties will reallocate water with senior priority rights from inland agricultural water users to the Southern California coastal plain, a transfer plan intended to maintain existing water supplies vital to urban populations. The "ramp up" to full potential deliveries would occur over a period of several years.

For SDCWA, the IID transfer will provide an independent, alternate, long-term replacement water supply that provides drought protection and increased reliability for municipal, domestic, and agricultural uses.[6] Although MWD's Colorado River supplies have been reliable in the past, in the absence of the project that supply could be cut in half during years in which the Secretary of the Interior does not declare a surplus condition on the river. Loss of Colorado River deliveries in the future would have an immediate and significant impact on existing water supply capabilities of both MWD and SDCWA.

The water transfers contemplated by the proposed project do not require or involve construction of any new water delivery facilities within either the MWD or SDCWA service areas. No new water pipelines or aqueducts are part of the actions under consideration. The water transferred from IID would be transported via the existing MWD Colorado River Aqueduct and other transmission facilities. No delivery systems are proposed that would provide water to currently undeveloped land. Furthermore, the actions involved do not dictate the location of any future developments, as is the case, for example, with the placement of a new highway or a extension of a new water supply facility.

The Proposed Project Maintains Historic Deliveries and Assures the Future Reliability of SDCWA's Existing Water Supply, But Does Not Make Available New or Additional Water

The proposed transfers, along with other QSA elements, are necessary to maintain historic deliveries of Colorado River water to the urban coastal plain. If California is reduced to its normal-year allocation of 4.4 MAFY, the reduction will occur primarily in deliveries through

[6] For a complete discussion of SDCWA's water supplies and planning, see Appendix I and Appendix VII.

MWD's Colorado River Aqueduct (CRA), which is SDCWA's sole means of receiving water from the Colorado River. This is because of the junior priority of MWD's entitlement relative to agricultural users. For many years, the MWD and SDCWA have depended on and used virtually a full CRA (roughly 1.2 MAFY), and a reduction to normal-year CRW supply would today mean that 600,000 to 700,000 AFY of that water would be lost. This is water that meets SDCWA's existing needs and the loss of that supply would have significant immediate impacts. Without any preventive action such as the QSA and the proposed transfers, a reduction of CRW supplies to California is likely.

MWD derives its water supply from two imported water sources: the Colorado River and the State Water Project (SWP). During the last drought (1986 to 1992), when SWP supplies were curtailed, the CRA was full. Until 1996, MWD was able to fill the CRA over and above its normal-year entitlement with water apportioned to, but unused by, Arizona and Nevada. Since 1996, now that those states are at or near their normal-year apportionment, the CRA has been filled through yearly surplus declarations by the Secretary of the Interior. To the extent that the proposed water transfers allocate senior priority river water to the CRA, SDCWA and MWD will be less dependent on annual surplus declarations to fill the CRA.

From Fiscal Years 1991 through 2000, of all water delivered from MWD to SDCWA, 84% of that water was from the Colorado River. While MWD deliveries to SDCWA and the rest of its service area lessened during the mid and late 1990's primarily due to local wet weather, deliveries to SDCWA averaged about 600,000 AFY in Fiscal Years 2000 and 2001, and are projected to total about 635,000 AFY for FY 2002.

If the QSA is implemented, the maximum amount of water transferred from IID to SDCWA would be 200,000 AFY. That water would be transported through the CRA. Assuming, for example, that the water transfer was currently in place at the full amount of 200,000 AFY and a firm MWD supply of 303,000 acre feet, SDCWA would still need 122,000 of supplies to meet projected deliveries to SDCWA this year, or 169,00 acre feet to meet the peak July 1989 - July 1990 deliveries. These additional supplies would come from MWD or other sources in accordance with the UWMP.

In order to meet its existing demands, SDCWA must find a reliable, long-term supply of water to replace the water it currently receives from surplus declarations. Since the water transfers proposed in the project allocate senior priority CRW to SDCWA, SDCWA will be less dependent on annual surplus declarations to meet existing demand. The proposed project will help offset the diminished supplies of Colorado River water that could otherwise be available in the future and ensure that SDCWA will not suffer the loss of supplies that have been available to it in the past.

Potential Direct and Indirect Growth Inducing Impacts of Maintaining Historic Supplies and Ensuring Future Reliability of Existing Water Supply

Maintaining historic and existing CRW supplies and ensuring those supplies for the future does not create an increased water supply or make additional water supplies available to new or future development. The proposed project firms up the future reliability of service to existing users; it does not create new water for future users. Currently, not all SDCWA water supplies that serve existing demands can be categorized as firm supplies. In order to meet its current

demands, SDCWA must rely on yearly surplus declarations from the Secretary of the Interior and other extraordinary measures. The proposed transfer will convert a portion of the less reliable water currently used into a firm supply serviced by senior priority Colorado River water. The proposed transfer is a step by SDCWA towards meeting all current demands with firm water.

Since the QSA water transfers only provide more reliable water into the future for current demands in the San Diego region, future growth of the San Diego region will not be affected. All of the water secured by the proposed IID/SDCWA transfer is already committed to current demands; none will be available for future development. Under the SDCWA 2000 Plan, all deliveries are to be based on firm supply. Increasing the future reliability of dry year water deliveries that are already committed to existing users and needs has no direct or indirect impact on future growth, nor does it remove obstacles to population growth.

Land Use Decision-Making and Future Growth In San Diego County

The proposed project has no growth-inducing impact because it does not provide new water for new development, but only maintains historic delivery quantities and assures the future reliability of that water for existing customer demands. The following information is provided to inform the decisionmaker how SDCWA determines the level of service required to meet existing and future needs within its service area and supports the conclusion that the project merely assures future reliability of supply quantity necessary to serve current users.

Role of SANDAG in Land Use Planning

In San Diego County, SANDAG plays a key role in assisting local governments meet their responsibilities to plan and regulate land use. SANDAG is the regional planning agency for the 18 incorporated cities and county government. SANDAG is governed by a Board of Directors composed of elected officials from each of the 19 local governments. Supplementing the voting members are seven advisory members, including the SDCWA. SANDAG is mandated as the regional transportation planning agency, the regional transportation commission, and the regional growth management and review board. SANDAG provides a variety of services, including regional transportation planning, regional growth management,[7] demographic and economic analysis, land use and growth management strategies, public facilities location, housing needs analysis and environmental planning.

SANDAG's Regional Growth Forecast

One of the most important land use tools provided by SANDAG is its regional growth forecast (RGF). Local agencies throughout the San Diego region use the RGF to assist with long-range land use decisionmaking. SDCWA also relies upon the RGF to assist with its water planning needs and capital programming processes.

SANDAG's preparation of the RGF is a two-step process. First, SANDAG creates a regional forecast for the total growth in the San Diego region through the use of economic and

[7] See Appendix V.

demographic factors. Second, SANDAG allocates the growth identified in the regional forecast to the 18 cities and county. For the City and County of San Diego the allocations are also made for each community plan area.

The most recent iteration of the SANDAG forecast, the 2020 RGF, was approved for use by the SANDAG Board of Directors in February 1999 and its numbers were certified for use in all regional plans and studies, including those conducted by SDCWA. The 2020 RGF predicts that local population, employment, and income will grow steadily throughout the next 20 years. The region should see an average annual population increase of 46,400 through 2020. Total population is projected to reach 3.85 million by 2020, roughly one million more than in 1998. Most of the projected growth in population – about 60 percent – will be the result of natural increase (more births than deaths, not due to migration to the area).

SANDAG's Regional Housing Needs Assessment (RHNA) and Housing Elements

SANDAG is the state's designated agency to provide regional housing needs assessment (RHNA) for the San Diego region.[8] In that capacity, SANDAG identifies the total number of residential units (by income categories) that a jurisdiction must provide for the next five years as part of their housing element updates. An important ingredient of any local agency's housing element is identifying an adequate number of housing sites to meet the local agency's allocated share of the regional housing needs. SANDAG's RHNA plays a critical role in this determination.

All cities in the county and the County of San Diego have approved general plans. Each of these general plans was prepared and adopted in conformance with CEQA. Fifteen of the cities and the county have revised their housing elements to reflect SANDAG's most recent regional growth forecast and the remaining three cities are currently in the process of doing so. The county is also in the process of a comprehensive general plan update and is using SANDAG's regional growth projections in that process as well.

County Water Authority Act

SDCWA provides water to meet current and projected needs identified by SANDAG, and advises local governments regarding water supply issues. SDCWA is mandated by its principal act, the County Water Authority Act (Stats. 1943, c. 545) (CWA Act) to provide water to meet the needs of member agencies in its service area. The CWA Act, at Section 5(11), provides that a county water authority board of directors "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs." SDCWA is not a retail water supplier; it is a wholesale water supplier to its member agencies, which are themselves retail suppliers and/or provide water to retail suppliers.

SDCWA's statutory purpose and direction is to provide a safe, reliable water supply for its service area, both present and future. SDCWA is a water provider, not a land use regulator. SDCWA has no jurisdiction over local land use policy or decision-making, which lie with the cities and county government. As a wholesaler, SDCWA has no ability to direct the allocation

[8] See California Gov. Code § 65585.1.(a).

of water by its member agencies so long as water use is within the uses prescribed in the Clean Water Act.

SDCWA/SANDAG Memorandum of Agreement

In order to meet its purpose and direction under the CWA Act, SDCWA has been working together with SANDAG for the past 12 years to link future water supply needs with forecasted regional growth. In 1992, SANDAG and SDCWA entered into a Memorandum of Agreement (MOA), which details how the two regional agencies coordinate to ensure the availability of water for future growth. Under the MOA, SDCWA agrees to use SANDAG's most recent regional growth forecasts for regional water supply planning purposes, provide updated information on changes in plans or programs, and implement relevant actions contained in the Water Element of the Regional Growth Management Strategy. The MOA ensures that water demand projections for the San Diego region are linked with SANDAG's growth forecasts and that water supply is a component of the overall Regional Growth Management Strategy.

The Legislature has recognized the unique regulatory and planning structure in San Diego County and has made SDCWA's adherence to the MOA one of the criteria for SDCWA's alternative compliance with its statutorily mandated water supply planning under Section 10915 of the Water Code. SANDAG revises its RGF once every 5 years. Thus, both water availability and housing development are driven by the same set of growth forecasts and are both periodically reassessed at the same time as part of the growth forecast update process for each forecast. The RGF is also used by the local agencies as part of their long-range planning and capital facilities programming.

The relationship established between SANDAG and SDCWA implements the requirements of SB 901, passed in 1995, which requires planning agencies to consider information provided by water agencies in their decisions to approve or deny commercial, industrial, or residential development. The state has determined that Proposition C, adopted by San Diego County voters in 1988, is functionally equivalent to the requirements of SB 901. Under Proposition C, SANDAG was charged with developing a Regional Growth Management Study and was designated by the cities and County government as the Regional Planning and Growth Management Review Board.

Two recent state legislative enactments also play a role in defining the nexus between land use and water supply, and further define water agencies' advisory role in the formulation of land use decisions by city and county governments. SB 221 amended various sections of the California Business and Professions Code and the Government Code to help ensure new housing developments have adequate water supplies. SB 221 prohibits approval of a tentative map, parcel map or subdivision development agreement unless the legislative body of a city or county provides written verification from the applicable public water system that a sufficient water supply is available, or in addition, a finding is made that sufficient water supplies are, or will be, available prior to completion of the project. SB 610 requires (in part) that an urban water management plan include a description of all water supply projects and programs that may be undertaken to meet total projected water uses, and prohibits an urban water supplier that fails to prepare a plan from receiving funding from bond acts until the plan is submitted.

SDCWA's 2000 Urban Management Plan

SDCWA's 2000 Urban Water Management Plan identifies the future water demands for its service area through 2020 based on the RGF developed by SANDAG. A key objective of the 2000 Plan is to provide a firm supply of water to meet the identified demand. The 2000 Plan identifies a need for 813,000 AF of water for its service area in the year 2020. This amount is not the identified imported water need; rather, it is the total need to be derived from both local and imported sources, when considered with extensive conservation that will continue to be implemented over the next two decades.

CONCLUSION

As discussed earlier, the project does not provide new water or new water facilities, but rather maintains historic delivery quantities and assures the future reliability of that water to meet existing customer demands using existing facilities. The above discussion is intended to inform the decision-maker as to the land use planning and growth forecasting used within SDCWA's service area. While the proposed project only supplies existing demands, and therefore, cannot encourage or induce growth or remove barriers to future growth, it is helpful to understand the process by which local agencies within the San Diego region plan for and accommodate growth.

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State of California

Memorandum

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SAIC SANTA BARBARA

To: Ms. Terry Roberts, Senior Planner
State Clearinghouse
Governor's Office of Planning and Research

Date: March 26, 2002

Place: Sacramento

Phone: (916) 657-4956

Mr. Robert D. Thompson
QSA PEIR
Sciences Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

From: **Department of Food and Agriculture** - Steve Shaffer, Director
Ag & Environmental Policy

Subject: Draft Program Environmental Impact Report (Draft PEIR) for Implementation of the Colorado River Quantification Settlement Agreement – **SCH #2000061034**

The California Department of Food and Agriculture (Department) has reviewed the Draft PEIR for Implementation of the Colorado River Quantification Settlement Agreement. The Department's mission is the protection and promotion of agriculture in California. Towards that end, we recommend that, for a complete final PEIR, the following information and issues pertaining to agricultural land and water resources be addressed in the document. In particular, we request that the final PEIR include a discussion of mitigation measures that will lessen, offset or avoid project impacts on agricultural resources.

Project Description

- Land fallowing can be a normal component of the sustainable management of agricultural land. Fallowing can be part of a crop rotation in order to rest the land, rebuild soil tilth and fertility, and replenish soil moisture. The final PEIR should compare the fallowing proposed as part of this project with the fallowing that might be incorporated into a sound agronomic stewardship plan for the agriculture uses typical of this area. 1

Cumulative Impacts

- The Draft PEIR does a thorough job of addressing agricultural land depletion within the districts involved. The PEIR should also compare this with the regional and statewide trend in the loss of producing agricultural land. 2

- The final PEIR should document how this project, if approved, would contribute to the cumulative agricultural land resource impact both regionally and statewide. If particular high value crops unique to the project setting will be impacted, how will the loss of the land that produces them affect their continued production in California? 3

Growth-Inducing Impacts

- Will the project result in increased water availability over what would otherwise be available to support urban growth? If so, will the removal of the water availability barrier to growth likely result in the loss of agricultural land? 4

- Will fallowing of high value agricultural land result in a weakening of the protection afforded these lands by local general plan policies, and hasten their conversion to non-agricultural uses? Many cities and counties now rely on the state Department of Conservation's Important Farmland Mapping and Monitoring Program maps for land use decisions, often discouraging or restricting the urban development of Prime Farmland, Farmland of Statewide Importance and Unique Farmland in their general plans. Because this mapping program requires that land be irrigated at least once every four years in order to be mapped as Prime or Statewide Farmland, retirement or fallowing of agricultural land could cause affected lands to be moved into lower classes of mapped farmland. Such a "downgrading" could result in the removal of the fallowed agricultural land from the protection that may be afforded them by local general plan land conservation policies. Therefore, the final PEIR should describe how the project will alter the irrigation status of affected lands, and what effects a change in irrigation status could have on farmland classifications and land protection under local zoning and other planning restrictions. 5

Indirect Environmental Impacts

- The Draft PEIR fails to address the indirect effect the environmental impacts have on the sustainability of local agricultural land uses. The final document should describe how the proposed reduction in productive agricultural land would affect the critical mass of agricultural acreage necessary to support local agricultural infrastructure. (e.g., crop shipping and processing, fertilizer and irrigation suppliers, etc.). Describe how the loss of critical support industries could adversely affect the profitability and use of the remaining agricultural lands in the surrounding area. 6

  While it may be difficult to quantify these impacts, a qualitative discussion on them should be included in the final PEIR, based in part on conversations with local agricultural commissioners, and Cooperative Extension Service farm advisors and agricultural economists.

Mitigation Measures

- The Draft PEIR proposes to partially mitigate the potential impact of Imperial Irrigation District's long-term fallowing by establishing a policy by requiring that the project attempt to utilize short-term fallowing measures first. We recommend that the final PEIR expand this mitigation measure by setting a maximum duration to fallow land. Such a mitigation measure would eliminate the risk that land would lose its Prime or Statewide Importance classifications (see first paragraph, this page). 7

- The Draft PEIR mitigates the impacts of groundwater recharge facilities on agricultural land by trying to avoid facility placement on agricultural land altogether. This impact could be further mitigated by: 8

  - Guaranteeing groundwater (from the recharge) to surrounding agricultural land to counteract the impact of fallowing land for the facility.
  - Locating facilities on the least desirable farmland, in the event that use of farmland for the facilities is inevitable.

Thank you for the opportunity to review and comment on the Draft PEIR for the Implementation of the Colorado River Quantification Settlement Agreement. If you have questions on our comments, or require information or assistance in responding to them, please call me at (916) 657-4956.

cc: Bruce D. Ellis
U.S. Department of Interior
Bureau of Reclamation

California Department of Food and Agriculture, March 26, 2002

1. Fallowing is a possible option for conserving water; it is not the only means available, however. As described in section 2.5.1 of the PEIR, other methods of conserving water in the IID service area may include on-farm conservation measures (e.g., use of tailwater return systems, irrigation management techniques, and laser leveling of fields) and water delivery system improvements. Multiple fallowing methods also have been identified and could include either removal of land from agricultural production or reduction of multiple crops to fewer crops (or a single crop) for one or more growing seasons or for multiple years. As noted in section 2.5.1, IID anticipates implementing a variety of methods in different combinations in order to achieve the desired amount of conservation within the service area. Section 3.5 of the PEIR evaluates the impacts of conserving all water by fallowing in order to provide a worst-case analysis of agricultural impacts.

2. Approximately 48 percent of the entire area of the State of California has been mapped from the perspective of agricultural land uses, and agricultural lands mapped at the state level total over 26 million acres. Approximately 15 percent of the land in the Southern California region is in agricultural use (California Department of Conservation 2000).

   In the entire state, between 1996 and 1998 almost 100,000 acres of land categorized as Prime Farmland were converted to other land use categories (including other farmland classes). Almost 87,000 acres of land were converted to urban and built-up use from other land use categories over the same time period. Of this total, just over 27,000 acres were converted from irrigated farmland. The largest share of this conversion occurred in the San Joaquin Valley region (49 percent), followed by the Southern California region (27 percent), the Central Coast region (8 percent), and the San Francisco Bay region (8 percent) (California Department of Conservation 2000).

3. Under the worst-case scenario, up to 50,000 acres could be fallowed in the IID service area on a long-term or permanent basis. This would represent less than 0.2 percent of the total farmland in the state and about 3 percent of the farmland in Southern California (United States Department of Agriculture 1997). Specific methods for implementing fallowing have not been identified, and it cannot be determined precisely which crops would be fallowed at this point. Given the small percentage of land that would be affected, however, the potential loss of farmland used to produce high-value crops would not significantly affect their continued production in California.

4. Please see the response to CDFG comments 41 and 42.

5. To a great extent, the likelihood of fallowed land being converted to urban land use or other non-agricultural land uses would depend on the land's location and length of time it remains fallowed. Lands close to the boundaries of lands currently zoned for urban uses would have a higher probability of converting to non-agricultural land uses. Additionally, lands fallowed for extended periods of time would have a higher probability of being converted to something other than agricultural land use in part because of the cost of reclaiming crop lands that have not been cultivated or irrigated for extended periods. While proximity to urban land uses or extended fallowing could make fallowed

lands more attractive to development, conversion to a non-agricultural land use would require local approval of the change in zoning and General Plan designation, which is not a part of the Proposed Project. In section 3.5.2.3, however, it is stated that if farmland is taken out of production on a longer-term or permanent basis, it would result in the conversion of Important Farmland to non-agricultural use. If short-term or rotational fallowing were implemented, this would not affect the irrigation status of fallowed lands since it would go without irrigation only temporarily.

6. A reduction in the amount of productive agricultural land through fallowing could have a negative effect on the regional economy. As noted in section 3.13.2.3 of the PEIR:

> If the reduction in water use was accomplished solely through land fallowing, Imperial County could experience a net loss of up to 1,400 jobs, mostly in the agricultural sectors. Such a change would comprise just under 3 percent of the Year 2000 county employment level. Net agricultural sector job losses would total up to 1,300, representing about 12 percent of the total county agricultural employment. The net decrease in the value of business output is estimated to be up to $98 million. This represents approximately 2 percent of the estimated $4.8 billion total value of business output for Imperial County (IID and USBR 2002). This would not represent a significant impact to population, housing, or employment.

Specific methods for implementing fallowing have not been identified, and it cannot be determined precisely which crops would be fallowed at this point. It is likely, however, that a variety of crops would be affected and that an entire crop would not be eliminated from production. It is unlikely that reductions in agricultural activity of the magnitude associated with fallowing would markedly affect the viability of agriculture in Imperial County.

7. As noted in section 3.5.3, the only way to avoid the impact associated with the conversion of Important Farmland in the IID service area is to use non-fallowing conservation measures or short-term fallowing. The discussion also indicates that the exclusive use of short-term fallowing may not be feasible for generating conserved water and use of agricultural land on a long-term basis may be required. Thus, the risk that land would lose its Prime or Statewide Importance classifications cannot be completely eliminated.

8. As noted in the comment, the PEIR contains a measure that would avoid impacts to Important Farmland or farmland under a Williamson Act contract altogether. The only two sites that are now under consideration as recharge basins are in the vicinity of Dike 4 and the Martinez Canyon and are not on farmland. Not locating the recharge basins on Important Farmland or farmland subject to a Williamson Act contract is thus considered a feasible mitigation measure, and there is no reason to anticipate that use of farmland would be required. No further measures are necessary.

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California Regional Water Quality Control Board
Colorado River Basin Region

Winston H. Hickox
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April 10, 2002

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SUBJECT: DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

Thank you for providing us the opportunity to comment on the subject document. The document addresses the aggregate impacts of implementing components of the proposed Colorado River Quantification Settlement Agreement to apportion water from the Colorado River among the Coachella Valley Water District, Imperial Irrigation District, San Diego County Water Authority, and the Metropolitan Water District of Southern California.

We have the following comments:

ES-4 Lines 25 and 27-31 Increased selenium concentration is identified as a significant and unavoidable impact. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. | 1

ES 7-19 Hyper-eutrophication of the Salton Sea is not addressed. 14 CFR 15126.2 requires the "inclusion of relevant specifics of the area." The document fails to do so. | 2

ES-10 Lines 1-8 What will be implemented? It is stated that "standard construction practices will be developed." However, 14 CFR 15126.4 requires that "An EIR shall describe feasible measures which could minimize significant adverse impacts." | 3

ES-17 What mitigation will be implemented for these alternatives? It is stated that these alternatives will "avoid significant impacts on the Salton Sea" the mitigation is not developed in the PEIR or in the EIR/EIS for the IID Water Transfer. CEQA 14 CFR 15126.4 requires that "An EIR shall describe feasible measures which could minimize significant adverse impacts." | 4

ES 19 Lines 15-25 The subject document fails to describe the plan to be implemented, and improperly defers selection and analysis of a mitigation measure until after the EIR is certified, thus precluding public review (14 CFR 15126.4). We are unable to determine the effects on water quality when the plan has not been developed. | 5

Table ES-1 Increased selenium concentration is identified as a significant and unavoidable impact after mitigation. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. 6

Table ES-1 (page 11 of 29) Increased selenium concentration and an increase in TDS are identified as a significant and unavoidable impact after mitigation. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. 7

Table ES-1 (page 23 of 29) It is stated that "The Proposed Project could increase salinity by as much as 1 mg/L below Hoover Dam and by as much as 8 mg/L at Imperial Dam. It is assumed, however, that additional salinity control measures would be implemented and water quality objectives would be met." However, 14 CFR 15126.4 requires that "An EIR shall describe feasible measures which could minimize significant adverse impacts." The subject document fails to describe the plan to be implemented, and improperly defers selection and analysis of a mitigation measure until after the EIR is certified, thus precluding public review (14 CFR 15126.4). We are unable to determine the effects on water quality when the plan has not been developed. 8

Table ES-1 (page 26 of 29) The document states, "...there is no water quality standard for salinity in the Salton Sea...." This statement is incorrect. Water Quality Objectives for the CRWQCB--CRBR are contained in Chapter 3 of the "Water Quality Control Plan for the Colorado River Basin Region" (CRWQCB—CRBR 1994). In addition to general surface water objectives, the Basin Plan contains established site-specific water quality objectives for the Salton Sea for Total Dissolved Solids and selenium. Therefore, we find that all subject document statements premised on the aforementioned statement technically deficient (14 CFR 15126.2, 14 CFR 15126.4). 9

Table ES-1 (page 27 of 29) How will funding be provided? Who will provide the funding and who will decide if it is necessary? CEQA 14 CFR 15126.4 requires that "An EIR shall describe feasible measures which could minimize significant adverse impacts." 10

Table ES-2 (page 2 of 6) Salton Sea Restoration Project - The fact that Restoration Project proponents have not selected a project alternative does not permit the project proponents to avoid analyzing the impacts of the Proposed Project on the Salton Sea, nor does it permit the deferment of mitigation alternatives to the Restoration Project's next draft EIR/EIS (14 CCR 15126.4 (B)). The project proponents cannot escape responsibility for mitigating the impacts of *its* project by assuming that the Restoration Project will either address these issues, or render the issue moot by determining that restoration is not feasible. | 11

Table ES-2 (page 6 of 6) There is an additional salinity control project entitled Colorado River Basin Salinity Control Program being conducted by the U.S. Bureau of Reclamation that needs to be included in the Cumulative Impacts analysis. | 12

3.0.3 Lines 1-23 Impacts on sea elevation, salinity and surface area need to be accounted for in relationship to the Salton Sea Restoration Project and/or TMDLs. | 13

3.1.3 Line 25. Delete Implementation Plan. | 14

3.1-3 Line 28 Edit the document from "has been proposed" to " have been adopted by Regional Board and approved by State Board." | 15

3.1-3 Line 30 Edit the document from "have been proposed for bacteria" to "have been adopted by Regional Board and approved by State Board for pathogens in the New River." | 16

Table 3.1-1 TMDL Completion Date- Edit the document from TMDL Completion Date for New River Bacteria/Pathogen of "proposed TMDL" to "Proposed Basin Plan Amendment." | 17

Line 32-33 Edit ", but this objective does not apply to agricultural discharges" to ",any discharges, excepting discharges from Agricultural sources." | 18

Table 3.1-3 footnote a- Edit footnote a to "for average annual TDS discharges." | 19

Table 3.1-4 footnote a- Edit footnote a to "for average annual TDS discharges." | 20

3.1-10-11, p 3.1-15-17 (all tables) There are applicable narrative criteria for all/most of the constituents that are marked "NS." | 21

3.1-21 Lines 13-14 Inflow is expected to decrease based on what factors, e.g., transfer is approved? Anything else, e.g., conservation, TMDLs? | 22

3.1.21 Line 24 Change "bacteria" to "pathogens." | 23

3.1.28 Line 26 Increased selenium concentration is identified as a significant and unavoidable impact after mitigation. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. 24

3.1.29 Table 3.1-15 Impact significance. Increased selenium concentration is identified as a significant and unavoidable impact after mitigation. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. 25

3.2-30 Lines 29-40 Comment does not consider impacts to the river delta areas. The extent of habitat impacts have not been quantified or discussed in this document. Federal Endangered Species Act § 10 (2) (A) (i)(ii) states that, "The impact that will likely result from such taking, (ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps" requires such analysis. 14 CFR 15126.2 states, "Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving the consideration to both the short-term and long-term effects." The subject document inadequately addresses habitat impacts of the Proposed Project. 26

Section 4 Cumulative Impact Analysis- Whenever this project will have an impact on another project, and the other project has a beneficial impact on water quality, the conclusions reached for cumulative affects is always "no cumulative impact." The document fails to address the fact this project may cause the beneficial project not to happen due to higher costs or lower feasibility. 27

The "Cumulative Impacts" section needs to discuss:

- the Proposed Project's impact on the Salton Sea Restoration Project regarding: (a) how restoration costs would increase, and (b) impacts on restoration alternatives (the Salton Sea Authority has come out with a list of alternatives). Proposed Project implementation probably will double the rates at which salinity and selenium concentrations increase, and accordingly make the Restoration Project cost-prohibitive. Michael Walker, Program Manager for the Salton Sea Restoration Project, estimates that restoration cost will increase from the current range of $226 million - $606 million to the range of $475 million - $1,357 million if inflow is reduced from 1.34 MAF/yr to 1.0 MAF/yr. 28
- the Proposed Project's impact on TMDL development and implementation. 29

• the Proposed Project's impact on TMDLs already adopted by the CRWQCB—CRBR and SWRCB (14 CFR 15130). | 30

4-13, 4.2.8 Change to Colorado River Basin Water Quality Control Plan. The WMI is part of the yearly process, but not the regional Water Quality Control Plan. | 31

4-14 Lines 1-7 Increased selenium concentration is identified as a significant and unavoidable impact after mitigation. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts. | 32

4-14 Lines 27-35 The fact that Restoration Project proponents have not selected a project alternative does not permit the project proponents to avoid analyzing the impacts of the Proposed Project on the Salton Sea, nor does it permit the deferment of mitigation alternatives to the Restoration Project's next draft EIR/EIS (14 CCR 15126.4 (B)). The project proponents cannot escape responsibility for mitigating the impacts of *its* project by assuming that the Restoration Project will either address these issues, or render the issue moot by determining that restoration is not feasible. | 33

4-15 Lines 19-21 14 CFR 15130 requires discussion of cumulative effects, "...shall the severity of the impacts and their likelihood of occurrence...". The draft report does not, but must, include discussion of potential cumulative impacts of TMDLs, selenium control projects on the Colorado River, and wastewater diversion for Mexicali power plants. | 34

We suggest that you check our website at http://www.swrcb.ca.gov/rwqcb7/ for more up to date information on the 303 (d) list, and Total Maximum Daily Loads (TMDLs) being prepared for our Region. If you have any questions, please contact me at (760) 346-7491. | 35

Sincerely,

TERESA NEWKIRK, Senior Environmental Scientist
TMDL Development Unit Chief

California Environmental Protection Agency

Recycled Paper

TN:tn

File: CR-WATER TRANSFER

CC:

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Eugenia McNaughton
US Environmental Protection Agency (W-1)
75 Hawthorne Street
San Francisco, CA 94105

California Regional Water Quality Control Board (RWQCB), April 10, 2002

1. The proposed Total Maximum Daily Load (TMDL) that will target selenium reduction will be implemented throughout the Colorado River Basin and focus on source reduction in the basin. Correspondence from the RWQCB states that: "It is our understanding that the proposed selenium TMDL would focus on selenium throughout the upper and lower Colorado River Basin States (Colorado River Watershed), and would address selenium reduction at the sources, but could also include management practices to address concentrating of selenium in Imperial Valley."[9] This statement is consistent with the co-lead agencies' view that mitigation to meet numerical criteria is not practical unless it is carried out within the context of a more extensive mitigation effort. The use of wetland management and other methods to control selenium within the Project area is not considered feasible since these methods would not address the regional sources of selenium within the Colorado River Basin.

2. The referenced section quoted only summarizes major issues. Section 3.1.1.6 addresses the nutrient loading levels in the Salton Sea. The Proposed Project would not result in increased nutrient loading; rather, as noted in Table 3.1-22, the Proposed Project would decrease the amount of pesticides (which include nutrients) entering the Sea since it would receive less agricultural drainage. (This reduction in tailwater flows would be consistent with Best Management Practices identified for the proposed nutrient TMDL being established for the Salton Sea.)

3. The text in section 4.3.1 and ES-5.1 has been modified to indicate the types of mitigation measures that would be implemented in order to prevent water quality impacts. The precise measures will depend upon the specific sites that are selected and specific construction practices that will be developed.

4. Mitigation measures have not been included for QSA alternatives because CEQA requires mitigation measures to be identified for the proposed project only. Under CEQA, mitigation methods and alternatives are somewhat interchangeable; both have the objective of reducing the proposed project's significant effects. See CEQA Guidelines Sections 15126.4(a) (mitigation) and 15126.6(a) (alternatives).

5. The PEIR is required to and does describe project alternatives and mitigation strategies that could reduce significant impacts to the Salton Sea. The selection of alternatives or mitigation measures to reduce Salton Sea impacts will occur when the co-lead agencies adopt CEQA findings for the implementation of the QSA. It is not required that this information be provided in the PEIR.

   Note that further discussions with the U.S. Fish and Wildlife Service and the California Department of Fish and Game after release of the Draft PEIR resulted in the elimination of Mitigation Strategy 1 from consideration. Mitigation Strategy 2 alone is now proposed to mitigate the significant impacts associated with biological and other resources.

---

[9] Correspondence from Teresa Newkirk Gonzales, dated April 18, 2002.

6. Please see the response to comment 1 above.

7. Please see the response to comment 1 above.

8. The text in the summary table is referring to the salinity control measures that are implemented under the Colorado River Salinity Control Act, which is described in section 3.1.1.1. This has been clarified in the table and section 3.1. As noted in this section:

> The Colorado River Basin Salinity Control Forum reviews the numeric criteria and plan of implementation every 3 years and makes revisions to accommodate changes occurring in the Basin States, most recently in 1999. At each triennial review, the current and future water uses are analyzed for their impact on the salinity of the Colorado River, including projects proposed as part of Reclamation, U.S. Department of Agriculture, and the Bureau of Land Management salinity control programs. If needed, additional salinity control projects are added to the implementation plan to assure compliance with standards. The need for one or more additional salinity control projects is determined by monitoring the salinity of the River and making near-term projections of changes in diversions from and return flows to the River system. When an additional project is needed it is selected from a list of potential projects that have undergone feasibility investigation. In selecting a project, considerable weight is given to the relative cost-effectiveness of the project. Environmental feasibility is another factor considered.
>
> Thus, the PEIR does describe the plan to be implemented and does not defer analysis.

9. The objectives referenced in the Basin Plan are not standards, but are associated with potential improvement of water quality at the Salton Sea. These levels have already been exceeded (the current salinity level is 44,000 mg/L, whereas the objective is 35,000 mg/L) and are not considered standards from a regulatory standpoint.

   The Basin Plan states:

> The water quality objective for the 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. *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* (italics added). 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....it is unreasonable for the RWQCB to assume responsibility for this objective....

   The Basin Plan does contain selenium objectives, but they apply to the tributaries of the Salton Sea and not the Sea itself.

10. The PEIR does described potentially feasible mitigation measures for significant impacts. The co-lead agencies will be responsible for implementing the adopted mitigation measures in accordance with legal requirements. In accordance with CEQA Guidelines Sections 15091 and 15096(h), they must prepare findings that the Proposed Project has been changed (including by the adoption of mitigation measures) in a manner that avoids or substantially reduces each significant impact. When making the findings, the agencies must ensure that the adopted mitigation measures are fully enforceable through permit conditions, agreements, or other measures. If the agencies cannot make these findings, they must find that changes to the Project are within another agency's jurisdiction and that such changes have been or can and should be adopted by the other agency or that specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures. CEQA Guidelines Sections 15091(d) and 15097 also require lead agencies to adopt a Mitigation Monitoring and Report Program (MMRP), which ensures compliance with adopted mitigation measures during project implementation. The MMRP must clearly state who is responsible for implementing a given mitigation measure, how and when the measure will be implemented, and how its implementation will be verified.

11. This table summarizes the *cumulative* impacts of the Proposed Project in combination with the impacts of other projects. In the case of the Salton Sea Restoration Project, the specific cumulative impacts cannot be identified because the restoration alternatives are not known at this time. The impacts of the Proposed Project on the Salton Sea are fully analyzed in the QSA PEIR and mitigation measures have been identified for project-specific impacts. Mitigation of project-specific impacts has not been deferred to the Salton Sea Restoration Project.

12. This is the same program as referenced in the PEIR (sections 3.2 and 4.2.7).

13. Since the alternatives that may be implemented for the Salton Sea Restoration Project are speculative at best, it is not possible to determine its precise relationship to the Proposed Project. As indicated in section 4.2.9 of the PEIR, since the alternative methods of implementing the Salton Sea Restoration Project have not been defined at this time, the cumulative impacts of the Proposed Project and the Salton Sea Restoration Project are speculative. The PEIR acknowledges that depending on the restoration methods selected, cumulative impacts could potentially be significant, but that mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels.

    While the RWQCB has been directed by the Environmental Protection Agency (EPA) to develop a TMDL for salinity in the Salton Sea, there is currently no schedule to do so. RWQCB has yet to develop background levels, which is one of the first steps in the process, nor have the load enforcement mechanisms been determined. Thus, it is premature to attempt to evaluate the relationship of this TMDL action to the Proposed Project. As noted in Table 3.1-22, the Proposed Project would decrease the amount of pesticides (which include nutrients) entering the Sea since it would receive less agricultural drainage. Thus, no conflict with future TMDLs for nutrients would occur. TMDLs for selenium are addressed in EPA response no. 17.

Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater discharges. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt discharged to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt discharge would result in a reduction in discharge of these nutrients. Because the volume of tilewater discharged under the Proposed Project is similar to that discharged under the Baseline, it is unlikely that the mass of nutrients, particularly ammonia, that may enter IID drains through tilewater would be greatly affected by implementation of the Proposed Project or project alternatives. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Salton Sea and support Best Management Practices introduced under a future Salton Sea nutrient TMDL.

In general, programs such as the U.S. Department of Agriculture/EPA-funded National Water Quality Evaluation Project[10] have recommended management of nutrient applications as the most effective measures for controlling nutrient loadings. Implementation of this type of Best Management Practices would not be influenced by the Proposed Project.

14. The text has been revised to address your comment.

15. The text has been revised to address your comment.

16. The text has been revised to address your comment.

17. The text has been revised to address your comment.

18. The text has been revised to address your comment.

19. The text has been revised to address your comment.

20. The text has been revised to address your comment.

21. The "NS" designation indicates there are no quantitative criteria. It is not reasonable to evaluate numeric data with the narrative data.

22. Even without the Proposed Project, future inflows to the Salton Sea are anticipated to decline. This decline is attributable to: effects of entitlement enforcement of Colorado River water; changes in water use patterns in CVWD (increased efficiency in agricultural practices; conversion of some agricultural land to residential and commercial development; reduction in effluent from fish farms and agriculture to drains [due to increased efficiency]); and changes in Coachella Aquifer interactions with the Sea. The

[10] Priorities, the Key to Nonpoint Source Pollution, Final Report for the Project: "Guidance Document on Targeting of NPS Implementation Programs to Achieve Water Quality Goals, USEPA Office of Water Regulations and Standards, Washington, D.C., July 1987

Baseline water budget assumed for the Salton Sea can be found in Table 4.1 of Appendix F of the IID Water Conservation and Transfer EIS/EIR.

23. The text has been revised to address your comment.

24. Please see the response to RWCQB comment 1.

25. Please see the response to RWCQB comment 1.

26. The commenter is correct that the analysis of the impacts to the river deltas is not provided in the referenced section; however, section 3.2.1.2 of the PEIR provides a detailed analysis of the effects of the Proposed Project in the IID service area that includes impacts to vegetation, wildlife, and sensitive species within the river delta areas. Furthermore, section 3.2.3 provides mitigation strategies to mitigate the impacts to the tamarisk scrub and drain habitats, which would occur within the delta areas.

27. "Cumulative impacts" refer to two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. In keeping with CEQA requirements, the PEIR focused on the Proposed Project's adverse impacts when added to the adverse impacts of related projects. Speculating whether implementing the QSA would cause another project not to happen due to higher costs or lower feasibility is not required under the CEQA Guidelines (Sections 15144 and 15145).

28. Potential alternatives for the restoration of the Salton Sea have not been identified publicly; thus, it would be speculative to estimate how restoration costs would be affected by the Proposed Project. Further, as indicated in section 4.2.9 of the PEIR, since the alternative methods of implementing the Salton Sea Restoration Project have not been defined at this time, the cumulative impacts of the Proposed Project and the Salton Sea Restoration Project are speculative. The PEIR acknowledges that depending on the restoration methods selected, cumulative impacts could potentially be significant, but that mitigation measures associated with the Proposed Project would reduce the potentially significant cumulative impacts to less-than-significant levels.

29. The Proposed Project would not impact the development of the selenium TMDL, Alamo River silt TMDL, silt New River silt TMDL, New River pathogen TMDL, or the nutrient TMDL for the Salton Sea. The selenium TMDL would be implemented throughout the Colorado River Basin to reduce the level of selenium entering the Imperial Valley. Reduction in tailwater flow from the Proposed Project would be consistent with the New and Alamo River silt TMDLs and the Salton Sea nutrient TMDL. No impacts associated with the implementation of the New River pathogen TMDL would occur since the drains and other features of the IID system that would be affected by the Proposed Project are not substantial sources of these pathogens.

30. No impact to adopted silt TMDLs would occur due to implementation of the Proposed Project.

*Alamo River Silt TMDL***:** According to the Basin Plan, the Alamo River silt TMDL is to be phased in over a period of 13 years. Modeling results from the IIDSS indicate that for the

Proposed Project, the 12-year, flow weighted concentration of total suspended solids (TSS) would be below the Phase 1 TMDL numeric criteria of 320 mg/L. As more stringent TMDL numeric criteria are phased in, there is the possibility that over time these criteria would not be achieved for the Proposed Project based on the predicted (modeled) water quality data.

The IIDSS modeling of sediment loading is not adjusted to factor in future improvements to drain water quality resulting from the application of Best Management Practices (BMPs) under the TMDL because the IID Revised Drain Water Quality Improvement Plan is currently being developed and information on how these BMPs may affect project actions is not available. Therefore, any predictions regarding the effectiveness of future BMP implementation measures, the necessity of such measures and how they would affect the Alamo River silt TMDL is premature at this time.

Thus, the reductions in tailwater volumes generated from on-farm conservation measures under the Proposed Project would result in reductions in the mass of silt eroded from farm fields and discharged to IID drains. For this reason, the Proposed Project is expected to reduce silt loadings to the Alamo River and to contribute to the achievement of the objectives of the TMDL. The fact that tailwater reduction is the major mechanism for water conservation under the Proposed Project illustrates the parallel between BMPs likely to be introduced under the TMDL and water conservation measures likely to be introduced under the Proposed Project. Therefore, to the extent that on-farm conservation measures are included, implementation of the Proposed Project is expected to complement implementation of the Alamo River silt TMDL. If fallowing were implemented as an on-farm conservation measure, it would eliminate tailwater and silt discharges from fallowed fields.

New River Silt TMDL: A silt TMDL for the New River is scheduled for consideration for adoption at the June 2002 Regional Board Meeting. As was noted with reference to the Alamo River silt TMDL, the reductions in tailwater generated under the Proposed Project are expected to result in a decrease in silt discharge to drains in the New River Basin. The impacts of implementation of the Proposed Project on TSS concentrations in the New River would be buffered to some degree because of the silt inflows at the International Boundary with Mexico. Nevertheless, the parallel between implementation of the Proposed Project and implementation of BMPs for silt control that would exist in the Alamo River Basin would also exist in the New River Basin.

31. This change has been made to page 4-13.

32. Please refer to response no. 1.

33. Please refer to response no. 11.

34. A discussion of the cumulative impacts of the Mexicali power plants has been added to section 4.2.15. No discussion of the cumulative impacts of TMDLs is required. Existing TMDLs are part of the baseline condition, and the details of how proposed or future TMDLS would be implemented are not known. Additionally, according to CEQA Guidelines Sections 15064(i) and 15130(b), the discussion of cumulative impacts should

focus on the cumulative impact to which the other project contributes rather than the attributes of the other projects that do not contribute to the cumulative impact. The Proposed Project would have certain adverse impacts to water quality, but the TMDLs would have beneficial impacts. Thus, no significant cumulative impacts would occur. Also refer to EPA response no. 24. The only potential selenium control projects on the Colorado River are dependent upon future federal appropriations and thus are speculative; thus, no such projects have been included in the cumulative impact analysis.

35. The text has been revised to address your comment.

California Regional Water Quality Control Board
Colorado River Basin Region

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

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SAIC SANTA BARBARA

April 18, 2002

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

SUBJECT: CLARIFICATION COMMENTS ON DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

We made the following comments on ES-4 Lines 25 and 27-31; Table ES-1; Table ES-1 (page 11 of 29); 3.1.28 Line 26; 3.1.29 Table 3.1-15; and 4-14 Lines 1-7: "Increased selenium concentration is identified as a significant and unavoidable impact. The subject document concludes that "no reasonable mitigation is available". The aforementioned conclusion is deficient for CEQA purposes (14 CCR 15130). Further, we disagree with the conclusion, as Best Management Practices (BMPs) *are* available to address selenium impacts. Such BMPs include wetland management for enhancement of selenium volatilization, algal-bacterial selenium reduction systems, use of piping irrigation laterals, and removal of selenium using emulsion liquid membranes. Selenium TMDLs (required by the Clean Water Act) for drains and the Salton Sea will require Imperial Valley farmers to address selenium impacts through BMP implementation. The final PEIR must address measures to reduce selenium impacts."

As a point of clarification, the Selenium TMDL referred to in our comments, has been proposed by U.S. EPA. It is our understanding that it would focus on selenium throughout the upper and lower Colorado River Basin States (Colorado River Watershed), and would address selenium reduction at the sources, but could also include management practices to address concentrating of selenium in Imperial Valley. If U.S. EPA adopts the TMDL, the States would likely be delegated responsibility for implementing applicable provisions. 1

If you have any additional questions, please contact me at (760) 346-7491.

Sincerely,

TERESA NEWKIRK GONZALES, Senior Environmental Scientist
TMDL Development Unit Chief

TN:tn

File: CR-WATER TRANSFER

CC:

State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Eugenia McNaughton
US Environmental Protection Agency (W-1)
75 Hawthorne Street
San Francisco, CA 94105

California Regional Water Quality Control Board, April 18, 2002

1. Thank you for this information; the comment is noted.

REGIONAL AGENCIES

Comments and Responses

CONTENTS

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MAR 19 2002
SAIC SANTA BARBARA

March 14, 2002

Ms. Alicia Gasdich
QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

RE: **Comments on the Draft Program Environmental Impact Report for the Implementation of the Colorado River Quantification Settlement Agreement – SCAG No. I 20020072**

Dear Ms. Gasdich:

Thank you for submitting the **Draft Program Environmental Impact Report for the Implementation of the Colorado River Quantification Settlement Agreement** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects, and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

It is recognized that the proposed Project considers the implementation of a proposed Agreement which will further refine the apportionment of Colorado River water among four water agencies for a period of up to 75-years. The proposed implementation of the Agreement involves a series of water transfers, exchanges, water conservation measures, and other actions identified in the Agreement.

SCAG staff has evaluated the Draft Program Environmental Impact Report for the Implementation of the Colorado River Quantification Settlement Agreement with the current Regional Comprehensive Plan and Guide and Regional Transportation Plan. The Draft PEIR includes a discussion on the proposed Projects' consistency with SCAG policies and applicable regional plans, which were outlined in our June 13, 2000 letter on the Notice of Preparation (NOP) for this Draft EIR.

The Draft PEIR, in Section 3.4, Land Use and Planning, cited SCAG policies and addressed the manner in which the proposed Project is consistent with applicable core policies and supportive of applicable ancillary policies. This approach to discussing consistency or support of SCAG policies is commendable and we appreciate your efforts. Based on the information provided in the Draft PEIR, we have no further comments. A description of the proposed Project was published in the February 1-15, 2002 Intergovernmental Review Clearinghouse Report for public review and comment. 1

If you have any questions, please contact me at (213) 236-1867. Thank you.

Sincerely,

JEFFREY M. SMITH, AICP
Senior Planner
Intergovernmental Review

Southern California Association of Governments, March 14, 2002

1. This comment indicated that the analysis of applicable SCAG policies was commendable and no further comments were submitted.

LOCAL AGENCIES

Comments and Responses

CONTENTS

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8 February 2002

Memorandum to: State Clearinghouse, Office of Planning and Research
1400 Tenth Street, Box 3044 Sacramento, CA 95812

QSA PEIR, SAIC, 816 State Street, Suite 500,
Santa Barbara, CA 93101

David Osias, Counsel to IID

Scott Slater, Counsel to SDCWA

Steven Abbott, Counsel to CVWA

Jeff Kightlinger, Counsel to MWD

Re: QSA Programmatic EIR SCH 2000061034;
request for extension of time to comment

Colleagues:

The County of Imperial requests that the time to comment on the subject draft EIR be extended from 17 March 2002 by 30 days to 16 April 2002. 1

This draft EIR is one of three interrelated and complex EISes or EIRs that are concurrently in circulation and all related to the proposed IID-SDCWA water transfer now pending before the State Water Resources Control Board. The other two are the Bureau of Reclamation Implementation EIS and the IID Water Conservation and Transfer

EIS/EIR. Each of these three documents identifies the others as related to the ultimate decision on the proposed water transfer; and the decisions to flow from each of these documents are also inter-related, and the IID water transfer ultimately conditioned on the other two decisions.

The County of Imperial believes, and trusts that the addressees agree, that each of these environmental documents, like the decisions proposed, informs the others; and that an assessment of the value of each document cannot be made without evaluating the others and then evaluating them as a whole.

The IID EIS/EIR has an established due date of 26 April 2002, with public hearings on that draft now scheduled by IID for 2-4 April. The IA EIS has a due date of 12 March 2002.

In order to make informed comment on the QSA EIR, the County of Imperial believes it will benefit from its analysis of the IID and IA EIS/EIR documents, and also from the public hearings of 2-4 April. A review period closer to the 90 days specified for the IID EIS/EIR would seem appropriate here, which will fulfill the purposes of CEQA to inform the Imperial County Board of Supervisors and Imperial County citizens on these related projects.

We are surprised that the QSA and IA documents, which address subjects as complex as those in the IID EIS/EIR, were not noticed for longer periods. It appears that in both the former cases, the minimum 45 days was used, which is especially unfortunate in that despite the agencies' good efforts to distribute them as soon as possible, the County of Imperial did not receive the QSA document until two days ago.

We recognize the urgency with which the respective lead agencies under all these projects are proceeding, and for that reason we are not asking for the full 90 days for the QSA EIR (nor will we for the IA EIS); but we do believe that an extension beyond the public hearing dates of 2-4 April is indispensable. For that reason we request a 30-day extension to 16 April, and will make the same request of the Bureau of Reclamation with respect to its present 12 March due date for the IA EIS.

Respectfully,

Special Counsel to County of Imperial

cc: Joanne Yeager, Deputy Imperial County Counsel

Law Office of Antonio Rossman, Special Counsel to the County of Imperial, February 8, 2002

1. The co-lead agencies believe that the initial 45-day review period provided adequate time to comment on the Draft PEIR; nonetheless, in response to requests for additional time, the review period was extended from March 15, 2002 until March 26, 2002, for a total of 56 days.

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26 March 2001

via mail and facsimile

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Re: County of Imperial Comments on IA EIS and QSA EIR

Greetings:

Introduction

The County of Imperial submits the following comments on the Bureau of Reclamation's Implementation Agreement environmental impact statement (IA EIS) and the four California water agencies' Quantification Settlement Agreement environmental impact report (QSA EIR). The County submits these comments jointly because at this stage the comments on both documents virtually overlap; and the County hopes that the preparers of both documents will benefit from the broadest range of comment that reflect not only on each one but also their interrelationship to each other and to the still-circulating Bureau/IID environmental impact statement/report on the IID-SDCWA long-term transfer (IID-SDCWA transfer EIS-EIR).

The County is grateful to the addressees for extending time to comment until today, without which extension it would not have been possible to provide what we attempt to state here. The County regrets that the time was not extended further, indeed in retrospect until after the close of comment and proceedings on the IID-SDCWA transfer EIS/EIR and transfer itself. At the same time, the County appreciates the pressure of time to conclude review of all three projects referenced in the first paragraph above. At page four of these comments we will propose a procedure that enables the Bureau and QSA sponsors to begin preparation of their final documents with comments received as of today, but also reopens the comment period to permit the agencies to benefit from the still inchoate transfer EIS/EIR and underlying proceedings.

Role and Interest of the County of Imperial

The County of Imperial is foremost a political subdivision of the State of California, deriving its authority from the State Constitution and statutory authority. The County recognizes the urgent need of California to confine its future Colorado River water use to that allocated pursuant to the Law of the River. The County will participate in that effort constructively as part of California, recognizing that the proposed projects identified above could potentially bring benefit to the County of Imperial as well as the entire State. The County also recognizes, as do indeed the EIS and EIR authors, the proposed projects' potential to produce long-term, permanent damage to the environment and economy of Imperial. The County as a non-sponsoring agency thus has perhaps the greatest interest in the success of the NEPA and CEQA review of the IA and QSA, because the County presently lacks the detailed knowledge and experience that the sponsoring agencies have acquired, and relies on NEPA and CEQA review to inform our collective knowledge of the impacts, the ability to mitigate them, the benefits, and hence the ultimate merit of the proposed projects.

The County respects greatly the efforts of the Secretaries of Interior and his and her subordinate agencies, and the California water agencies to address the Colorado River water use constructively. The County appreciates the diplomacy and skill required to formulate, for example, a quantification of California priorities to complete the task left undone from the 1930s; and the efforts of IID to propose a water transfer that brings benefit to the people and environment of Imperial. The County especially appreciates the near-universal recognition by project sponsors that what in the past have been dismissed as "third party impacts" must genuinely be identified in advance -- impacts of both an environmental and related economic nature. What are now needed, in the County's view, is verification of the project impacts, and more importantly mechanisms to ensure their mitigation to an acceptable degree.

The County's concerns remain basically as stated in section 1810 of the California Water Code: to prevent unreasonably affecting Imperial's overall environment and economy. The Bureau and California agencies, to secure that result in cooperation with

the County, must improve their assessments of the following IA- and QSA-induced impacts: loss of available water supply in Imperial County to meet the County's own reasonable future needs; loss of air, visual, and aesthetic quality flowing from changes in the Salton Sea level and in patterns of irrigated agriculture; and economic distress not only to individual farmers but also to the County's secured and unsecured tax revenues, and to social service programs and agencies. At the same time, the projects' assessment of growth- and economic-inducement in the receiving water agencies must be refined, to enable those benefits to be quantified as appropriate sources of mitigation to Imperial, the county of transfer origin.

If the comments that follow seem incomplete, the County readily acknowledges that they are. As Imperial has stated in both public arenas and in individual conferences with project sponsors, the County's evaluations of the water transfer, QSA, and IA are works in progress. The County just yesterday received the opening set of exhibits in the State Water Board proceeding; the County awaits the public hearings on the water transfer EIS-EIR and on the transfer itself, as well as the water transfer lead agency IID's ultimate decision on that project. The County anticipates that the coming weeks will bring much more detailed commentary on the impacts of the QSA and IA, as well as water transfer; and most importantly that the decision of IID on the transfer will for the first time fix the terms of that transfer and its impacts, subject then to the review and decision of the State Water Board. At the same time, in the coming weeks the County anticipates that it will complete the formulation of its proposed mitigation measures to address satisfactorily the County's environmental and economic concerns.

The "Tiering" or "Programmatic" Dilemma

The structure of the IA, QSA, and IID-SDCWA water transfer, and the drafting of the respective environmental documents, suggest that these three projects tier from the first to the second to the third. In reality, however, the reverse is true; by their terms, the transfer defines a necessary element of the subsequently-negotiated QSA, and the transfer and QSA together frame the IA. Thus rather than having the transfer ultimately be framed by an initially-formulated programmatic IA, in reality these are "bottom up" rather than "top down" arrangements. 1

The transfer agreement at the bottom frames the overall impact of the QSA; and the QSA in the middle frames the overall impact of the IA. That circumstance is confirmed by the Bureau's 1 March 2002 letter extending time to submit these comments, which states that "Reclamation will not make any final decision on the proposed Implementation Agreement until both the IA EIS, and the Imperial Irrigation District Water Conservation and Transfer Project EIR/EIS are finalized and the public comments on both documents have been fully considered."

The Bureau, coincidentally lead federal agency on both the IA and water transfer EISes, can resolve this dilemma in two ways. First, the IA can be refined to make clear

3

that it is not conditioned on any specific form of water transfer agreement or QSA, but instead that the IA will accommodate whatever form of transfer IID initially authorizes and the State Board subsequently approves. Similarly, the California water agencies can refine the QSA to quantify the allocations of priorities identified in the 1931 Seven Party Agreement, subject to subsequent transfers and exchange agreements between and among the California water agencies -- but without fixing up front the terms, quantities, or ranges of those transfers or exchanges. (In NEPA terms it thus remains prejudicially significant that the QSA alternatives are framed in terms of transferring the "minimum allowable" according to the *1998 agreement*.) Only in this way can the Bureau and California water agencies avoid the error of having the IA or QSA effectively pointing the gun at IID and ultimately the County of Imperial, by defining the transfer before its environmental or State Water Board review has been completed. 1

The second resolution of the dilemma is for both the Bureau and California water agencies to proceed as the Bureau's 1 March 2002 letter suggests: to withhold their decisions on the IA and QSA until the individual components have been analyzed and finalized. The County is grateful that the Bureau has confirmed this sequence with respect to the IA. The California water agencies need to do the same with respect to the QSA. 2

The problem remains, however, that without subsequent direction, the opportunity to comment on the environmental assessment of the IA and QSA ends today -- well in advance of the fixing of the terms of the water transfer. In the County's view, the only cure to this NEPA and CEQA deficiency is for the IA and QSA lead agencies to reopen comment on the present environmental documents after the water transfer terms have been fixed by IID and State Water Board decisions. The County of Imperial expressly requests that reopening. 3

(The County notes that just as the transfer agreement remains non-final, so has the forthcoming Draft Salton Sea Restoration Alternatives Report not been published. Consideration and possible adoption of these alternative restoration strategies will frame the overall impact of the IA and QSA as much as will the final transfer agreement.) 4

The California Lead Agency Question

This comment pertains only to the QSA EIR. That document has been presented, both at the notice of preparation and now in its draft form, as prepared by four co-lead agencies. In its scoping comments the County of Imperial questioned this procedure and asked to receive a copy of the lead agency agreement or any authorization of that agreement by the California Office of Planning and Research. The County repeats that unfulfilled request here. The County questions whether CEQA guidelines and case law authorize an EIR that is not prepared under the direction of a single, principally responsible lead agency. At the same time, the County can readily empathize with the four California water agencies' desire to avoid assignment of this responsibility to a single lead. The County asks that this issue be addressed and responded to. 5

Specific Impact Concerns to Imperial County

Imperial County Water Supply.

The documents appropriately attempt to address impacts of the water transfer component on agriculture in Imperial County, but do not address the County's future water needs outside the agricultural sector. The underlying premise of the water transfer, QSA, and IA seems to be that Imperial County agriculture through IID will conserve as much water as practicable and make all of that conserved water available for transfer outside the County. Nowhere does the assessment identify existing non-agricultural use in Imperial County or the County's future beneficial needs. The EIS and EIR show that Imperial County will in the next two decades be the most rapidly growing of any of its California counterparts, doubling in population from 142,000 to 294,000. The population of San Diego County is anticipated to rise to 3,800,000, which will be served according to the SDCWA urban water management plan by 813,000 AFA (or a ratio of .21 AFA per capita). Even if one applied the same coastal-region ratio to arid Imperial County, the County's future needs would at least amount to 62,900 AFA. The EIS and EIR must show that the projects will enable at least 63,000 AFA to remain in Imperial County to meet future domestic and urban needs there, or propose mitigation measures to achieve that objective. 6

Fallowing.

A major benefit of the present EIS and EIR is that they show that while the 1998 water transfer prohibits the use of permanent fallowing to generate conserved water, subsequent agreements that comprise the QSA assertedly authorize fallowing, and this practice may be necessary to produce transfer benefits without adverse effects resulting from accelerated Salton Sea decline. 7

The County in the past has recorded its policy disfavoring fallowing as a conservation technique. That position has been subsequently ratified in state law, particularly present California Water Code section 1011, which only recognizes fallowing as a source of conserved water if it is "temporary" or part of "crop rotation." The EIS and EIR assume that non-temporary fallowing can become part of the purpose of the IA and part of the project of the QSA, without addressing the provisions of section 1011.

The County recognizes that a literal reading of the 6-06-01 draft QSA defines fallowing for a term of up to 75 years as "temporary." QSA, ¶ 1.1(56). The County questions whether this definition can be squared with the statutory context of section 1011, or common sense. The County requests a response to these observations, including if appropriate correcting the County's literal reading of the QSA.

5

"Fallowing" is a subject on which the County is devoting extensive efforts among the Board of Supervisors, staff and consultants, and other constituencies. The County's failure to specify further comment on that subject now, including suggested mitigation measures, should not lead the agencies to conclude that the County will not address this necessary issue more completely in its water transfer DEIR comments and the State Water Board proceedings. 8

Air Quality.

The County will provide expert testimony to the water exchange DEIR and to the State Water Board addressing this issue; that testimony is still in preparation. The County notes summarily these concerns with the air quality analysis and assumptions in the IA and QSA assessments. The asserted 20,000-acre baseline of fallowed lands assumes that this much acreage is out of production for a season or more; in actuality, most of those lands are idle for only a month or two between crops. Water needs to mitigate dust emissions from fallowed lands are not addressed. The wind measurements have not included the sites that are most reflective of air quality near the Salton Sea, and those data that are included appear in part to be incorrect. And in a nutshell, the assumption or assertion that the Salton Sea cannot be compared to Owens Lake does not stand up; in actuality, the impacts, both by nature and degree, are distressfully congruent. 9

Growth Induction.

The QSA EIR commendably recognizes that the "no project" scenario includes the reasonably foreseeable consequence that MWD will lose up to 650,000 AFA from the Colorado Aqueduct. Despite this loss without the projects, the IA and QSA are not projected to induce growth in the San Diego water service area. It is not a sufficient answer to say that the IA and QSA change the distribution of existing California supplies from the Colorado; the impacts are generated by changing the *places* of use and *purposes* of use. Common sense inquires, "*Why* is the transfer proposed as part of the IA and QSA, if *not* to enable future growth in San Diego?" Nor does it matter that the projects will not change existing land use or water supply "assumptions," especially in light of recently-enacted S.B. 221 and S.B. 601, and their requirements for new development to be founded on assured drought-year supplies. The current SDCWA urban management plan projects a fixed 303,630 AFA "firm" supply from Metropolitan from now to 2020 based on MWD's represented 2.1 MAF "firm" supply. But as the QSA EIR indicates, without the QSA and IA projects, MWD would lose approximately 650,000 AFA from the Colorado, reducing its "firm" supply from that source and the State Water Project to a combined total of approximately 1.6 MAF (660,000 AFA from the Colorado, plus approximately 50 percent of MWD's 2.1 MAF SWP "entitlement"). (These expectations reflect normal deliveries; in time of drought the MWD supply would be even smaller.) Not surprisingly, indeed, the SDCWA urban management plan shows that the IID transfer 10

is *vital* to maintain the San Diego "expectation" of serving a population that will expand from a present level of 2.8 million to 3.8 million. 10

The County of Imperial does not raise the "growth induction" issue to enter a debate about the future composition of the greater San Diego community, but instead to ensure that the assessments include recognition of the tremendous economic value of the transferred water to that community (or other urban communities in the receiving water agencies). That economic value becomes a source of mitigation beyond compensation paid to IID farmers for Imperial Valley impacts that transcend those on the farm. The IA and QSA EIS and EIR must recognize and quantify the growth inducing impacts of their respective projects in the water-receiving communities.

Socio-Economic Impacts.

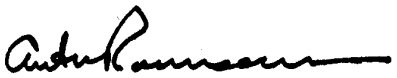
The IA EIS commendably recognizes the relevance of socio-economic impacts to the environmental assessment and the ultimate projects to be approved. A collapse of the agricultural economy in Imperial County, resulting from flawed implementation of the water transfer, could produce environmental consequences far beyond those contemplated by selective water conservation techniques. Economic distress to the County itself, through loss of secured and unsecured tax revenues, could translate into distressed public facilities, housing, and health. The IA EIS defers to the analysis of these impacts within the water transfer EIS/EIR, taking advantage of the Bureau being federal lead under both EISes. The County of Imperial's assessment of and comments on the water transfer EIS/EIR, therefore become an important component of the County's assessment of the present EIS. The County anticipates in its water transfer EIS/EIR comments and in the State Water Board proceedings that it will critique the socio-economic assessment, supplement it to the degree possible within time constraints, and most importantly attempt to formulate that which is missing from both the IA EIS and the water transfer EIS/EIR: mitigation measures to prevent adverse socio-economic impacts. 11

As the County reads the QSA, it does not address socio-economic impacts at all, even though they are related to the ultimate environmental quality of carrying out a QSA project. The QSA EIR must give these impacts at least the same analysis they are accorded in the IA and water transfer documents, and move from that point to identify mandatory mitigation measures.

Conclusion

The County of Imperial requests that the lead agencies respond to theabove comments, and that the opportunity to provide further comments on the draft EIS and EIR be renewed at the conclusion of proceedings on the IID-SDCWA water transfer agreement. 12

Respectfully submitted,



Special Counsel to the County of Imperial

cc: Laura Simonek, MWD
FAX (213) 217-6704

Imperial County Board of Supervisors
Imperial County Counsel
Imperial County Planning Director

Law Office of Antonio Rossman, Special Counsel to the County of Imperial, March 26, 2002

1. The comments on the Implementation Agreement (IA) EIS are noted. The basic terms of the QSA have been established and are included in Appendix A. The impacts of the actions that would implement these terms bracket the maximum physical environmental changes that could occur if the QSA as a whole were implemented. Some contractual changes could occur prior to the finalization of the QSA, but these would not affect the impact analysis in the PEIR. Thus, the terms of the QSA have been established in sufficient detail to support the development of this PEIR and, in fact, provide a worst-case analysis of all environmental impacts. Also refer to response no. 2.

2. The comments on the IA EIS are noted. The QSA EIR is a Program EIR, analyzing the impacts of a broad range of actions. Some components of the Proposed Project (e.g., the Coachella and All American Canal Lining Projects) already have completed CEQA analysis. Others, such as the IID Water Conservation and Transfer Project EIR/EIS and CVWD Water Management Plan PEIR, are still in process. There is no requirement under CEQA that the analysis of individual components be finalized prior to making decisions regarding the QSA.

3. Refer to response nos. 1 and 2. The QSA PEIR analyzes impacts at a program level and is intended to identify the maximum environmental impacts that could result from implementing the IID/SDCWA water transfer. More specific details are described in the project-specific analysis contained in the IID Water Conservation and Transfer Project EIR/EIS, but impacts and mitigation measures are similar to those described in the QSA PEIR. Further, the SWRCB decision will govern only project-specific details of the IID/SDCWA water transfer, not the QSA. There is no requirement under CEQA to reopen the comment period as suggested.

4. The PEIR identifies the Salton Sea Restoration Project as a related action in section 1.5. It also is considered in the cumulative impact analysis (refer to section 4.2.9). The PEIR identifies the restoration alternatives that were under consideration at the time it was issued. CEQA does not require that an EIR be delayed in order to include the results of all future studies. Rather, environmental documents are to rely on information that is available at the time they are prepared.

5. Although normally there is a single lead agency, nothing in CEQA, the State CEQA Guidelines, or case law prohibits co-lead agencies. CEQA Guidelines Section 15051(d) state that when two or more public agencies have a substantial claim to be the lead agency, they may establish an agreement to "provide for cooperative efforts by two or more agencies by contract, joint exercises of power, or similar devices." For the QSA, having four co-lead agencies also furthers CEQA's policies of reducing paperwork and delay (CEQA Guidelines Section 15006). Since all four co-lead agencies plan to certify the QSA EIR at approximately the same time, it is more efficient for all four to be co-lead agencies. Each agency will be accountable for making CEQA findings and adopting feasible mitigation measures; the findings and adopted mitigation measures are planned to be consistent for each lead agency. This process is more efficient than having a single lead agency and three responsible agencies, and does not change accountability for making CEQA findings and adopting feasible mitigation measures.

Regarding case law on lead agency designations, it is correct that Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, required that if agencies share responsibility for implementing a project, the agency with "principal responsibility" for implementing the project should be the lead agency. In that case, the court found that the Department of Water Resources had principal responsibility for project implementation, and that Central Coast Water Agency was not the appropriate lead agency because it did not have principal responsibility for project implementation.

In contrast, for the QSA PEIR, three of the co-lead agencies are signatories to the QSA, and thus have shared principal responsibility for implementing the QSA. The fourth agency, SDCWA, has principal responsibility (shared with IID) for implementing the IID/SDCWA water transfer, a central project of the QSA.

The request to send a copy of the lead agency agreement to Imperial County is not related to the content of the PEIR; a copy of the lead agency agreement has been sent to Imperial County, however.

6. The Proposed Project involves implementation of agricultural water conservation measures only. Under the terms of the QSA, IID would retain the ability to divert in excess of 2.6 MAFY for agricultural, industrial, and domestic use within the current IID water service area. In addition, at the end of the initial 45-year term, the IID/SDCWA transfer agreement potentially allows IID to reclaim up to 34,000 AFY of transfer water for municipal and industrial (M&I) use within the Imperial Valley. This amount is twice the expected growth in M&I use within the IID water service area over the next 45 years. Therefore, the Proposed Project can be implemented without compromising the Imperial Valley's urban water supply. IID would continue to make water deliveries reasonably required for M&I beneficial uses, including current use and expected growth in these sectors.

7. Your comment is noted. IID recognizes that a conflict exists between Water Code Section 1011 as currently codified and the use of permanent land fallowing as a source of conserved water. IID does not and has not in the past assumed "that non-temporary (i.e., permanent) fallowing can become part of the purpose of the IA and part of the project of the QSA, without addressing the provisions of Section 1011." Should IID ever wish to include permanent land fallowing as a source for any portion of the conserved water to be transferred under the QSA, IID recognizes that legislative action would be needed to address the conflict with Water Code Section 1011.

8. This comment is noted. The parties recognize that should a long-term fallowing program eventually be included in the QSA, any potential inconsistencies with Water Code Section 1011 will have to be addressed prior to implementation.

9. The sources of water used to mitigate fugitive dust emissions from fallowed lands will come from irrigation return flows, drain, or other unused water. In regard to the potential impact of fugitive dust emissions from exposed shorelines of the Salton Sea, please refer to the response to EPA comment no. 27.

10. In general, see response to CDFG comment 42, which discusses the relationship of the QSA to SDCWA's water management plan and future supply/demand relationships.

The no-project alternative analysis in section 5.4 of the PEIR does recognize a "loss" of 590,000 AFY in normal year historic diversions of Colorado River water. However, the analysis goes on to state under the no-project scenario, MWD and SDCWA would evaluate other water management actions such as desalination, recycling, and conservation to meet water demands. These actions are further described in sections 6.2.3.2 (MWD) and 6.2.4.2 (SDCWA) of the QSA PEIR. These actions are found to be sufficient to meet projected water demands.

Further, even if it were assumed that water demands would not be met under the no-project scenario, the no-project scenario is not the appropriate baseline for analyzing the impacts of the potential growth-inducing impacts of the QSA (CEQA Guidelines Section 15126.6(e)(1). The QSA PEIR used existing water supplies at the time the NOP was published in 2000 as the baseline. Therefore, the QSA's maintenance of historic reliability of Colorado River water supplies was determined to not be growth-inducing.

Also, the comment states that the QSA will change the places of use and purposes of use of Colorado River water supplies. This statement is not correct with regard to the SDCWA service area, where the comment argues that growth-inducing impacts would occur. Places and purposes of use of water supplies would remain unchanged within the SDCWA service area; the QSA changes only the seniority of the supplies.

Regarding SB 610, and SB 221, these new laws require water supply assessments and verifications for certain large development projects. However, the QSA would not change San Diego area local government findings on water supplies under these laws. MWD has sufficient supplies to meet demands within the entire MWD service area even if some planned water projects (such as those called for by the QSA) are slowed in implementation, and SCDWA in the absence of the QSA has alternative ways to meet demands.

11. The QSA PEIR provides an adequate level of analysis under CEQA. Section 3.13 addresses impacts to employment and business output, as well as impacts to population and housing from the Proposed Project. The IA EIS and IID Water Conservation and Transfer Project EIR/EIS both must comply with NEPA, which has different requirements than CEQA. State CEQA Guidelines, Section 15131 states:

> Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.

Under NEPA, economic or social effects are not intended by themselves to require the preparation of an EIS. However, when an EIS is prepared, the economic and social effects must be discussed if they are interrelated to the natural or physical environmental effects (Code of Federal Regulations [CFR] sec. 1508.14). "Effects" are also defined as including economic and social factors (CFR sec. 1508.8). NEPA's requirement to consider socioeconomic impacts is somewhat broader than CEQA's, and

federal agencies typically include more economic and social information in EISs than state or local agencies include in EIRs.

The QSA PEIR analyzes impacts at a program level and is intended to identify the maximum environmental impacts that could result from implementing the IID Water Conservation and Transfer Project. As appropriate, more specific details are described in the project-specific analysis contained in the IID Water Conservation and Transfer Project EIR/EIS, but impacts and mitigation measures are similar to those described in the QSA PEIR.

12. Refer to response no. 1.

County of San Diego

DEPARTMENT OF PUBLIC WORKS

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TRANSIT SERVICES
COUNTY SURVEYOR
FLOOD CONTROL
WASTEWATER MANAGEMENT

March 5, 2002

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

COACHELLA VALLEY WATER DISTRICT, IMPERIAL IRRIGATION DISTRICT, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, AND SAN DIEGO COUNTY WATER AUTHORITY - DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE IMPLEMENTATION OF THE COLORADO RIVER QUANTIFICATION SETTLEMENT AGREEMENT

We have reviewed the above document dated January 2002, which was prepared by Science Applications International Corporation. Our comments on the traffic impact section are as follows:

- Language should be included in the EIR which requires that the County of San Diego (County) be notified if, and when, traffic will be temporarily re-routed onto county roads due to the project. For example: If State Route 78 is temporarily closed due to the project and traffic is rerouted onto County maintained roads, the County should be notified. 1

- The EIR should list mitigation measures for impacts resulting from traffic being temporarily re-routed onto County roads due to the project. 2

- The EIR should list permits required by Caltrans should traffic be rerouted from State to County Roads (i.e. encroachment permits etc.). 3

If you have any questions concerning our comments, please contact Tom Duffy at (858) 874-4039.

Sincerely,

K Fleming

Kaylene Fleming
Environmental Services
KPF:TFD

1

County of San Diego, March 5, 2002

1. No new construction would occur in San Diego County, nor would any other actions occur that would require temporary re-routing of traffic onto county roads as a result of the QSA (refer to sections 2.5.4 and 3.12.2.3, *San Diego County Water Authority*).

2. Please see response no. 1.

3. Please see response no. 1.

INDIAN TRIBES

Comments and Responses

CONTENTS

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PLEASE REPLY TO THE
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Via Facsimile - (805) 966-3318

March 26, 2002

Attention: Rob Thomson
QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, California 93101

Re: Comments on Draft PEIR for Implementation of Colorado River Quantification Settlement Agreement (QSA)

Dear Mr. Thomson:

We are submitting these comments on the above PEIR on behalf of the Quechan Indian Tribe, whose Fort Yuma Reservation is located in southwestern Arizona and southern California near Yuma, Arizona. The Tribe possesses present perfected rights ("PPR") from the mainstem of the Colorado River pursuant to the Decree and supplemental Decrees (1979 and 1984). The amounts, priority dates, and state where the rights are perfected are as follows:

Amount (AFY)	Acreage	Priority Date	State
51,616	7,743	Jan. 9, 1884	California

This water is diverted at Imperial Dam through the Yuma Project Reservation Division - Indian Unit. A Supreme Court decision issued on June 19, 2000 allows the Tribe to proceed with litigation to claim rights to an additional 9,000 acres of irrigable lands. Proving this claim would increase the water rights for the reservation.

The Tribe has the following specific comments on the PEIR:

1. **Impact on Water Flow and the Quechan Tribe's Senior Water Rights.** How will the project affect the Quechan Tribe's perfected and unperfected water rights? Are there any indirect effects? Impacts on senior water user's perfected and unperfected water rights are not even included in the "Significance Criteria." PEIR at § 3.1.2. The PEIR does not address this issue. This project and the many other projects affecting the lower Colorado River should not interfere in any way with the Tribe's right to use all of its PPR and to its potential rights to an additional 9,000 acres of irrigable lands. 1

What will be the reduced flow between Laguna and Morelos dams? Finally, what is the reduced flow between these two dams due to the cumulative impact of the many projects affecting the lower Colorado River? 2

Will the project alone, or with the other projects affecting the lower Colorado River, facilitate others' use of surplus water, which is the Tribe's unused entitlements? 3

2. **Impact on Water Salinity.** How much will the project cause a salinity rise in the stretch between Laguna and Morelos dams? Will the increased salinity impact the quality of water taken by the Tribe? Finally, what is the cumulative salinity increase between these two dams of the many projects affecting the lower Colorado River? 4

3. **Impact on Ground water.** Will the project cause a reduction in ground water, or in ground water levels, underlying the Fort Yuma Reservation? What is the cumulative reduction in or lowering of ground water underlying the Fort Yuma Reservation due to the many projects affecting the lower Colorado River? 5

4. **Impact on Electricity Supply.** Will the Fort Yuma Reservation experience a reduced electricity supply due to 1) the project, or 2) the cumulative impact of all of the projects affecting the lower Colorado River? Will there be a sufficient supply to accommodate the Tribe's future plans for development? 6

5. **Impact on Agricultural Uses.** How exactly will the Tribe's and its members' agricultural uses be affected 1) by the project, or 2) by this and the many projects affecting the lower Colorado River? 7

6. **Impact on Cultural Resources.** The Tribe wants to be consulted about how ongoing actions in the lower Colorado River are impacting cultural resources affiliated with the Tribe. How exactly will cultural resources affiliated with the Quechan Tribe be affected by this project? 8

7. **Cumulative Impacts - Projects Considered.** The PEIR's cumulative impacts analysis omits many projects and actions that directly affect the lower Colorado River. This was revealed by checking the PEIR's list against the two other environmental analyses listed in no. 8 below. The omissions include, but are not limited to: 1) the Glamis mine; 2) the IID/San Diego County Water Authority Water Transfer Project; 3) BOR's consumptive use policy; 4) BOR's Northern & Eastern Colorado Desert Coordinated Management Plan; 5) the International Agreement for Water Deliveries to Mexico; 6) operating criteria for Colorado River Reservoirs; 7) All American Canal lining; 8) Coachella Canal lining; and 9) rule for off-stream storage. 9

8. **Compliance with CEQA.** Please explain why the federal and California governments have published three related NEPA/CEQA documents, rather than combining them into one readable document? The documents are: 1) this PEIR, 2) the Bureau of Reclamation's DEIS for the Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, and 3) the Bureau of Reclamation's and Imperial Irrigation District's Draft EIS/EIR and Habitat Conservation Plan for IID's Water Conservation and Transfer Project? This approach violates both NEPA and CEQA, which prohibit piecemealing projects and analyses that are closely related, and which require combined federal/state environmental documents for such projects. 10

9. **The QSA.** How exactly do sections 2.1(2), 2.2(2), and 2.3(2) of the QSA protect the Quechan Tribe's senior rights to its PPRs and its potential senior water rights to an additional 9,000 acres of irrigable land? How does the same question apply to the entire QSA? The QSA does not seem to protect the Tribe's potential rights to 9000 irrigable acres, because it only covers "present perfected" rights. 11

Please state, if true, that the QSA, Implementation Agreement and IID Transfer Agreements, together and separately, do not and will not interfere with these perfected and unperfected water rights held by the Quechan Tribe, at any point during the agreements' respective durations. This provision should be added to the QSA. 12

Thank you for your consideration. The Tribe urges your respective offices to carefully consider these comments, and to respond in a detailed, readable manner, given the 75-year, irreversible nature of this project and the many other projects affecting the lower Colorado River.

Sincerely yours,

MORISSET, SCHLOSSER, JOZWIAK & McGAW

Mason D. Morisset

cc: Mike Jackson Sr., President
Quechan Indian Tribe

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slh:03/14/02

Morissett, Schlosser, Jozwiak, & McGaw, on behalf of the Quechan Indian Tribe, March 26, 2002

1. The Quechan Tribe is entitled to use its full entitlement for reasonable beneficial use within the boundaries of its reservation, and the Proposed Project would not affect the Tribe's senior water right to use all of its PPR, including any additional rights granted in a supplemental decree. If the United States Supreme Court in *Arizona v. California* upholds the Tribe's claim to additional land and enters a supplemental decree to set forth that claimed right, the priority date of the right in the supplemental decree will be established by the court. If the court follows the criteria it used for its supplemental decree entered October 10, 2000, the priority date will be the same as the Tribe's original Federal reserved right PPR (January 9, 1884). Also refer to the responses to comments 11 and 12 below.

2. The Proposed Project would not impact the normal flow regimes in the portion of the Colorado River system below Imperial Dam. As noted in section 3.1.2.3, impacts would be limited to the stretch between Parker and Imperial dams. Refer to response to EPA comment 16.

   A surplus determination on the Colorado River is made based on many factors, including inflow to the system, assumed delivery of 7.5 MAF to the lower Basin States, necessary reservoir storage for efficient power generation, reservoir space needed to protect flood control, and other operational constraints. Given these inputs and constraints, reservoir elevations are projected. Balancing the need for efficient power generation and the need for flood control space, a surplus determination is made and water released by the Secretary to entitlement holders in accordance with the Law of the River, the Secretary's authority, and established priority system.

   To the extent that the Tribe does not use its entitlement, the unused portion remains Colorado River System water and could be released as surplus water in that year. However, the QSA does not change the Tribe's entitlement or its ability to request or use surplus water, when available, for beneficial use.

3. The Project described in this PEIR would quantify some California entitlements and transfer water and would reduce California's dependence on surplus water. As agricultural water within the State of California is conserved and transferred to other users within California, their dependence on surplus water is reduced.

4. The Proposed Project would not impact the normal flow regimes in the portion of the Colorado River system below Imperial Dam. In the stretch between Laguna and Morelos dams, the salinity increase is not expected to be any greater that that expected at Imperial Dam, 8 mg/L in the year 2076. The tendency of the water transfers to increase salinity would be more than compensated for by other actions included in the cumulative impact analysis. This analysis indicates that in the future, with the Proposed Project and other actions (outside of the Salinity Control Program), salinity at Imperial Dam (and thus Laguna and Morelos dams) would decrease by as much as 10 mg/L. For more information refer to Appendix D.

5. The groundwater level under the Fort Yuma Reservation would not change as a result of the Proposed Project. The modeled conditions that were analyzed in this PEIR would not impact the normal flow regimes in the portion of the Colorado River system below

Imperial Dam, which includes the Yuma, Laguna, and Limitrophe divisions of the River. Thus, no impact to groundwater hydrologically connected to this reach of the River would occur.

6. Per discussions with the U.S. Bureau of Reclamation, it is the co-lead agencies' understanding that the Fort Yuma Indian Reservation does not receive energy from any of the hydro-dams below Parker Dam or any Parker Davis–Project preference power. Therefore, the QSA would have no impact on their current or future energy production.

7. As discussed on page 3.5-10, lines 9-16, agricultural land along the lower Colorado River would not be directly affected by the Proposed Project. As noted in section 3.2.3, "If existing farmland is used to develop habitat, there may also be a significant unavoidable impact of loss of agricultural resources since these areas would be removed from production for the foreseeable future." The precise location of the areas to be developed as habitat is not known at this time; thus, the exact impact to the Quechan Tribe cannot be identified. Use of tribal land for habitat development would be subject to tribal approval, however, and an appropriate level of environmental analysis will be conducted once sites are selected.

8. At this time, no impacts have been identified as potentially occurring to cultural resources affiliated with the Quechan Indian Tribe. Once site-specific locations have been identified for implementing biological mitigation measures, additional cultural resource surveys will be conducted to determine what, if any, cultural resources would be impacted by any on-the-ground activities that would occur. The procedures outlined in section 3.8.3 of this PEIR would be followed.

9. The IID Water Conservation and Transfer Project, the All American Canal Lining Project, and the Coachella Canal Lining Project are all a part of the Proposed Project. Their impacts were therefore addressed as project impacts, not cumulative impacts. The Rule for Off Stream Storage was addressed as a cumulative project. Prior to the identification of the projects to be addressed in the cumulative impact analysis for the PEIR, projects were screened to determine which projects would result in a potentially significant impact when combined with the Proposed Project. The other projects addressed in this comment were considered, but screened out from the cumulative impact analysis since there was not a potential for a cumulative impact. For example, the water deliveries to Mexico would not be affected by the Proposed Project since all changes in diversions would be in California only (refer to Chapter 2 of the PEIR).

10. Three environmental documents were prepared to address impacts at different levels of detail, consistent with the level of detail of the proposed action or project. Each document will support different decisions by different lead agencies, and is tailored to match the particular decisions being made. The interrelationships of the three documents and other related projects are explained fully in section 1.5 of the PEIR.

11. The Quechan Tribe is entitled to use its full entitlement for reasonable beneficial use within the boundaries of its reservation. Sections 2.1(2), 2.2(2), and 2.3 (2) of the QSA (or sections B.3.f., B.4.d., and B.5.c. of the IA) were not drafted to address the rights of the Quechan Tribe or other Tribes, nor do they impact such rights. Those provisions prorate the individual forbearance in consumptive use by IID, CVWD, and MWD when California water districts are required to reduce use to prevent California's consumptive

use from exceeding the amount of Colorado River water available to California that year. For scheduling purposes only, the California water districts will assume that water use by the higher priority California water users, such as the Quechan Tribe, will be the same as their historic average use. This scheduling presumption is made only so the districts can schedule their water use with more certainty; it does not restrict the rights of the Quechan or other Tribes. If the Tribes' use exceeds the amount of water the water districts projected, then IID, CVWD, and MWD will need to forbear some of their consumptive use to keep California's consumptive use from exceeding the amount that is available to California. The QSA is the agreement among IID, CVWD, and MWD as to how a required reduction will be prorated among them.

12. Neither the QSA, IA, nor the IID/SCDWA Transfer Agreement would interfere with the federal reserved right PPRs or with additional PPR rights that may be granted to the Tribes in future supplemental decrees. Also see response to comment no. 1 above.

Sch # 2000061034 2

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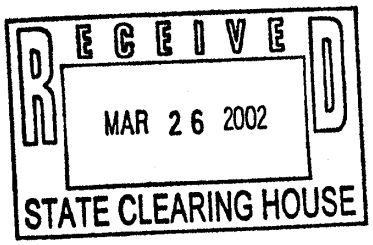
March 26, 2002



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Re: Quantification Settlement Agreement Draft Program Environmental Impact Report

Dear Mr. Morgan:

Please accept the following comments on the Draft Program Environmental Impact Report ("DEIR") for the Implementation of the Colorado River Water Quantification Settlement Agreement. These comments are submitted on behalf of the Torres Martinez Band of Desert Cahuilla Indians ("Tribe"). The Tribe owns and enjoys the full use and benefit of the Torres Martinez Reservation ("Reservation"), which is located on the northwest side of the Salton Sea. The Tribe also possesses a considerable amount of land that has been inundated by inflows of Colorado River water into the Salton Sea. The implementation of the Quantification Settlement Agreement will have direct impacts on the land and water assets of the Tribe, several of which are not properly considered by the DEIR.

Salton Sea

Of greatest concern to the Tribe are impacts to the Salton Sea from reduced inflows caused by the lining of the Coachella Canal and the reduction of inflows from the Imperial Irrigation District ("IID"). The DEIR fails to provide an adequate analysis of the potential reduction in the level of the Salton Sea, leaving the Tribe in a state of uncertainty about the future of one of its most precious resources. 1

The DEIR clearly acknowledges that the decline in the level of the Salton Sea will be accelerated by the water management changes anticipated under the Quantification Settlement Agreement. It does not, however, adequately acknowledge the dramatic impacts the lowering of the Salton Sea will have specifically on the Tribe and other local communities.

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The DEIR admits the Salton Sea will shrink faster under all potential scenarios, from a minimal conservation effort within IID to a reduction of 300,000 acre-feet a year of inflows, potentially reducing the Sea's elevation to –250 feet and increasing salinity levels to 140,000 mg/l within 75 years. This acceleration of the lowering of the Salton Sea will increase salinity levels and catalyze the decline in sports fisheries, non-sport fisheries, and bird populations, destroying future recreational and economic development opportunities. 1

The DEIR recognizes that the salinity of the Salton Sea will increase due to the decrease in IID's discharge to the Sea. The DEIR states in table 3.1-21 that the increase in salinity levels will not be a significant impact to the hydrology of the Salton Sea because there are no water quality criteria for salinity in the Sea. Regardless of whether there are water quality criteria, the increase in salinity and the ensuing decline in recreational opportunities and the accelerated die off of fish and bird populations will be a significant impact and should be addressed in detail.

The DEIR concludes that increased levels of selenium and total dissolved solids will unavoidably impact the Salton Sea. No mitigation measures for these impacts are contemplated by the DEIR. In addition, the DEIR recognizes that significant impacts will occur in the lower groundwater aquifer due to increased levels of total dissolved solids. The DEIR states that no feasible mitigation measures have been identified for this hydrologic impact. Mitigation measures for these significant impacts should be developed prior to implementation of the Quantification Settlement Agreement. 2

As the level of the Salton Sea lowers, the agricultural drains that enter the Sea on Tribal lands will have a longer path to travel to reach the Sea. The DEIR contemplates that this will create increased riparian and wetland habitat. The DEIR should also consider the likelihood that the waters traveling towards the Sea will have higher concentrations of contaminated sediments and will be subject to increased evaporation and evapotranspiration before reaching the Sea, further impacting the level of the Sea. 3

The DEIR fails to adequately consider the impacts to the over 400 bird species, 27 mammal species, and five reptile and amphibian species that rely on the Salton Sea from the accelerated lowering of the Salton Sea and accompanied increase in salinity and pollutant levels. These fish and wildlife populations include 58 species classified by the U.S. federal government as sensitive. Most significantly 25 to 40% of the Yuma clapper rail U.S. population, half of the California population of snowy plover, 80 to 90% of the entire population of American white pelicans, and the second largest population of wintering white-faced ibis utilize the Salton Sea. 4

The Tribe commends the lead agencies for including discussion of the mitigation strategies for reductions in fish populations expected from the acceleration of the salinity levels in the Salton Sea. The Tribe encourages the IID to continue consultation with the Fish and Wildlife Service and the California Department of Fish and Game. The Tribe 5

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also encourages the IID to include the Tribe and the Salton Sea Authority in its consultations on this issue. 5

The conclusion that increased odors due to premature death of fish and wildlife in conjunction with increased algae blooms on the Salton Sea will not be a significant impact because there are not a substantial number of people around the Sea is not shared by the Tribe. The northwest portion of the Salton Sea is the permanent homeland of the Tribe and impacts from increased odors will cause significant disturbance to the Tribe and has the potential to affect future Tribal economic developments. 6

The Tribe requests that its jurisdiction and ability to implement land use planning on the northwest portion of the Salton Sea be acknowledged in section 3.4.1.7. 7

Groundwater

Groundwater is also of vital concern to the Tribe. It has historically been the sole source of meaningful water supply and is perhaps the most valuable Tribal resource. Unfortunately, the DEIR fails to provide adequate data, analysis, or even an honest discussion about the current incapacity to make meaningful forecasts about future groundwater quality and levels underlying the Reservation that will be directly affected by the proposed actions. 8

More specifically, there is a lack of analysis in the DEIR as to the effects on groundwater quality and a lack of consistency in the DEIR as to whether groundwater levels will increase or decrease with the change in water management contemplated by the Quantification Settlement Agreement. While the DEIR discusses changes in quantities of imported water, impacts from the lining of the Coachella Canal, and increased groundwater recharge efforts in the Coachella Valley, it fails to adequately analyze two substantial and potentially critical negative effects.

First, the effects of recharging the high-quality aquifer with much lower quality Colorado River water must be thoroughly assessed. Although increased groundwater recharge efforts may have a positive impact on the quantities of water contained in the Coachella Valley aquifers, such recharge activities may also significantly impair the quality of the receiving groundwater and with it, the Tribe's water supplies. It cannot be assumed that aquifer recharge by itself is a positive environmental or resource management action.

For example, Colorado River water has been analyzed and identified by the U.S. EPA as containing dangerous levels of perchlorate.[1] The Coachella Valley Water District has proposed building a groundwater recharge facility within one mile and up-gradient from the Tribe's main domestic drinking water well. That facility would recharge the Coachella aquifer with Colorado River water, yet the DEIR contains no analysis or recommended mitigations related to these likely environmental impacts.

[1] Perchlorate levels of the Colorado River at Lake Havasu have been measured at ranges between 8 and 10 ppb. On January 18, 2002 the California Department of Health Services set drinking water standards for perchlorate at 4 ppb.

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A second major concern revolves around the structural effects to the Coachella Valley aquifers resulting from the lining of the Coachella Canal and the conservation of agricultural water in the IID. It is likely that those efforts will result in a decrease of water that otherwise would recharge groundwater resources. The DEIR does not reconcile the countervailing results of these actions. 9

It is misleading to point to structural benefits for the Coachella aquifer when there is no presently legally enforceable commitment from the parties involved in the water transfer to provide more water to the Coachella Valley Water District, or for the Coachella Valley Water District to commit that water to a recharge project. Under the terms of that proposed agreement, the Coachella Valley Water District must develop a Water Management Plan and complete the attendant environmental review and permitting processes. To date, the Tribe is not aware of nor has it seen a copy of even a Draft Environmental Impact Statement/Report related to the Water Management Plan. 10

Thus, it is puzzling to the Tribe how the DEIR can claim to adequately analyze the environmental effects and cumulative impacts of the Quantification Settlement Agreement and attendant policies when those activities are inextricable from the Coachella Valley Water Management Plan, the Salton Sea Restoration and other projects and their environmental reviews when those analyses have not been completed.

Also lacking in the DEIR is discussion of the anticipated changes to the confluence of Salton Sea water with fresh waters underlying the Reservation. Increases in salinity levels will have effects underground as well as above. Destruction of the groundwater resources of the Tribe through the intrusion of highly saline water could effectively render the Reservation valueless unless the Tribe is then provided with substantial quantities of fresh water. Of course, that scenario is contrary to the overall intent of the Implementation Agreement to reduce the reliance of southern California on Colorado River water. 11

Irrigation and Drainage Systems

Section 2.5.2 of the DEIR discusses the potential for expansion of the Coachella Valley Water District ("CVWD") distribution and drainage system. Therein the DEIR states that the exact location of these potential distribution and drainage facilities is not known at this stage of plan development. The Tribe reminds the CVWD that all Reservation lands listed within the schedule for CVWD's Irrigation District No. 1 have yet to be served by irrigation and drainage works and encourages CVWD to complete its responsibilities on the listed Reservation lands. 12

Access to Tribal Lands

The statement in section 3.8.3 that IID shall conduct paleontological and archaeological surveys in newly exposed areas of the Salton Sea shoreline should acknowledge the requirement that express tribal permission must be obtained before any entry onto Tribal lands. 13

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Thank you for considering these comments. Please do not hesitate to contact me to discuss these issues in greater detail.

Sincerely,

Les W. Ramirez
Special Counsel for Water Resources & Environmental Affairs

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Received Mar-26-2002 16:45 From- To-GOV.OPR Page 006

Les Ramirez, on behalf of the Torres Martinez Band of Desert Cahuilla Indians, March 26, 2002

1. Lining the Coachella Canal would not affect inflows to the Salton Sea. There is no subsurface connection between the canal and the Salton Sea, and surface flows to the Salton Sea, via Salt Creek, would be maintained. Impacts of the Proposed Project on the Salton Sea and, where appropriate, surrounding communities (which include the Torres Martinez Indian Reservation) are addressed under each resource in Chapter 3 of the PEIR, and include recreational impacts, biological impacts, economic impacts, aesthetic impacts, and impacts to cultural resources. As appropriate, additional details are provided in the IID Water Conservation and Transfer Project EIR/EIS.

2. Please refer to the response to Environmental Protection Agency (EPA) comment no. 18.

3. With implementation of proposed conservation measures in the IID service area, both the volume and concentration of silt in the Alamo and New rivers and Salton Sea will decrease. Because pesticides, herbicides, and nutrients tend to concentrate in sediments, this decrease in silt is expected to lead to a decrease in pesticide, herbicide, and nutrient concentration and load in the Alamo and New rivers and the Salton Sea. Additionally, the gradient at the north end of the Sea (near the Torres Martinez Indian Reservation) is considerably steeper than at the south end, so the impact would be less pronounced for the worst-case analysis in the south. With implementation of the Coachella Valley Water Management Plan, drainage from this service area could increase. However, the increase in drainage from this service area, and its associated silt, pesticide, herbicide, and nutrient concentrations would be considerably less than the decrease in silt arriving at the Sea from the IID service area. With the implementation of all QSA components, it is anticipated that the Salton Sea would receive less contaminated sediments than it does at present.

4. Section 3.2 of the PEIR fully considers the potential impacts of the Proposed Project on the wildlife species described in the comment. These include impacts to general biological resources, as well as impacts to sensitive species. It must be noted that the PEIR addresses the impacts of the Proposed Project, which are associated with the acceleration of the increasing salinity of the Sea. Measures have been identified to reduce the biological impacts of the Proposed Project to less than significant levels.

   The impacts to the Yuma clapper rail associated with the implementation of the Proposed Project would be less than significant since the habitat for the species is located in the managed marshes of the wildlife refuges and would not be affected by changes in the Salton Sea.

   The impacts to the snowy plover and the other species were also addressed in the PEIR, section 3.2.2.3.

5. The co-lead agencies agree with this comment and will continue to discuss strategies for mitigating impacts to the Salton Sea with the Torres Martinez Indian Tribe.

6. Additional detail regarding potential impacts associated with odorous emissions at the Salton Sea has been added to section 3.7.2.3 of the Final PEIR. However, the finding of significance has not changed and odor impacts are still considered to be less than significant.

7. This information has been added to section 3.4.1.7.

8. As noted in the PEIR (section 3.1.2.3), groundwater levels in the Coachella Valley generally would increase as a result of the Proposed Project. Water levels in the Oasis area, which is near the Torres Martinez Indian Reservation and representative of conditions there, are expected to be about 75 feet higher in 2035 than they were in 1999 given implementation of the Proposed Project (CVWD 2000).

   The PEIR is not inconsistent regarding whether groundwater levels would increase or decrease upon implementation of the QSA. Rather, the document indicates that the QSA components would have varying effects on groundwater levels depending on the location involved. For example, as noted in section 3.1.2.3, groundwater levels would decline in the East Mesa area as a result of All American Canal Lining Project, and the QSA would result in an overall decrease in the IID service area. Lining the Coachella Canal would result in a reduction in groundwater near the newly lined section of the canal; however, the QSA would result in an overall beneficial impact to groundwater levels in the CVWD service area.

   The PEIR recognizes that while the impact of recharge on groundwater levels in the CVWD service area would be beneficial, the impact on groundwater quality in certain parts of the Coachella Valley groundwater basin is anticipated to be significant because of the higher concentrations of TDS and other chemical constituents in Colorado River water than some local groundwater. Wells located up to 2 to 3 miles downgradient of the proposed CVWD recharge sites are most likely to experience elevated TDS as a result of the Proposed Project. Groundwater quality near the recharge basins would gradually change over time and may approach the quality of Colorado River water in the affected areas.

   Please refer to EPA response no. 17 regarding selenium TMDLs. As noted in that response, it is the co-lead agencies' view that it is only practical to carry out mitigation for selenium within the context of a more extensive mitigation effort.

   Since the TDS of the local groundwater in portions of the basin is higher than Colorado River water, the magnitude of the water quality change would vary with location. The anticipated TDS increase would not impair any beneficial uses of the water, as defined by established state and federal primary (or health-based) drinking water standards. The higher salinity could exceed recommended secondary water quality standards that deal with aesthetics, such as taste and hardness. Mitigation to reduce the higher TDS concentrations of Colorado River water to the equivalent of groundwater was evaluated and found to be financially and environmentally infeasible, as discussed below.

   CVWD evaluated the feasibility of reducing the higher TDS of Colorado River water to the equivalent quality of groundwater. Two alternatives were considered: (1) construction of an extension of the State Water Project (SWP) into the Coachella Valley and (2) construction of desalination facilities for Colorado River water. The capital cost of extending the SWP to the valley ranged from $205 million to $390 million depending on the size of the facility. Total costs (including capital and operations) would range from $322 to $406 per acre-foot, in addition to the cost of acquiring SWP water (about $200 per acre-foot). The capital cost of desalting Colorado River water ranged from $284 million to $1.19 billion depending on the size of the facilities and the method of brine

disposal. The highest cost identified involved treating all Colorado River water entering the Coachella Valley. The cost of the desalted water ranged from $184 to $330 per acre-foot, in addition to the costs of acquiring the water supplies and delivering them to customers in the valley. On the basis of economics alone, these options were found to be economically infeasible (CVWD unpublished data).

In addition to the economic considerations, each of these options has significant environmental impacts of its own. Environmental impacts include the disturbance of 300 to 400 acres of desert land for pipeline construction, loss of 500 to 3,500 acres of land for brine evaporation ponds, loss of habitat and biological resources, loss of cultural resources along facility alignments, air quality impacts from construction and generation of additional energy for the pump and treatment facilities, additional energy for pumping SWP water or running the desalters, and impacts related to salt disposal (CVWD unpublished data). Considering both costs and environmental impacts, these mitigation measures are considered infeasible.

Perchlorate enters the Colorado River water system along Las Vegas Wash, which drains into Lake Mead. Perchlorate concentrations decrease as Colorado River water flows downriver, because of other incoming flows. Water from MWD's Colorado River Aqueduct had perchlorate concentrations ranging from 4 to 8 ppb between 1997 and 2001. IID reports perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. The CVWD water samples found no perchlorate in water from the Coachella Canal (the detection limit is 4 ppb). In 2001, CVWD tested all its active wells in May and in October/November. Only one well near Avenue 54 and Jefferson had detectable perchlorate (5.0 and 5.9 ppb from two different laboratories).

At the same time, the Nevada company responsible for the perchlorate entering Las Vegas Wash constructed and is operating a perchlorate treatment system. The treatment processes are anticipated to decrease perchlorate concentrations in Las Vegas Wash, and thus in the Colorado River water, significantly over the next approximately 6 years. The date cannot be predicted exactly as the concentration is also a function of flow in the river, which is dependent on rainfall, and there is perchlorate already in the Las Vegas Wash sediments that will be flushed out over time at a rate that also depends on rain events. By the time the Dike 4 area recharge basin goes on line, in roughly 2005, the perchlorate level in the Colorado River water from the Coachella Canal will be lower than at present.

In addition, CVWD groundwater modeling estimates that the recharge at Dike 4 will take approximately 10 to 20 years to reach the Torres Martinez wells.

A mitigation measure has been added to section 3.1.3 that would reduce any potential impacts to the Torres Martinez drinking water supply from the significant groundwater impact.

9. The impacts of lining the Coachella Canal have been addressed and mitigated in a separate EIS/EIR for that project. The lining of the canal would have no effect on the Coachella Valley aquifers as the area to be lined does not overlie these aquifers. Conservation of agricultural water in the IID service area would have no impact on Coachella Valley aquifers, as IID irrigation drainage does not have any connection to Coachella Valley aquifers.

10. There is no legally enforceable commitment for any of the agencies until the QSA itself is signed, which cannot occur until after certification of the QSA PEIR. The PEIR evaluates the effects of a group of proposed related actions by several agencies. CVWD would receive no water until this and other agreements, approvals, and permits were in place (such as the Secretary of the Interior execution of the Implementation Agreement, U.S Bureau of Reclamation approval to convey non-Federal water in the Coachella Canal, air quality permits, California and federal Endangered Species Act compliance, National Pollutant Elimination System Discharge permit, Streambed Alteration Agreement, water transfer and exchange agreements with MWD, and Caltrans encroachment permits).

    Analysis of cumulative impacts under CEQA does not require that the environmental review of the related project be in a completed document. The best available information on these projects, including the Coachella Valley Water Management Plan, has been made available to the preparers of the PEIR. The Water Management Plan was published in November 2000 and a copy made available to the Tribe.

11. CVWD groundwater modeling predicts that the intrusion of Salton Sea water into adjacent Coachella Valley aquifers will occur unless the Coachella Valley basin is recharged and groundwater overdraft addressed. The Coachella Valley aquifer adjacent to the Sea is currently as low as 227 feet below mean sea level. If groundwater overdraft continues to lower the aquifer (below the elevation of the Salton Sea), seawater intrusion will continue. Although the overall intent of the QSA is to reduce California's reliance on Colorado River water, the QSA provides additional water supplies to the Coachella Valley. CVWD is proposing groundwater recharge and other planned components under the Coachella Valley Water Management Plan to reduce overdraft in the Coachella Valley. The risk of Salton Sea intrusion would be substantially reduced if not eliminated with the QSA and the Water Management Plan.

12. This is not a comment on the Draft PEIR; thus, no response is required.

13. This change has been made to the mitigation measure.

ORGANIZATIONS

Comments and Responses

CONTENTS

March 20, 2002

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

To whom it concerns:

Defenders of Wildlife, National Audubon - California, and the Planning and Conservation League respectfully request that the Coachella Valley Water District, Imperial Irrigation District, Metropolitan Water District, and San Diego County Water Authority extend the deadline for comment on the QSA PEIR to April 26, 2002. By separate letter, Defenders has requested that the Bureau of Reclamation extend the deadline for comment on its DEIS for the Implementation Agreement (IA), Inadvertent Overrun and Payback Policy (IOP), and Related Federal Actions to April 26, 2002. This is the same day as the deadline for comments on the DEIS/EIR for the IID Water Conservation and Transfer Project. 1

Setting a common deadline for these three environmental documents will greatly simplify the public's task in commenting, result in improved public input, and thereby simplify the agencies' responsibility to respond to comments. The QSA PEIR acknowledges the extent to which these actions are connected. For example, "[e]xecution of the IA would commit the Secretary to making Colorado River water deliveries in accordance with the terms and conditions of the IA *to enable the implementation of the QSA*." QSA PEIR, at ES-3 (emphasis added). The QSA was designed to facilitated implementation of the IID/SDCWA Water Conservation and Transfer Agreement. QSA PEIR, at ES-2. The QSA's terms require completion of both of these projects, and the QSA cannot be implemented without them as currently written. *See* QSA Art. 6.1, 6.2(2)(a). It is only common sense that the public can most effectively participate in the environmental reviews for these related projects if the comment periods for them are coordinated.

Please inform us of your decision on our request at your earliest convenience by calling me at 916-313-5810 or e-mailing me at bfletcher@defenders.org.

Thank you,

Brendan Fletcher, California Program Associate
Defenders of Wildlife

for

J. William Yeates, Attorney for
National Audubon - California

Karen Douglas, Natural Resources Director
Planning and Conservation League

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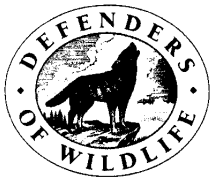
Defenders of Wildlife, March 20, 2002

1. Please refer to Antonio Rossman (February 8, 2002) response no. 1.



March 26, 2002

BY FACSIMILE AND U.S. MAIL

Robert D. Thompson
QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Re: Draft Program Environmental Impact Report for Implementation of the Colorado River Quantification Settlement Agreement (QSA DPEIR)

Dear Mr. Thompson:

This letter provides comments from Defenders of Wildlife, National Audubon - California, Planning and Conservation League, National Wildlife Federation, and the Pacific Institute for Studies in Development, Environment, and Security on the Draft Program Environmental Impact Report for the Quantification Settlement Agreement (QSA DPEIR) prepared for the Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), the Metropolitan Water District of Southern California (MWD), and the San Diego County Water Authority (SDCWA) (collectively, "the water agencies"). This letter supplements a separate letter prepared by National Audubon - California and signed by Defenders, Planning and Conservation League, and National Wildlife Federation.

We commend the water agencies for undertaking the difficult task of setting aside their long-standing disputes and settling upon an agreement for water allocation among themselves so that California can one day live within its basic allocation of 4.4 million acre-feet of Colorado River water. We recognize the importance to the water agencies of living within their means, and we support their goal of doing so.

But it is critical that in the effort to implement meaningful plans to reduce California's Colorado River water use, the water agencies take the time to thoroughly review the environmental impacts, weigh the alternatives, and involve the public in their decisionmaking. However laudable the purposes of the QSA, it would be unwise to rush to approve it without seriously considering whether the agreement or its component parts can be altered to avoid most environmental impacts, how mitigation can be implemented where environmental impacts cannot be avoided, and even whether the environmental costs of the agreement as it is currently structured outweigh the benefits for California.

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As we will explain throughout this letter, we are concerned that the DPEIR does not adequately provide the necessary thorough review, especially with respect to impacts on the Salton Sea. By separate letter, Defenders of Wildife and other environmental organizations have registered their concern that the Bureau of Reclamation's Implementation Agreement and other federal actions related to the QSA will result in significant, unacceptable harm to the Lower Colorado River and its delta. We incorporate those comments where relevant, but in this letter, we will focus on the impacts the QSA will have on the environment at the Salton Sea, in the Imperial and Coachella Valleys, and in San Diego County.

The Salton Sea is a natural and recreational resource of statewide, national, even international importance. The Sea supports millions of birds during migration, and with the loss of 91 percent of California's wetlands, the Sea has become a critical stopover on the Pacific Flyway. It supports 45 percent of the entire United States population of the threatened Yuma clapper rail, 80 percent of the American white pelican, and 90 percent of the *North American* population of the eared grebe. It sustains a productive fishery that attracts 400,000 anglers every year. 1

Yet the DPEIR's analysis of the effects the QSA and its component projects will have on the Sea is cursory at best. The DPEIR gives little indication that QSA-related impacts could hasten the point at which the Sea will become too saline to support fish by a decade or more, with devastating impacts on the Sea's piscivorous bird populations; could so substantially reduce the surface area of the Sea that existing recreational facilities could become far less attractive at best and useless at worst; could create one of the worst, perhaps even the worst, sources of PM10 air pollution in the United States. The DPEIR gives the impression that there will be mitigation for significant impacts, when in fact, no mitigation at all has been proposed for some of the most severe impacts, some proposed mitigation measures are wholly unproven and likely inadequate, and there has been no commitment from the water agencies to fund even those unproven and inadequate measures that have been proposed. In short, the DPEIR gives no indication that, if QSA-related projects are implemented without proper avoidance and mitigation measures, California could be facing a genuine environmental catastrophe at the Salton Sea.

A Programmatic Environmental Impact Report for such a critical suite of projects needs to do more. It needs to highlight rather than minimize the impacts to such a vital resource as the Salton Sea; it needs to propose genuine mitigation plans that the agencies have the resources and commitment to carry out; it needs to provide real alternatives to the proposed action so there is a fall-back plan in the event the project, as proposed, is unworkable. In the remainder of this letter, we explain the ways in which the DPEIR fails to meet these needs. For these reasons and all that follow, we request that the water agencies revise the DPEIR and recirculate it as a second draft, so all of the consequences of the QSA and its components are clearly laid out for public consideration. 2

1. The DPEIR unlawfully designates all four agencies as the lead agency, reducing accountability for the project and confusing responsibility for mitigation of its impacts. 3

Section 15050 of the CEQA Guidelines provides that "[w]here a project is to be carried out or approved by more than one public agency, one public agency shall be responsible for preparing

an EIR or negative declaration for the project." However, the DPEIR has four co-lead agencies: CVWD, IID, MWD, and SDCWA. 3

In *Planning and Conservation League v. Department of Water Resources,* 83 Cal.App.4th 892 (2000), a court of appeal found such shared responsibility among water agencies to violate CEQA. The court noted that Public Resources Code section 21067 plainly requires the public agency with principal responsibility to assume the role of lead agency, and observed that dividing lead agency responsibility among parties to an agreement creates serious problems of accountability. This problem is particularly acute with respect to the QSA, because the terms of the QSA actually limit the parties' commitment to fund mitigation measures for QSA-related impacts. As a result, as explained in more detail in Section 4 below, the QSA DPEIR describes mitigation measures for biological impacts at the Salton Sea which the QSA parties (and SDCWA, which is not a party to the QSA but stands to benefit from it and is a co-lead agency) have expressly declined to fund. Because there is no lead agency, however, there is no single party the public may hold accountable for DPEIR's failure to describe mitigation measures that actually stand some chance of being implemented.

2. The DPEIR does not adequately describe the proposed project. 4

"An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR." (*County of Inyo v. City of Los Angeles* (3d Dist. 1977) 71 Cal.App.3d 185, 193.) The project description provided in the DPEIR falls short of this standard in several respects.

The draft text of the QSA is nowhere to be found in the DPEIR. Although the DPEIR provides a summary of the QSA's terms in Appendix A, which is useful and should be retained, a summary is no substitute for the actual text of the agreement.

In addition, the summary omits several critical details of the QSA, and other important aspects of its terms are missing from the project description within the body of the DPEIR. First, the summary does not fully capture the extent to which the QSA's execution is contingent upon execution or implementation of its component parts. The QSA requires that the Bureau of Reclamation adopt the Implementation Agreement and Inadvertant Overrun Policy in substantially the same form it was proposed; it requires that the IID – San Diego water transfer complete environmental compliance and survive judicial review before the end of this year; it requires that the State Water Resources Control Board make specific findings regarding its approval of the transfer. These details are important because, as described below in Section 5, the DPEIR provides no alternative should any of these conditions not come to pass.

In addition, there is no discussion within the DPEIR of the limits on the parties' willingness to fund mitigation that are written into the QSA, or the provisions of the IID – San Diego water transfer agreement that preclude use of replacement water for mitigation. As these provisions render impracticable the two strategies the DPEIR proposes for mitigation of biological impacts at the Salton Sea, as discussed further in Section 4 below, their omission is critical. 5

3. The DPEIR inadequately or inaccurately describes impacts across the range of resource areas. 6

The CEQA Guidelines provide that "significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence." (CEQA Guidelines § 15143.) However, the DPEIR fails to recognize the significance of some serious impacts, downplays the severity of others, and provides only scanty information for those impacts that are not ignored or minimized.

a. Water Resources

The DPEIR recognizes that the proposed project would result in a decrease of inflows to the Salton Sea, but it does not even attempt to quantify this decrease and fails to recognize its significance. (DPEIR, p. 3.1-37.) However, if the IID – San Diego transfer is fully implemented through on-farm conservation methods, as much as 300,000 acre-feet of water per year will be transferred out of the Imperial Valley, reducing flows to the Salton Sea by approximately the same amount. (CITE) This reduction in inflow could be permanent. As current inflows are approximately 1.3 million acre-feet of water, this amounts to a nearly 25 percent reduction in flows to California's largest inland water body; if inflows are reduced for other reasons, as expected, the reduction is even greater on a percentage basis. But somehow, the DPEIR finds this impact insignificant. (DPEIR, p. 3.1-38.) 7

The DPEIR's findings regarding water quality at the Salton Sea are even more puzzling. Although the DPEIR acknowledges that QSA-related actions will increase the salinity of the Salton Sea, it finds this impact insignificant because there are no water quality criteria for salinity at the Sea. While there are provisions within CEQA intended to assist lead agencies in making significance determinations when a project has impacts that fall within existing regulatory guidelines, see CEQA Guidelines section 15064, we are unaware of any provision of CEQA that provides that a project's impact on a water body is automatically insignificant if there are no water quality criteria for the pollutant of concern for that water body. 8

The DPEIR also recognizes that the project "would cause an increase in concentration, although not total load, of various soluble constituents in drains in the Imperial Valley and the New and Alamo rivers, which discharge into the Salton Sea," DPEIR, p. 3.1-28, but this bland statement hardly conveys the magnitude of the impact. There are over 1200 miles of drains in Imperial County, and surely the consequences of increasing concentrations of selenium in those open drains merits more than a brief acknowledgement. 9

The DPEIR simply ignores the impacts this concentration of selenium in drain water will have on the Salton Sea. The drain water will make its way to the Sea carrying the same selenium load as previously, with less water to decrease concentrations. The degraded drain water will flow into the Sea, which will be smaller as a result of the proposed project. Unless there is some mechanism for removing selenium from the drain water, and the DPEIR does not describe any such mechanism, water quality in the Sea will be degraded.

b. Biological Resources

The DPEIR acknowledges that the project "has the potential to adversely affect biological resources" at the Salton Sea as a result of increased salinity from reduced inflows, DPEIR, p. 3.2-21, but it consistently understates the impacts. 10

Regarding the Sea's abundant fish populations, the DPEIR finds that "[a]n acceleration of the increase in salinity of the Salton Sea will likely change the species composition of the invertebrate and fish populations and cause a decline in their general population size." (DPEIR, p. 3.2-31.) That is putting it mildly. As the Salton Sea becomes more saline, it will become less hospitable to fish and eventually reach a point where it is too salty for fish to survive. The IID water transfer EIR/EIS projects that the Sea will be too salty for fish in approximately 20 years if the transfer and other QSA-related projects are not implemented, and in approximately 10 years if they are. (IID EIR/EIS, Figure 3.2-17.) In other words, the project will reduce the lifespan of the Sea as fish habitat by half.

However, even this is a conservative estimate of impact. A draft report of the Salton Sea Science Office projects that the Sea's salinity would not exceed the fish-supporting threshold for more than fifty years, assuming current inflows. If these numbers are used, the project could reduce the lifespan of the Sea as fish habitat by 80 percent.

Nevertheless, "[t]his impact to fisheries (more rapid loss) is considered less-than-significant since these species are not native to the Salton Sea." (QSA DPEIR, p. 3.2-31.) This is absurd. Although nonnative fish have different ecological value than native fish, and often compete with or prey on natives to their detriment, in the case of the Salton Sea, they provide a valuable food resource for native and even imperiled bird species and support a large recreational fishery. There are millions of fish in the Sea today. Hastening the day when there will be none, except perhaps at the deltas where inflows enter the Sea, is surely a significant impact.

The DPEIR finds that as a result of declines in fish populations, populations of fish-eating birds such as skimmers, cormorants, American white pelicans, and threatened brown pelicans may decline sooner than without the project. (DPEIR, p. 3.2-31.) Here the dynamic is as with fish. These bird species will not simply decline, they will largely disappear as their foodsource expires. The DPEIR does not explain where these birds will go or whether they have alternative habitat. 11

The DPEIR finds that the project "would not create significant impacts to populations of the Yuma clapper rail and the California black rail since their primary habitat is within the managed marshes not directly affected by the decline of in the Salton Sea." (DPEIR, p. 3.2-31.) This is hardly as self-evident as this statement would imply. On average 25 to 40 percent of the entire U.S. population of the endangered Yuma clapper rail reside in habitat directly adjacent to the Salton Sea. The managed wetlands at the south end of the Sea could be isolated from open-water habitat by several miles as the Sea recedes. If this will not affect the remnant population of these endangered birds, it should be explained more convincingly than by unsupported 12

assertions. In addition, as the DPEIR acknowledges, the project will increase selenium concentrations in open drains, which could have an adverse impact on emergent vegetation that provides habitat for the Yuma clapper-rail, but the DPEIR does not quantify the increase in selenium concentration or analyze the degree to which it could contribute to clapper rail reproductive failure or birth deformities. 12

c. Recreational Resources/Aesthetics

The DPEIR finds that impacts on sport fishing at the Salton Sea will be significant, but the analysis obscures those impacts, much as with fisheries impacts. (DPEIR, p. 3.6-8.) The IID water transfer EIR/EIS reports that as many as 400,000 people visit the Sea annually to fish. If fish populations fail a decade earlier than would occur without the project, as projected, IID water transfer EIR/EIS, p. 3.2-31, this would result in the loss of 4 million angler days at the Salton Sea. 13

The DPEIR acknowledges that the project may have significant impacts on developed recreational facilities, but it softpedals those impacts as well. It mentions that when water levels at the Sea drop below 230 feet below sea level, facilities may need to be relocated, but it does not make clear that the project could cause the shoreline to drop below 250 feet below sea level. Since the DPEIR does not provide any quantitative information at all as to how far from the shoreline facilities will be stranded, it is impossible to know how dramatic the relocations will need to be. However, judging from the map provided in the IID transfer EIS/EIR, the boat launch at the southern end of the Sea will be miles from the shoreline, and facilities on the east and west shores, including campgrounds and boat lauches, could be hundreds of yards from shoreline. (IID water transfer EIS/EIR, Figure 3.6-4.) 14

Regarding aesthetics, the DPEIR finds that the decline in the Sea's surface area caused by the project would affect the Salton Sea's scenic views, with the exposed area looking "like the existing beach; however, views of the water, considered a scenic vista, would be possible only from a much greater distance from the developed public viewing facilities at these locations. The change would be very gradual and the visual impact would not be perceptible except over a long period, but ultimately, the impact would be significant." (QSA DPEIR, p. 3.10-5.) This makes it sound like things will stay more or less the same, but with wider beaches and longer views. In fact, as the simulated views in the IID water transfer DEIR/DEIS show, from current vistas the Sea will be a thin blue line on a distant horizon, with exposed, salt-encrusted playa surfaces standing between the viewer and the shoreline and presenting an extraordinary deterrent to access. (IID DEIR/DEIS, Figures 3.11-5a through 3.11-5l.) 15

d. Air Quality

The DPEIR describes air quality impacts as follows: 16

> As a result [of the proposed project], the surface water elevation of the Salton Sea would decline at a faster rate and to a greater extent under the Proposed Project

> than under the Future Baseline. The soils along the Salton Sea shoreline are predominantly silty clay in texture and consequently have a moderate potential for wind-blown dust. . . . the level of dust emissions from the Proposed Project would be contingent upon the amount of human disturbances that would occur on these exposed soils. Although the new shoreline created by the Proposed Project would only marginally increase the total land area within the ROI that presently generates fugitive dust emissions, fugitive dust emissions from these areas would be significant due to the PM10 nonattainment status of the region. (QSA DPEIR, p. 3.7-9.)

16

This grossly understates the project's potential impact. The statement that the Sea's elevation "would decline at a faster rate and to a greater extent" than without the project implies that much of the impact from seabed exposure comes from factors other than QSA-related projects, whereas IID's DEIR/DEIS shows that the water transfer alone could cause as much as 50,000 acres (78 square miles) of seabed sediments to be exposed. (IID DEIR/DEIS, p. 3.7-34.) According to the DPEIR, this exposure "would only marginally increase the total land area within the ROI that presently generates fugitive dust emissions," which is true in a literal sense, but the margin of increase – 78 square miles of exposed seabed – is greater than the size of the largest single source of air pollution in the United States, Owens Lake, at 60 square miles of exposed lakebed! The statement that the level of dust emissions would be contingent on the amount of human disturbances is bare assertion – there is absolutely no explanation for why wind would not generate substantial, even extraordinary, PM10 emissions from a seabed of exposed salts and sediments that is larger than the dry lakebed that is the largest source of PM10 in the nation.

e. Growth-inducing impacts

17

The DPEIR states that the proposed project will not have a growth-inducing impact on San Diego because "[p]rojected future supply will match the year 2020 demand" and "[t]he Proposed project will not change the assumptions upon which SANDAG has based its population projections for the region." However, the transfer will supply SDCWA with between 130 and 200 KAF of Colorado River water, a source of water it would not have otherwise, which is as much as nearly 25 percent of the region's projected need for 2020. This is a significant enhancement in water supply reliability.

And that means the project would have growth-inducing impacts. The adoption of SB 221 in October 2001 changed California's statutory climate, clarifying the transfer's growth-inducing impacts at the points of delivery. SB 221 prohibits approval of new developments of at least 500 units, unless the applicable public water system verifies that a sufficient water supply is available, or in addition, a specified finding is made by the local agency that sufficient water supplies (including transfer water) are or will be available prior to completion of the project. (See Gov't Code § 66473.7(a)(2)(D).) A 1999 IID newsletter specifically notes this objective: "The proposed Project is designed to . . . 3) provide SDCWA with a reliable, long-term and cost effective water supply to provide drought protection and to accommodate current and projected

demands for municipal and agricultural water." (IID and SDCWA Water Conservation and Transfer Project, "Project Newsletter," p.1, dated November 1999.) 17

As the passage of SB 221 reinforces, having plans to obtain water, which is what the DPEIR's finding of no significant impact rests upon, is not the same as obtaining a reliable source of water. San Diego's acquisition of a reliable supply via IID will certainly improve developers' ability to meet the standard of SB 221, and will fuel growth in the region.

4. The mitigation proposed for impacts to the Sea is inadequate and unlikely to be implemented. 18

The DPEIR describes two possible strategies designed to mitigate for biological impacts at the Sea. The first involves construction of a fish hatchery and 5,000 acres of ponds constructed to raise fish to support fish-eating birds. The second involves fallowing land and providing replacement water to hold the Sea's salinity and elevation at baseline levels. (DPEIR, p. 3.2-28.)

The fish-pond strategy raises more questions than it answers. It is far from clear whether the proposal is of sufficient scale to support the tremendous populations of fish-eating birds that currently rely on the Sea. There is no indication that the ponds will support a fishery equivalent to the one that currently exists in the Sea. Water supply, land availability, and other important considerations are not described. And the project does not even purport to address impacts to recreational fisheries or air quality.

As importantly, there is no indication that either mitigation strategy described can be accomplished under the current terms of the QSA and the IID – San Diego water transfer agreement, and there are substantial reasons, though the DPEIR does not mention them, for believing they cannot be implemented. As mentioned above, the QSA currently limits IID's financial responsibility for QSA-related impacts to 15 million dollars, CVWD's financial responsibility to 2.1 million dollars, and MWD's to 5 million dollars. Although the DPEIR does not give a cost estimate for the fish-pond proposal, our understanding is that the cost would exceed 100 million dollars. Regarding the replacement-water strategy, IID's transfer agreement with San Diego appears to prohibit fallowing as a method of conserving water for the first 130,000 acre-feet of water transferred. In sum, the mitigation the DPEIR describes for the project is simply paper mitigation; unless the terms of the QSA or the transfer agreement are altered, the project's serious impacts on the Sea will be left unmitigated.

5. The DPEIR presents no program-level alternatives to the proposed project. 19

CEQA requires that an EIR must consider a reasonable range of alternatives to the project. The DPEIR analyzes a no project alternative and three alternatives to the proposed project: 1) Implement the proposed project while minimizing changes in points of Colorado River diversions, 2) reduce the IID/SDCWA transfer to 230 KAF, and 3) implement the IID/SDCWA transfer with replacement water. However, these three alternatives are really just alternative means of implementing project components; the DPEIR presents no program-level alternative at all. California courts have found that "the methods used or rejected in carrying out the project

are not alternatives to the project," "[a]n alternative to a proposed activity is just that—a description of *another* activity or project that responds to the major environmental issues identified during the planning process." (*Friends of the Old Trees v. Department of Forestry,* (1st Dist. 1997) 52 Cal.App.4th 1383, 1405.) 19

This failure to present a genuine alternative is also problematic because, as noted above, execution of the QSA is contingent upon execution of several other agreements and receipt of several public approvals which have not yet taken place. It is not clear from the DPEIR whether there is any fallback provision should one or more of the needed agreements or approvals not come to pass, nor is it clear that there is any alternative QSA that could be implemented should the current version not be approved.

* * *

The DPEIR does not adequately analyze the impacts of the QSA and its component projects, does not provide any realistic mitigation for many of the impacts that are recognized, and does not provide any genuine alternative to the proposed course of action. We recommend that the water agencies revise the DPEIR to reflect the comments in this letter and others submitted by the public and issue a supplemental DPEIR. Thank you for the opportunity to comment on this DPEIR. 20

Sincerely,

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Defenders of Wildlife, March 26, 2002

1. The PEIR does address the QSA's impacts to the Salton Sea. Changes to the Sea's elevation and water quality, including salinity, are described in sections 3.0 and 3.1.2.3; they are summarized in Table 3.1-22. Impacts to fish and birds are discussed in section 3.2.2.3, and impacts to fish-eating birds and sensitive species are found to be significant but feasibly mitigable. Impacts to recreational resources and air quality are addressed in sections 3.6 and 3.7, respectively, and appropriate mitigation measures are identified. Mitigation measures have been identified for all significant impacts, where feasible. Where no feasible measures have been identified, this is clearly noted in the text. Please note that Mitigation Strategy 1 (development and maintenance of foraging ponds) has been removed from consideration due to U.S. Fish and Wildlife Service (Service) and California Department of Fish and Game (CDFG) concerns regarding the potential for the ultimate success of this approach and the absence of a suitable back-up position if the foraging pond approach failed.

   The final selection of mitigation measures will occur once the Project is approved. The co-lead agencies will be responsible for implementing the adopted mitigation measures in accordance with legal requirements. In accordance with CEQA Guidelines Sections 15091 and 15096(h), they must prepare findings that the Proposed Project has been changed (including by the adoption of mitigation measures) in a manner that avoids or substantially reduces each significant impact. When making the findings, the agencies must ensure that the adopted mitigation measures are fully enforceable through permit conditions, agreements, or other measures. If the agencies cannot make these findings, they must find that changes to the Project are within another agency's jurisdiction and that such changes have been or can and should be adopted by the other agency or that specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures. CEQA Guidelines Sections 15091(d) and 15097 also require lead agencies to adopt a Mitigation Monitoring and Report Program (MMRP), which ensures compliance with adopted mitigation measures during Project implementation. The MMRP must clearly state who is responsible for implementing a given mitigation measure, how and when the measure will be implemented, and how its implementation will be verified.

2. The Draft PEIR needs to be recirculated only if significant new information is added to the EIR (CEQA Guidelines Section 15088.5[a]) that identifies:

   - A significant new environmental impact from the project or from a new mitigation measure proposed to be implemented.
   - A substantial increase in the severity of an impact unless mitigation measures are adopted that reduce the impact to a level of insignificance.
   - A feasible project alternative or mitigation measure considerably different from those analyzed that would clearly reduce impacts, but which the project proponent declines to adopt.

   Recirculation is also required if the EIR is so fundamentally and basically inadequate, and conclusory, that meaningful public review and comment are precluded.

Revisions made to the QSA Draft PEIR do not require recirculation because none of these events has occurred. The Draft PEIR did adequately analyze the impacts of the QSA, does provide realistic mitigation for Project impacts, and does provide genuine alternatives to the Proposed Project. The Final PEIR serves to clarify, amplify, and make minor modifications, in which case recirculation is not required (CEQA Guidelines Section 15088.5[b]).

3. Please refer to Antonio Rossman (March 26, 2002), response no. 5, regarding lead agencies.

   It is premature to make the determination that the co-lead agencies will be unable to fund the Salton Sea mitigation measures at this stage of the environmental review process. It is common CEQA practice to include all ostensibly feasible mitigation measures in a Draft EIR, since ultimate determinations of feasibility are not made until findings are adopted at the end of the CEQA process. (Any adopted mitigation measures will be fully funded by a combination of federal and state agencies and the co-lead agencies; however, details of specific funding sources and arrangements are not required at the time that findings are made.) Further, CEQA requires an EIR to identify mitigation measures for significant impacts regardless of lead agency commitment or authority to implement the measures. See CEQA Guidelines Section 15126.4(a)(1)(A), which requires EIRs to identify those measures proposed by project proponents to be included in the project, versus other measures that could reasonably be expected to reduce adverse impacts. Also refer to response no. 1 above.

4. The basic terms of the QSA have been established and are included in Appendix A. The actions that would implement these terms bracket the maximum physical environmental impacts that could occur if the QSA were implemented. Some contractual changes could occur prior to the finalization of the QSA, but these would not result in impacts beyond those that are analyzed in the PEIR. Thus, the terms of the QSA have been established in sufficient detail to support the development of this PEIR and in fact provide a worst-case analysis of all environmental impacts. The QSA is an agreement among the parties associated with the implementation of several projects that could be approved independently.

5. See response no. 3. Mitigation Strategy 2 would reduce the identified significant impacts to less than significant levels. Water in addition to the transfer water would be used to implement this mitigation measure. This water could be gained through increased on-farm conservation, system-based conservation measures, and/or fallowing.

6. This comment is noted. Please refer to the responses to detailed comments below.

7. The QSA focused on changes to elevation, surface area, and salinity resulting from the reduced inflows. Consistent with model results generated by the Imperial Irrigation District Decision Support System (IIDSS) (upon which the QSA's impacts to the Salton Sea are based), the amount of water IID releases to the Salton Sea is estimated to decrease, as shown in PEIR sections 3.1.2.3 and 3.1.2.4 (Table 3.1-21).

8. The PEIR, section 3.1.2.3, acknowledges that selenium concentrations are an impact to IID drains. The PEIR states, "…the decrease in the amount of water discharged from the Alamo River and IID drains could result in selenium concentrations exceeding the EPA

Aquatic Life Criterion for Continuous Concentration, and thus impact biological resources in these areas. This impact is considered a significant and unavoidable impact to water quality."

No regulatory standard exists for total suspended solids (TSS) or salinity in the Salton Sea, making a significance determination related to hydrology unwarranted. Further, the Salton Sea is an already degraded water body and does not meet Basin Plan objectives. There is evidence that water quality of the Sea will decline with or without implementation of the QSA, although transfers under the QSA would hasten this inevitable decline. For example, without the QSA, Salton Sea salinity levels could surpass 60,000 mg/L in year 2023. Absent mitigation, with the QSA, the 60,000 mg/L level could be surpassed as early as 2017 (assuming on-farm conservation is used as the primary conservation method). Although the Proposed Project's contribution to the decline in the Sea's water quality is not considered significant, impacts to biological and recreational resources from increased salinity were found to be significant (sections 3.2 and 3.6, respectively).

9. Modeling results generated by the IIDSS indicate that with implementation of the QSA there will be an increase in selenium concentrations in the IID surface drains discharging directly to the Salton Sea, and an increase in selenium concentrations in the Alamo River and in the New River outlets to the Salton Sea (refer to Table 3.1-15).

   Selenium is carried into the IID service area from imported Colorado River irrigation water and tends to build up in soils and root zones as crops are irrigated. Periodically, farmers leach their fields, and the excess salts and selenium dissolve out of the root zone and are released to the tilewater system. Ultimately, concentrations of dissolved salt and selenium combine in the water that is released into the IID surface drains. As a result, selenium concentration would be expected to exceed the specific water quality criteria at the point of release from surface drains that directly release to the Salton Sea, the Alamo River outlet, and New River outlet to the Salton Sea. This impact cannot be feasibly mitigated on a project-specific basis since the source of selenium lies largely outside the Project area (primarily in Colorado). Until a comprehensive, basin-wide mitigation strategy is developed that takes into consideration sources of selenium throughout the Colorado River Basin, this impact is considered significant and unavoidable.

10. There are a number of estimates with wide variation of the time it would require for the Salton Sea to no longer support its fish populations. A very conservative estimate is used in the PEIR as a timeframe for the reduction of the fisheries to ensure that impacts to the Sea were not underestimated. If one were to use a different, longer estimate, then the impact of the implementation of the components of the QSA would also stretch out proportionally for the resource.

    The biological impact to the non-native sport fisheries in the Salton Sea was based on significance thresholds set forth in the State CEQA Guidelines, Appendix G, and was not considered significant in and of itself since the fish populations are not native. The impacts to fish-eating birds were considered significant due to the decline of the non-native fisheries that is their food source. Additionally, a significant impact to the loss of the sport fisheries associated with recreational sport fishing was also considered

significant. This analysis and the assignment of significance are considered appropriate under CEQA.

11. The PEIR identifies a significant impact to fish-eating birds due to the decline in the fish population resulting from increased salinity in the Salton Sea. A potential strategy (Mitigation Strategy 2) has been identified to reduce the impacts associated with implementation of the Proposed Project to less than significant levels. It is appropriate to describe the impact to fish-eating birds as a decline in population. The increase in salinity would occur over a number of years, reducing fish populations and consequently, the numbers of fish-eating birds. Even with the increased salinity that would reach levels that would no longer support fish, there would likely be some areas in the Salton Sea, such as those near fresh water inflows, which would have salinity levels able to support a reduced fishery. Therefore, it is expected that some fish-eating birds would be able to be supported by the Salton Sea in the future under both the Proposed Project and Future Baseline. Mitigation measures have been identified in section 3.2.3 to reduce the effects of the implementation of the Proposed Project to less than significant levels. The co-lead agencies, however, are not obligated to mitigate for the overall decline of the Salton Sea, including increased salinity, which would occur whether or not the proposed water transfers were implemented.

12. The primary habitat of the Yuma clapper rail and black rail is on the managed marshes in the refuges, which receive water purchased from IID, not the Salton Sea. Therefore, changes in Salton Sea levels and salinity would not affect the managed marshes or these species. Because these species do not depend upon the Sea as a habitat and a food source, a decrease in the sea level that would isolate these marsh areas would not affect those species. Because irrigation water is used to supply these marshes, no impact from selenium buildup would occur.

13. Sufficient information was provided to support the conclusion that impacts would be significant but mitigable. The QSA PEIR analyzes impacts at a program level. As appropriate, more specific details are described in the project-specific analysis contained in the IID Water Conservation and Transfer Project EIR/EIS, but impacts and mitigation measures are similar to those described in the QSA PEIR.

14. Information regarding the projected decrease in the Salton Sea water elevation is provided at the beginning of the impact analysis, in section 3.0. Section 3.6.2.3 of the PEIR notes that facilities would have to be relocated. This is not an unprecedented situation. As noted in section 3.6.1.6, the Salton Sea State Recreation Area was built about 45 years ago when the Sea's elevation was lower. Increasing water levels caused recreational facilities to be flooded in the 1970s and they had to be relocated. Even now, some areas are subject to flooding due to relatively high water levels.

15. The discussion in the PEIR is not inconsistent with this comment. The significant visual impacts to the Salton Sea are appropriately characterized in section 3.10.2.3. As acknowledged in the comment, the PEIR states that "views of the Sea would be possible only from a much greater distance from the developed public viewing facilities at these locations." To mitigate this impact, the PEIR states that recreational facilities would have to be relocated to an appropriate site adjacent to the Salton Sea and that access would have to be extended to the new shoreline.

16. Analysis of available information and experience at Owens Lake and at the Salton Sea shows a substantial difference in driving forces that create dust emissions, as well as substantial differences in the composition of Owens Lake sediments versus those at the Salton Sea. The frequency of higher wind speeds is greater at Owens Lake than at the Salton Sea. Experience at Owens Lake has shown that there is a strong correlation between sand motion and PM_{10} emissions. There are substantial deposits of sand on the Owens Lake bed surface and numerous sand dunes surrounding the area. There is very little sand in the areas of the Salton Sea that would be exposed by the drop in sea elevation. Soil chemistry and temperature ranges at the Salton Sea differ markedly from those at Owens Lake. The combination of weaker driving forces for emissions at the Salton Sea and different soil chemistry support the conclusion that exposed sediments at the Salton Sea will probably not be as emissive as they have been at Owens Lake. However, as identified in section 3.7.3, Mitigation Strategy 2 would reduce significant air quality impacts at the Salton Sea.

17. Please see the response to CDFG comment 42. Regarding State Bill (SB) 221, it is correct that local agencies approving subdivisions of more than 500 units must now make a finding of sufficient water supply. However, San Diego local governments' SB 221 findings will not be changed by the QSA, because MWD has sufficient supplies to meet demands within the entire MWD service area even if some planned water projects are slowed in implementation, and because SDCWA in the absence of the QSA has alternative means to meet demands.

    The comment refers to the QSA as increasing reliability, thus allowing developers to more easily comply with SB221. As stated in section 2.2 of the PEIR, one QSA objective is to "ensure the certainty and/or reliability of Colorado River water supplies"; this objective is achieved through maintaining the historic reliability of Colorado River water supplies. Another objective is to "assist (the co-lead) agencies in meeting their water demands without exceeding California's apportionment of Colorado River water"; such assistance would be provided not through creating a new water supply, but rather through redistribution of reduced Colorado River water supplies.

    Because the QSA water transfers have been described as "enhancing" or "increasing" water supply reliability, it is helpful to explain such statements in the context of the PEIR statement that the transfers "maintain" historic reliability of current water supplies. Until now, the reliability and availability of the Colorado River supply for MWD and its member agencies, including SDCWA, have been constant, even when imported water from the State Water Project and local supplies have been curtailed. For many years, MWD's Colorado River Aqueduct has operated at or near full capacity, and the SDCWA supply from MWD has been largely Colorado River water (from FY 1991 through 2000, 84 percent of MWD deliveries to SDCWA consisted of Colorado River water). Although about 700,000 AFY of water required to fill the aqueduct is not within California's normal year apportionment of 4.4 million acre-feet, that water was available until 1996 due to the availability of the unused apportionments of Arizona and Nevada.

    As those states are now at or near full use of their apportionments, California has relied upon surplus declarations since 1997 to fill the Colorado River Aqueduct. The QSA components are designed to help keep the aqueduct full into the foreseeable future. This will allow MWD and SDCWA to continue to rely on Colorado River water to the

extent they have relied on it in the past and rely on it today. If the QSA or other actions designed to ensure a full aqueduct in the future were not implemented, then the ability to fill the aqueduct would be dependent on the availability of surplus water as determined on a year-to-year basis and other water supply sources. Therefore, in the context of historic and present availability of Colorado River water, the purpose of the QSA is to maintain the availability and reliability of that supply.

18. Continued coordination with the Service and CDFG during the public review period for the Draft PEIR resulted in the removal of Mitigation Strategy 1 from consideration due to concerns regarding the potential for the ultimate success of this approach and the absence of a suitable back-up position if the foraging pond approach failed. Therefore, the co-lead agencies now propose the implementation of Mitigation Strategy 2 to mitigate for the impacts to biological resources, recreational resources, and air quality associated with the Proposed Project. The appropriate sections of the PEIR have been revised to reflect this change.

19. The alternatives presented in the PEIR are in fact "genuine" "program-level alternatives." They represent a reasonable range of alternatives to the proposed QSA that could feasibly attain most of the basic program objectives (CEQA Guidelines Section 15126.6). Each alternative has been formulated to address a significant impact of the Proposed Project by modifying one or more QSA components, as stated by the comment.

    PEIR section 5.3.2 documents the rationale for rejecting other alternatives — because they either do not meet the basic project objective and/or are infeasible. It is correct that the PEIR does not present a "fallback provision" if the agreements or approvals needed to implement the QSA do not occur. The no-project alternative, presented in Chapter 5 of the PEIR, describes what is reasonably expected to occur if the agreements and approvals are not implemented.

    20. Please refer to response no. 2 above.

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March 25, 2002

Robert D. Thompson
QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Re: Draft Program Environmental Impact Report for Implementation of the Colorado River Quantification Settlement Agreement (QSA DPEIR)

Dear Mr. Thompson:

The following comments are submitted on behalf of National Audubon Society, Planning and Conservation League, Defenders of Wildlife and National Wildlife Federation ("Environmental Organizations"). While the Environmental Organizations agree that it is beneficial to reduce California's usage of Colorado's river water, the significant environmental consequences of implementing the Quantification Settlement Agreement (QSA DPEIR) must be carefully and meaningfully evaluated so that the public and the public's decision-makers are fully apprised of ways to accomplish this laudable goal without significant and irreversible environmental harm. California's landscape is littered with "good intentions" that have significantly damaged the natural environment.

Surprisingly, even though this draft program EIR has been prepared on the QSA, the text of the QSA has been omitted from the document.

1. THE PURPOSE OF THE DPEIR IS UNCLEAR. 1

Despite its intentions, the Environmental Organizations do not believe that the DPEIR provides a programmatic evaluation of the nine component parts identified in the agreement. As pointed out in the document and in the U.S. EPA's NOP letter, many of the component parts are undergoing separate environmental analysis. Rather than a comprehensive, programmatic, or basin-wide evaluation of the nine component parts as a sum of its many parts, the DPEIR merely summarizes information from other documents or refers the reader to many other documents that have been or are now going through public review.

Since the QSA has been adopted by three of the co-lead agencies, and is expected to benefit the fourth, the DPEIR appears to be nothing more than a *post-hoc* rationalization of a decision

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already made.

1

According to the CEQA Guidelines, a program EIR can provide the following advantages:

1) Provide an occasion for more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action,
2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis,
3) Avoid duplicative reconsideration of basic policy considerations,
4) Allow the lead agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts,
5) Allow reduction in paperwork.

It does not appear that any of the Guidelines advantages have been met. In fact it would appear from the DPEIR that the implementation of the QSA is dependent upon the implementation of the separate component parts. The QSA DPEIR merely evaluates the effects of each component part within each lead agency's service area, rather than evaluating the broader programmatic impacts.

As the DPEIR admits, the "QSA is based on a series of proposed agreements, which include water conservation/transfer and exchange projects among IID, CVWD, MWD, and SDCWA." [DPEIR, p. 2-1.] The DPEIR then goes on to describe the "key concepts and provisions of the QSA" and the "QSA components" and the various CEQA and/or NEPA review documents that either have been, are currently being, or will be prepared to address the impacts of each component part. [DPEIR, p. 2.3.] Although the DPEIR claims that it is evaluating "the aggregate of the QSA components," Table 2.4-1 merely depicts case-by-case environmental review of the QSA component parts.

Any claimed programmatic environmental review appears to be illusory. At best the DPEIR appears to be a "road-map" for where to find project-specific analysis of each component part of the QSA. For example, Item F. of Table 2.4-1 entitled "Transfer of conserved water" (67.7 KAFY) claims that the "QSA PEIR provides program-level CEQA analysis for the All American Canal Lining Project, a component of the Proposed Project." [DPEIR, p. 2-5.] In reality, the alleged program analysis within the DPEIR of the All American Canal Lining Project's impact on water resources states: "The All-American Canal lining was addressed in a project-specific EIS/EIR certified in 1994."

Regarding the IID/SDCWA transfer project, the QSA DPEIR is simply a stripped-down analysis of the DEIR/DEIS that is being circulated by IID and the U.S. BOR.

2. SWRCB SHOULD BE LEAD AGENCY FOR QSA DPEIR

As noted above, the QSA DPEIR has four (4) co-lead agencies: the Coachella Valley Water District ("CVWD"), the Imperial Irrigation District ("IID"), the Metropolitan Water District of Southern California ("MWD"), and the San Diego County Water Authority ("SDCWA").[1] [DPEIR, pp. ES-1, 2-23] The co-lead agencies are the parties to the QSA agreement and have also entered into an agreement to act as co-lead agencies. [DPEIR, p. 1-1; Appendix B, Environmental Checklist] CEQA requires that the public agency with the principal responsibility over the project assume the role as lead agency.[2]

> Where a project is to be carried or approved by more than one public agency, one public agency shall be responsible for preparing an EIR or negative declaration for the project.[3]

2

The Federal lead agency, which is preparing a separate NEPA EIS on the Implementation Agreement, is the Secretary of Interior due to the Secretary's "responsibility and authority to manage [the delivery] of Colorado River water under the Law of the River." [DPEIR, p. 2-1] The Secretary is then accountable for this document.

It is not clear that any of the four lead agencies will be accountable for the QSA DPEIR. As the DPEIR states: "The co-lead agencies for this PEIR are CVWD, IID, MWD, and SDCWA. Each agency will independently evaluate and, if appropriate, certify this PEIR and make CEQA findings. [DPEIR, p. 2.23, emphasis added.]

The more proper lead agency should be the State Water Resources Control Board because, as is provided in the QSA summary at Appendix A, SWRCB is to enter "a final order of approval of the Petition for Change relating to the IID/SDCWA Water Conservation and Transfer Agreement and the IID/CVWD Acquisition Agreement upon terms and conditions set forth in the QSA." [DPEIR, p. 1-1, Appendix A, p. A-7.]

Although the co-lead agencies have a stake in seeing that the QSA is implemented, they do not have the principal responsibility for carrying out or approving the implementation of the QSA. SWRCB does.[4] Therefore, the co-lead agencies should have designated the SWRCB as the lead agency, as the federal government designated the Secretary of Interior to be the lead agency on the IA DEIS.

[1] SDCWA is not a party to the QSA but has an interest in its implementation. [DPEIR, p.1-1.]
[2] *Planning and Conservation League, et al., v. Department of Water Resources ("PCL")* (2000) 83 Cal.App.4th 892, 905-907.
[3] CEQA Guidelines, § 15050, subd. (a).
[4] SDCWA is not a party to the QSA and has no responsibility in implementing the QSA. [DPEIR, p. 1-1.]

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3. THE QSA DPEIR's USE OF A FUTURE ENVIRONMENTAL BASELINE TRIVIALIZES THE IMPACTS OF COMPONENT PARTS TO THE QSA ON THE SALTON SEA. 3

CEQA requires evaluation of a project's impacts compared to the "physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced."[5] "Special emphasis should be placed on environmental resources that are rare or unique to that region."[6]

The purpose of this requirement is to ensure the proper environmental setting is used by the lead agency for determining whether an impact is significant.[7] Moreover the discussion must include "relevant specifics of the area . . . alterations to ecological systems."[8]

California Courts have established that

> [b]efore the impacts of a project can be assessed and mitigation measures considered, an EIR must describe the existing environment. It is only against this baseline that any significant environmental effects can be determined.[9]

California courts have interpreted the statutory language literally, requiring measurement against current conditions. *Environmental Planning and Information Council v. County of El Dorado* (1982) 131 Cal.App.3d 350, was a case involving projects that proposed to develop land at lower densities than the maximum allowed for in the general plan and zoning regulations. The California Court of Appeal held that the lead agency should have evaluated the proposed projects' impacts in light of the current existing conditions, not by assuming the maximum conditions possible under the general plan.

Here, the QSA DPEIR evaluates the proposed project's impacts in light of conditions projected to exist in 75 years. This allows the agencies to trivialize the impact the transfer of water will have on the Salton Sea. Basically, the agencies are claiming that under current conditions the Sea will become hypersaline, therefore conservation practices that allow the transfer of conserved irrigation water to urban areas will only have a temporal impact on the Sea.

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[5] CEQA Guidelines, § 15125, subd. (a).
[6] *Id.* at subd. (c).
[7] *Id.* at subd. (a).
[8] *Id.*, § 15126.2, subd. (a).
[9] *Save Our Peninsula Committee v. Monterey Co. Board of Supervisors* (2001) 87 Cal.App.4th 99 at pages 119-120, citing to *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 952; see also Remy, *et al.*, Guide to the California Environmental Quality Act ("CEQA") (10th ed. 1999) ch.5, pt. C "Determining the Proper 'Baseline' of Environmental Conditions for Purposes of Measuring a Project's Impacts," pp. 162-171.

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However, what the agencies are ignoring is the significance of the Salton Sea to the species that are at risk. Furthermore, the agencies completely ignore Federal policies that seek to restore and protect the Salton Sea for the fish and wildlife that depend upon this unique natural resource. The DPEIR fails to evaluate the significance of the agencies' proposed actions, which will accelerate the salinity within the Sea, against the backdrop of the significance of this resource to the migratory birds within the Pacific flyway. 3

The DPEIR claims that "[t]his impact to fisheries (more rapid loss) is considered less-than-significant, since these species are not native to the Salton Sea." CEQA is concerned about substantial physical change to the existing environment. The fact that the existing environment includes non-native fish does not negate a project's significant change to that environment. The abundance of fish at the Salton Sea is due to the fact that the introduced tilapia is a prolific breeder and well adapted to the Salton Sea. The fish in the Salton Sea are an important food source for birds and fish. The loss of these non-native fish will have a profound effect on the physical environment. 4

The DPEIR claims that the loss of wetland or riparian habitat would not have a significant impact on those species dependent on those habitats. About 20% of the entire population of the Yuma Clapper rail is dependent upon wetland habitat along the south end of the Salton Sea, which will be lost if the QSA is implemented. 5

By improperly focusing on the Sea as an agricultural repository, the QSA DEIR fails to adequately describe the setting. The QSA DEIR improperly minimizes the impacts to the current physical environment of the Salton Sea. The Salton Sea will be significantly adversely impacted by increased salinity once it stops receiving Colorado River water. The EIR must "assess the impacts of a proposed project by examining changes in the physical conditions in the affected area."[10] In other words, "[t]he significance of an activity depends upon the setting."[11] 6

The DPEIR fails to recognize the importance of the Salton Sea to major portions of total populations of some bird species that use it. Furthermore, the DPEIR fails to consider the regional significance of the Salton Sea within the context of the migratory birds within the Pacific flyway. In a terse summary of potentially significant impacts, the DPEIR simply dismisses these environmental consequences. Entire populations of bird species are at risk. One of the most significant stop-over points along the Pacific flyway may be irreversibly impacted by the agencies' program. The DPEIR simply trivializes these extraordinary losses. 7

The alleged mitigation strategies to reduce the impact of accelerating the loss of fish and and wildlife at the Sea are poorly described. The feasibility of constructing 5,000 acres of ponds to raise fish to support fish-eating birds is unknown. Moreover, the success of these ponds as mitigation for loss of the Sea is sheer speculation. Essentially, the agencies would be replacing 8

[10] *County of Amador, supra*, 76 Cal.App.4th at 954.
[11] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718.

the 235,000-acre Salton Sea, which has been described by the Salton Sea Authority as "perhaps the most productive fishery in the world," with 5,000 acres of man-made hatchery ponds. 8

Moreover, the DPEIR concedes that these hatchery ponds would produce potentially significant impacts to air and water quality, as well as an unavoidable impact to agriculture. Where will the water for these ponds come from? How will the agencies control diseases within these ponds? How can these ponds serve the diversity of species that now depend upon the 235,000-acre Salton Sea? 9

The other mitigation strategy is to take agricultural land out of production. However, none of the agencies have the authority to carry out this mitigation strategy. 10

The QSA DPEIR simply fails to adequately describe the environmental setting by improperly treating the Sea as a repository of agricultural waste water, rather than as the place described by the Salton Sea Authority as "California's crown jewel of avian biodiversity." By illegally trivializing the significance of the Salton Sea, the agencies minimize the profound environmental consequences of their program. 11

4. The QSA DPEIR FAILS TO ADEQUATELY ADDRESS GROWTH-INDUCING IMPACTS 12

CEQA requires that an EIR discuss growth-inducing impacts.[12] An EIR must describe the ways in which a "proposed project may foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment."[13] The QSA DPEIR claims that no new water is being generated for urban water use. The agencies claim, for example, that SDCWA has entitlements to future water supplies from MWD. However, future entitlements "represent nothing but hopes, expectations, water futures or, [] paper water."[14] It is foreseeable that the service areas may not receive all future entitlements. The current physical environmental baseline is the current water usage.

Therefore, the availability of IID conservation water for urban use is an additional supply that does not now exist. The growth-inducing effects of this additional urban water must be considered in evaluating potential growth-inducing impacts.

5. QSA DPEIR FAILS TO EVALUATE CUMULATIVELY CONSIDERABLE IMPACT OF SALTON SEA IMPACTS ON MIGRATORY BIRDS. 13

The QSA DPEIR fails to even consider the cumulative impact to the migratory birds within the Pacific flyway of losing the Salton Sea as a stopover point in the evolutionary migration patterns of the affected bird species. Hundreds of thousands and on some days millions of migratory birds use the Salton Sea as a stopping point to feed and rest. Because the DPEIR fails to

[12] Pub. Resources Code, § 21100, subd. (b)(5); CEQA Guidelines, §§ 15126, subd. (d), 15126.2, subd. (d).
[13] CEQA Guidelines, § 15126.2, subd. (d).
[14] See *PCL, supra*, 83 Cal.App.4th at page 908, fn5.

adequately describe the significance of the Salton Sea in a regional context, especially with regard to migratory birds, the DPEIR's evaluation of cumulative impacts is limited to brief discussions of related projects within the Lower Colorado River basin. The geographic scope of the impacts to migratory bird species exceeds the Lower Colorado River basin. The cumulative loss of places like the Salton Sea along the Pacific flyway needs to be evaluated in order to appreciate the severity of the cumulative impacts to migratory birds. 13

By providing this context, the importance of the Salton Sea Restoration Project, which is dismissed in the QSA DPEIR as speculative, and the significance of the impact of the QSA program on this project is brought into focus.

6. CONCLUSION

In order to comply with CEQA's requirements, the aforementioned inadequacies must be remedied prior to any final determination made either on the QSA DPEIR or by any California public agency to implement the QSA. 14

Sincerely,

J. William Yeates

Law Office of J. William Yeates, on behalf of National Audubon Society, Planning and Conservation League, Defenders of Wildlife, and National Wildlife Federation, March 25, 2002

1. The PEIR evaluates the full suite of QSA components and projects in "aggregate" in the project-level evaluation (Chapter 3) and combines the impacts of all QSA components with other foreseeable projects in the cumulative analysis (Chapter 4). The PEIR does not evaluate any component that has overlapping potential effects without considering the other potential effects on other components of the Proposed Project. For example, impacts to the Salton Sea would result from the combination of water transfers/conservation measures that would occur in more than one service area, not just one component. Impacts to the lower Colorado River also take into consideration all project components that would affect river flows. Other impacts, such as noise impacts, are more localized and would not contribute to a "basin-wide" impact.

   Note that the QSA has *not* been adopted by any of the co-lead agencies. Its Key Terms have been negotiated and provide a sufficient framework from which to measure the Proposed Project's environmental impacts.

   The "road map" concept was intentionally included as a portion of the PEIR and was requested in comments on the Notice of Preparation. The PEIR utilizes as appropriate the analyses of prior and current applicable evaluations, including those of the canal lining EIS/EIRs.

   Regarding the IID Water Conservation and Transfer Project EIR/EIS, the PEIR has a much wider region of influence, covers all of the QSA components, and evaluates some components at a project level. The actions considered in the IID/SDCWA analysis are project-specific. That EIR/EIS only evaluates the QSA in a cumulative sense.

2. See response to Defenders of Wildlife comment no. 3. The State Water Resources Board (SWRCB) has no role in carrying out or approving the QSA; it is simply a potentially responsible agency for the IID/SDCWA transfer. Further, the SWRCB is taking no action on QSA components other than the IID/SDCWA transfer; the co-lead agencies, on the other hand, collectively have responsibility for implementing the QSA. Also note that a public agency is required to be the lead agency for its own projects (CEQA Guidelines Section 15051[a]).

3. See response to California Department of Fish and Game (CDFG) comment no. 4. The comment cites the EPIC case, in which a proposed land use change was required to be evaluated against a baseline of existing conditions, versus buildout of a general plan. Although the use of existing environmental conditions is an appropriate baseline under those circumstances because buildout of the general plan was speculative, for the QSA, a future baseline is appropriate for certain impacts because there will be changes in the environment reasonably certain to occur by the time the QSA is fully implemented.

   Salton Sea impacts are analyzed in detail, and their significance evaluated, throughout Chapter 3 of the PEIR. The federal Salton Sea Reclamation Act and its policies are recognized in section 1.5 of the PEIR. This Act authorized the Salton Sea Restoration Project, which is being implemented by the U.S. Bureau of Reclamation in cooperation with the Salton Sea Authority, in accordance with objectives driven by the federal law. Note that at present, the Salton Sea Restoration Project has not been defined; at this

point it remains simply a Feasibility Study. Additionally, by law, it is intended to be developed based on the assumption that the water transfers are in place.

4. The biological impact to the non-native sport fisheries in the Salton Sea was based on significance thresholds set forth in CEQA Guidelines, Appendix G, and was not considered significant in and of itself since the fish populations are not native. The impacts to fish-eating birds were considered significant due to the decline of the non-native fisheries that is their food source. Additionally, a significant recreational impact associated with the loss of the sport fisheries was identified. This analysis and the assignment of significance are considered appropriate under CEQA.

5. It is true that a significant population of Yuma clapper rail does reside on the southern end of the Salton Sea. The primary habitat of the Yuma clapper rail is on the managed marshes in the refuges, which receive water purchased from IID, not the Salton Sea. Therefore, changes in Salton Sea levels and salinity would not affect the managed marshes or these species. Because these species do not depend upon the Sea as a habitat and a food source, a decrease in the sea level that would isolate these marsh areas would not affect those species.

6. The PEIR correctly identifies the Salton Sea as a repository for agricultural drainage water since that is its legal designation. However, the PEIR does not focus on the Sea as a repository and addresses the extensive biological resources of the Salton Sea in section 3.2.1.6. It addresses the impacts to these resources in section 3.2.2.3.

   It is important to note that the PEIR focuses on the impacts of implementation of the Proposed Project on the Salton Sea, not on the overall projected increase in salinity and subsequent substantial decline in the biological resources of the Salton Sea whether or not the Proposed Project were implemented (except as discussed under the no-project alternative). The impacts of the implementation of the Proposed Project, including the acceleration of the rate of salinity, are discussed in the PEIR. Mitigation measures have been identified to reduce the biological impacts of the Proposed Project to less than significant levels.

7. The PEIR addresses the value of the avian and other resources at the Salton Sea in section 3.2.2.3. As described above in response no. 6, the PEIR addresses the temporal impacts of the Proposed Project, which include the loss of fish populations resulting from the acceleration of the increase in salinity of the Sea. The impact to birds is not trivialized; it is identified as significant. Mitigation measures have been identified in section 3.2.3 of the PEIR to reduce the impact of the Proposed Project to less than significant levels. It should be noted that the impact to migratory birds would occur eventually even without implementation of the Proposed Project.

8. As described above, the mitigation proposed in section 3.2.3 of the PEIR is to mitigate the Proposed Project impacts, not the biological effects of the projected decline of the Salton Sea, which is an ongoing process that will take place whether or not the water transfers are implemented. Please note that Mitigation Strategy 1 (development and maintenance of foraging ponds) has been removed from consideration due to U.S. Fish and Wildlife Service and CDFG concerns regarding the potential for the ultimate success of this approach and the absence of a suitable back-up position if the foraging pond approach failed.

9. Mitigation Strategy 1 has been eliminated from the PEIR.

10. See Defenders of Wildlife response no. 3. The water for Mitigation Strategy 2 would be obtained in a manner similar to the water for the proposed IID Water Conservation and Transfer Project (referred to as Habitat Conservation Plan [HCP] Approach 2 in the EIR/EIS for that project).

11. Please see response to comment no. 6.

12. Please see the response to CDFG comment 42. IID's conservation of water simply maintains reliability of historic and current Colorado River water deliveries. The EIR does not use future entitlements as a "baseline." It is foreseeable that the service areas may not receive all future water entitlements, but MWD has sufficient water supplies to meet projected demands within the entire MWD service area even if some future water projects are slowed in implementation.

13. As discussed above, the PEIR addresses the impacts of the Proposed Project on the Salton Sea, including impacts to migratory birds (section 3.2.2.3). Measures have been identified to reduce the temporal impacts of this Project to biological resources to less than significant levels. These also would effectively mitigate potential cumulative impacts to biological resources. As noted above, the Proposed Project is not required to mitigate all impacts associated with the decline of the Salton Sea; rather it is required to mitigate to the extent feasible its own impacts.

14. In compliance with CEQA requirements, the PEIR will consider all comments and provide responses, correcting any errors that were identified. This will necessarily occur before the document is certified and any decisions made regarding the QSA.

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March 14, 2002

VIA FEDERAL EXPRESS

QSA PEIR
Science Applications International Corporation
816 State Street
Santa Barbara, CA 93101

Re: *Draft Program Environmental Impact Report for Implementation of the Colorado River Quantification Settlement Agreement (State Clearinghouse No. 2000061034)*

Dear SAIC:

This letter is submitted on behalf of Save Our Forest and Ranchlands (SOFAR), an organization dedicated to the protection of the wilderness, watershed, and agricultural resources of San Diego County. SOFAR seeks to preserve rural wildlife habitat and natural resources while also curbing costly urban sprawl and making our cities more livable.

On behalf of SOFAR we have reviewed the Draft Program Environmental Impact Report for Implementation of the Colorado River Quantification Settlement Agreement (DEIR). Numerous impacts and issues raised in the DEIR fall outside of SOFAR's purview and we do not comment on them here. However, SOFAR closely follows issues relating to water supply and land development in San Diego County, and is concerned that the DEIR fails to acknowledge the relationship of these issues to the implementation of the Quantification Settlement Agreement (QSA), and thus fails to disclose the full extent of the environmental impacts of the QSA implementation on San Diego County. SOFAR seeks clarification regarding the cumulative, land use, and growth-inducing impacts of the implementation of the QSA in San Diego County.

A stated goal of the Proposed Project is to "agree upon a plan for the future distribution of Colorado River Water" among various water agencies including SDCWA. (DEIR, p. ES-1.) The QSA is "to assist these agencies in meeting their water demands." (DEIR, p. ES-1.) Although the SDCWA is not a signatory to the QSA, "SDCWA would benefit from the QSA since the QSA would facilitate implementation of the 1998 IID/SDCWA Water Conservation and Transfer Agreement." (DEIR, p. ES-2.) The DEIR also states: "*With implementation of the Proposed Project*, SDCWA would receive 130 to 200 KAF of Colorado River water conserved by IID, replacing water currently received by MWD." (DEIR, p. 2-22 [emphasis added].) SOFAR will comment separately on the environmental documentation for the IID/SDCWA Transfer Agreement. The DEIR regarding implementation of the

QSA, however, is incomplete for its failure to take into account the impacts of the IID/SDCWA Transfer Agreement in San Diego County when analyzing the impacts of the QSA.

For example, the DEIR asserts that there would be no physical/construction impacts associated with the implementation of the Proposed Project within the SDCWA service area. (DEIR, pp. 2-22, 3.2-26.) The DEIR states, "The exchange of water with SDCWA would occur through existing infrastructure and would not require construction activities . . ." (DEIR, p. 3.13-12.) However, under the IID/SDCWA Transfer Agreement, SDCWA is responsible for arranging for the necessary conveyance facilities to transport the water to its service area. Although the DEIR assumes that SDCWA will use the Metropolitan Water District's Colorado River Aqueduct for the water transfer, MWD has stated that it may do so only for the first 30 years of the 75-year term of the Transfer Agreement. San Diego has already engaged in substantial efforts to plan for new water conveyance facilities. A recent aqueduct feasibility study, funded jointly by SDCWA, the state of California and Mexico, reviewed options for a massive new joint aqueduct to convey Colorado River water, transferred to SDCWA from IID under the 1998 Transfer Agreement, from the Colorado River to San Diego and the Baja California region of Mexico. (*"Joint Colorado River Water Conveyance Planning Level Study for San Diego, California - Tijuana, Baja California Region."*) Such a conveyance facility, while clearly requiring separate environmental review, should not be disregarded as an aspect of the implementation of the QSA in the DEIR. 1

The DEIR finds that the Proposed Project will have no growth-inducing effect in San Diego's service area because it will not involve additions or expansions to SDCWA's water delivery and storage system. (DEIR, p. 6-8.) The DEIR also states, however, that the projected future supply of water for San Diego's service area would "match the year 2020 demand." (DEIR, p. 6-8.) The projected year 2020 demand is approximately 813,000 AF per year, whereas the current supply is 695,000 AF. It is SOFAR's position that new water supplies should not be developed absent sound land use plans to prevent sprawl and irresponsible loss of our natural resources and habitat. We are concerned that in fact the QSA and its implementation will have growth-inducing effects, both by increasing the reliability of supply and by opening up the possibility of increased supply. Please clarify the relationship of the QSA to the addition of new SDCWA water supplies referred to in the DEIR. 2

In its discussion of potential growth-inducing impacts, the DEIR acknowledges SDCWA's joint aqueduct feasibility study, but states that SDCWA could construct a new aqueduct to carry Colorado River water in the absence of the QSA. (DEIR, p. 6-9.) Please explain how this could occur in the absence of the QSA and/or the IID/SDCWA Water Transfer Agreement. 3

The DEIR's Cumulative Impacts discussion also fails to include these potential San Diego County projects and impacts. Section 4.0 of the DEIR lists numerous regional water supply and other related projects in the region in order to evaluate cumulative impacts. We submit that a new San Diego conveyance facility and/or a San Diego/Baja joint aqueduct is a reasonably foreseeable probable future project, as described above, for purposes of the cumulative impacts analysis required by the California Environmental Quality Act (CEQA). These facilities should be included and their impacts disclosed in the DEIR's cumulative impacts analysis. 4

Please let me know if you have questions about SOFAR's concerns. Please also include me on your mailing list for this EIR. We look forward to your response.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

Christy H. Taylor

cc: Duncan McFetridge, Save Our Forest and Ranchlands

[P:\SOFAR\Mat7\sofarletter.wpd]

Shute, Mihaly & Weinberger, LLP, on behalf of Save Our Forest and Ranchlands (SOFAR), March 14, 2002

1. The Proposed Project would require no additions or expansions to SDCWA's water delivery and storage system. As noted in section 6.2.4.2, SDCWA is undertaking the Regional Colorado River Conveyance Feasibility Study to analyze the feasibility of constructing a separate conveyance system to allow IID transfer water to be imported without using MWD's Colorado River Aqueduct. If the Proposed Project is not implemented, the PEIR states in section 6.2.4.2 that SDCWA and IID would pursue their transfer agreement as a separate project. If SDCWA found a separate system to be feasible and negotiated a source of water, it could be implemented. As noted in the comment, this project would be subject to a separate environmental review. Also refer to response no. 4 below.

2. Please see the response to CDFG comment 42. The comment cites a SOFAR objective that new water supplies should not be developed absent sound land use plans. However, the QSA maintains historic and current reliability of Colorado River water supplies to the MWD/SDCWA service areas, rather than creating a new supply. The San Diego Association of Governments (SANDAG) growth projections that SDCWA uses for water supply plans take into consideration local government general plans.

3. Please refer to response no. 1 above.

4. The construction of a pipeline from the Imperial Valley to the San Diego region is addressed as an alternative to the Proposed Project in the PEIR. Although a feasibility analysis has been conducted either for a specific pipeline or an SDCWA/Baja California joint pipeline, the potential for construction of either one of these facilities is speculative at this time.

INDIVIDUALS

Comments and Responses

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March 7, 2002

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Re: Public Comment on Draft EIR/EIS

Dear Sirs:

We have lived at the Salton Sea for over 6 years and have attended a number of symposiums and meetings about the problems facing the Sea, possible solutions and the impacts of various proposals on Imperial County. Now the proposed transfer of water to three other water districts has significantly impacted the possibility of implementing a plan to maintain the Salton Sea as a viable body of water and important habitat on the Pacific Flyway. We find several troubling aspects of the QSA in the EIR/EIS. We would like to address these concerns and then make a request for some modification to the QSA.

Concerns:

First is the forced transfer of water from the poorest county in California to some of the richest in order to promote their further "growth and development." There is neither any demand that they enforce strict water conservation as IID is mandated to do, nor are they mandated to seek alternative sources of water such as desalinating sea water. Without mandating conservation and developing other sources of water, it is inevitable that SDCWA and MWD will be back to take more Imperial County water within 20 years, if not sooner, even though it is supposed to be a 75 year agreement. 1

Having been born and raised in Los Angeles County, we are well aware of MWD's ability to take water from other areas instead of either containing their own sprawling growth or developing their own source of water from the ocean. The desalination project in Florida has proven that a reasonably priced water supply can be obtained by desalination. CVWD knows it has a water supply problem, but still encourages growth and development of projects which are high water consumers. Yet this QSA completely ignores the obvious problem with Southern California continuing to "develop and grow" knowing that indigenous water is not available to support it. All the burden for supplying coastal counties with water is placed on IID conservation. This is patently unjust and short-sighted, even if expedient for the short term.

Second, the objectives for IID listed under ES-5 include: "Provide economic stimulus to Imperial Valley agriculture and surrounding community." Under ES-6 the Habitat Conservation Plan Objectives for IID include "Minimize and mitigate impacts of take of covered species as a result of the IID/SDCWA transfer." This brings us to the problem 2

of the Salton Sea. PL 105-372 says no additional Colorado River water can be purchased to replace that lost by IID conservation. As a result the Sea is expected to be destroyed in eleven years by diking off the north and south ends. The resulting ponds would receive all the inflow available to provide endangered species habitat. The rest of the Sea will be allowed to dry up and turn into an Owens Valley-like soup of brine shrimp and brine flies. With an estimated 70,000 acres of sea bed exposed, the PPM-10 count will skyrocket in the adjacent area and it will become uninhabitable by the people currently living in the area. Can you reconcile this with the stated purpose of the QSA to transfer water for the benefit of human, rather than agricultural use? It is not going to benefit humans in the Imperial Valley. This situation will certainly not "provide economic stimulus to Imperial Valley agriculture **and surrounding community."** Indeed, it will preclude any "economic stimulus" to Imperial County. Again, we see the wealthy coastal cities benefiting from the decline of the poorest county in California. How can any project for restoring the Salton Sea be implemented if all sources of water to support the Sea are given away in the QSA and/or made impossible to obtain by terms of PL 105-372? 2

Third, the EIR/EIS does not address the U.S. Treaty obligation to maintain the Sea as part of the Pacific Flyway, nor the possible effects of any remedies which might be taken at the Salton Sea. Since diking off the north and south ends for habitat is the currently suggested solution, there should be consideration given to the effect of a major earthquake along the San Andreas and other fault lines in and around the Sea. A major earthquake which fractured a dike would bring disaster to the fish in the impounded areas, and therefore, many birds which rely on them. This would seem to violate the Habitat Conservation Plan Objectives for IID in ES-6. Has the cost of building dikes been figured? It also seems doubtful that the two ponds could support hundreds of thousands of white pelicans, estimated to eat 5 - 7 tilapia per day for 5 months, to say nothing of the cormorants, herons and other fish-eating birds dependent on the Sea. Of course, the endangered brown pelicans are here year around. It is obvious from reading the EIR/EIS that IID will be granted a permit to kill endangered species any time it asks for one and there is no mention of SDCWA or MWD responsibility for killing endangered species. 3 4 5 6 7

Fourth is the question of maintaining the recreational resources of the Salton Sea. Has the cost to the State, and private individuals been calculated? It appears IID may be exempted from paying any of those costs. The cost to move the camp sites and docking facilities every few years as the sea dries up and building interpretive centers will be very significant. Then there is the question of who would want to camp or fish by a body of brine shrimp and flies. There will be no boating on that soup, no annual races of personal water craft, which bring significant money to the State and Riverside County, leaving only bird watchers and some fishermen who are willing to endure the flies as recreational opportunities. The tilapia will survive in the diked ponds, but the prime sport fish, the orange mouth corvina, probably will not. 8

Fifth, the horror stories about how "polluted," "poisoned" and "dying" the Sea is are simply not true as the words are commonly understood. Many of the stories about supposed problems of the Sea have apparently originated in the Los Angeles area. The 9

New River is contaminated with waste when it leaves Mexico, but not when it reaches the Salton Sea. Nature cleans the toxins over the 60 mile length of the river. It took several years of intensive scientific studies to prove what people who live around the Sea have always known. The Sea is not polluted. It has never been closed to human use for swimming due to health concerns. It is actually one of the most productive fisheries in the world and the fish are safe to eat. There are no toxic selenium or other chemicals in the water. The fish die for lack of oxygen, not from being poisoned. If a reasonable inflow can be maintained, there is real scientific evidence, that the Salton Sea can be maintained as a healthy ecosystem. The Salton Sea Authority has been trying for 7 years or more to find a viable, affordable way to prevent further degradation of the Sea by increased salinity. Their efforts have been hampered by lack of knowledge about the true condition of the Salton Sea. Now the water transfer is causing additional problems in figuring the costs of possible actions. 9

Sixth, ES-42 states that adverse change to regional economic conditions would be accelerated by up to 11 years because of the water transfer. This will mean a loss of the majority of recreation-related economic activity, decreased economic activity and downward pressure on property values. By taking water from IID and the Salton Sea, the Imperial Valley will have its own economic development effectively prevented, both for lack of water and because of the deteriorated environment. The report mentions employment loss by minority farm laborers, but not loss by minority businesses. Nor does it address losses by all businesses and property owners in Imperial County except to acknowledge property values will drop. Since many people living around the Sea are senior citizens with low incomes this problem really needs to be considered. 10

Conclusions and recommendations:

It is obvious that the water transfer will be pushed through by those receiving the benefit of it. To us it is equally obvious that those receiving the benefit should be mandated to mitigate the effects of the transfer on Imperial County, not just on certain "endangered species" which will be legally killed anyway. 11

First, this mandate should require those agencies benefiting from the water transfer to implement strict water conservation so that they can continue to live within the water allotment provided by this transfer for the next 75 years. IID is being forced to conserve, so should they. 12

Second, those agencies receiving water should either return their reclaimed water to the Sea or provide a new source of water to maintain the Sea as a whole near its current level. This might mean desalinating ocean water to pipe to the Salton Sea. Since these benefiting agencies have much more influence in congress than IID, they have a much better chance to have the U.S. government help with the cost. 13

Third, the coastal communities of Southern California should be mandated to desalinate ocean water as a long term source of their water so that they will not come back to IID or Northern California for more water in 20 years or so. 14

Fourth, since the money being paid for the transferred water is going solely to pay for IID conservation and/or payment to farmers not to farm, there should be additional mitigation to the County of Imperial for the detrimental effects of loss of business and property tax revenues as values decline. Without water available for "development," within Imperial County the poorest county will simply become poorer. Possibly the water agencies benefiting from this transfer are waiting for that so they can take all IID water when the County becomes bankrupt. 15

Fifth, the "Water Wars" have been raging in California for over 75 years. MWD has known for many years that it would have to curtail its use of Colorado River water, but has done nothing in all those years to develop a permanent, stable water supply for itself. The time has come to find a permanent solution. This must address the fact that the Southern California coast is an irrigated desert environmentally. The coast is the preferred place for humans to live. There is no way our government can prevent the population expanding. Humans require fresh water. Therefore, an unlimited source of water must be developed for the California coast. This water must not be taken from other populated areas. The only solution that we can see is desalination of ocean water and that must be started immediately, not 20 or 50 years from now. 16

Thank you for your consideration of our concerns and suggestions.

Floyd D. Overholt
1318 Beach Club Dr.
Thermal, CA 92274-6306

Margot S. Overholt

Floyd and Margot Overholt, March 7, 2002

1. No issues were raised regarding the content of the PEIR; however, it should be noted that the current Urban Water Management Plans prepared by each of the co-lead agencies include water conservation measures and alternative water sources. Specific types of measures that are being implemented in these service areas include: water conservation, including the use of Best Management Practices (e.g., financial incentives for the installation of low-flow toilets and high-efficiency appliances; distribution of low-flow showerheads; residential surveys, leak detection programs, landscape programs, public information programs, school education programs, water waste prohibitions, etc.) and Agricultural Efficient Water Management Practices. Water recycling (the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-potable reuse) is also a key component of these Urban Water Management Plans, which include provisions for low interest loans, financial assistance, and public education.

2. Please note that the referenced objectives for IID are from the Draft IID Water Conservation and Transfer Project EIR/EIS, not the QSA PEIR. The goals and objectives of the Proposed Project are listed in section 2.2. They do not specifically state for what purposes the water should be used (e.g., human vs. agricultural use). Uses of the water are to be determined by the individual water agencies consistent with the terms and conditions of their water delivery contracts with Reclamation. The goals and objectives of the Proposed Project also do not include "providing economic stimulus to Imperial Valley agriculture and the surrounding community." These, too, are from the IID Water Conservation and Transfer Project EIR/EIS, not the PEIR for the QSA. The PEIR (section 3.13.2.3) acknowledges that jobs could be lost within the IID service area and that business output could decline, depending on how conservation is implemented.

   The issues involving the restoration of the Salton Sea are complex and are being addressed by the Salton Sea Restoration Project, which is authorized by PL 105-372 (refer to section 1.5 of the PEIR). The impacts of alternatives methods of restoring the Sea will be evaluated in an Environmental Impact Statement/Environmental Impact Report prepared by the U.S. Bureau of Reclamation and the Salton Sea Authority. This analysis will address issues associated with PL 105-372.

3. We are unaware of a treaty that specifically cites a U.S. obligation to maintain the Salton Sea as part of the Pacific Flyway. The PEIR does, however, address the impacts of the Proposed Project to the biological resources of the Salton Sea in section 3.2.2.3, including impacts to migratory birds. Impacts to fish-eating birds were considered significant, and a mitigation strategy has been identified to reduce impacts of the Proposed Project to less than significant levels. Issues associated with the long-term maintenance of the Salton Sea are being addressed through the Salton Sea Restoration Project.

4. Please note that Mitigation Strategy 1 (development and maintenance of foraging ponds) has been removed from consideration due to USFWS and CDFG concerns regarding the potential for the ultimate success of this approach and the absence of a suitable back-up position if the foraging pond approach failed.

5. See response no. 4 above.

6-7. This comment appears to refer to the fact that IID has applied for incidental take permits. As noted in the PEIR, IID has prepared a draft Habitat Conservation Plan in support of its application for such permits in conformance with the federal and California Endangered Species Acts. This plan will provide strategies for the management of sensitive species, as well as measures to mitigate any potential impacts. Incidental take permits are issued only after rigorous environmental analysis has been completed for specific projects. IID and SDCWA are applying for such permits because the actions that would result in potential take of threatened or endangered species would result directly from actions within their service areas.

8. The PEIR identifies significant recreational impacts at the Salton Sea (section 3.6.2.3). Recreational costs would be incurred in the course of mitigating Project impacts and thus assumed by the appropriate entity as identified in the Mitigation, Monitoring, and Reporting Program required to be prepared by the co-lead agencies. Please refer to Defenders of Wildlife, March 26, 2002, response no. 3 regarding the cost of mitigation.

9. No response is required because no issues were raised regarding the content of the Draft PEIR.

10. Please see response no. 2 above and Antonio Rossman, March 26, 2002, response no. 11.

11. Where feasible, mitigation measures have been identified in the PEIR for all significant impacts, not just impacts to endangered species.

12. Please refer to response no. 1 above.

13. This comment does not specifically address the analysis included in the Draft PEIR. Please note that the impacts of desalination were considered under the no-project alternative (section 5.4). The use of this technology would not be technologically or economically feasible at this time given the volume of water being considered and the timeframe of the Project. This has been clarified in the Final PEIR. It also was found not to meet the Project objectives (section 5.3.2). Use of reclaimed water to stabilize the water elevation of the Salton Sea is not feasible. It would involve the construction of extensive pipelines, which would be costly and have considerable environmental impacts (refer to the discussion of pipeline construction in Chapter 5 of the PEIR). Water also would have to be treated to adequate standards so as not to increase pollutant loads to the Sea. This would be very costly.

14. Please refer to response no. 13.

15. The loss of business and property tax revenues are not considered environmental impacts in this PEIR (refer to Antonio Rossman, March 26, 2002, response no. 11).

16. Please refer to response no. 13.

Dessert Shores, California

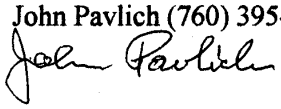
February 28,2002

QSA PEIR
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, Ca 93101

Agreement with Southern California water agencies does not include replenishing the Salten Sea with water lost to the sea due to the water transfers. 1
This replenishment to maintain the desireable sea level should be included.
The restoration of the Salten Sea level is best replenished with ocean water.
A portion of the saltier water should be returned to the ocean to maintain the salinity acceptable for fish survival.
Construction of pipe lines to the ocean and a pumping station would be required.

Respectfully,

John Pavlich (760) 395-0317



John Pavlich, February 28, 2002

1. The PEIR does contain a mitigation measure (Mitigation Strategy 2, described in section 3.2.3) that would maintain the level of the Salton Sea for a period consistent with that projected under the No-Project (Future Baseline) conditions. Please note that the impacts of desalination were considered under the no-project alternative (section 5.4). The use of this technology would not be technologically or economically feasible at this time given the volume of water being considered and the timeframe of the Project. This has been clarified in the Final PEIR. It also was found not to meet the Project objectives (section 5.3.2). As noted in this comment, constructing pipelines and pumping stations would be required, which also would have considerable environmental impacts (refer to the discussion of pipeline construction in Chapter 5 of the PEIR).

SUMMARY OF PROPOSED QUANTIFICATION SETTLEMENT AGREEMENT

The following generally summarizes the purpose and intent of the Quantification Settlement Agreement (QSA) among Imperial Irrigation District (IID), Coachella Valley Water District (CVWD), and Metropolitan Water District of Southern California (MWD) (collectively, the Parties), and describes those actions contemplated by the QSA and a number of related agreements.

1.0 PURPOSE AND INTENT

The QSA is intended (1) to consensually settle longstanding disputes regarding the priority, use and transfer of Colorado River water among the Parties, (2) to establish by agreement the terms for the further distribution of Colorado River water among the Parties for up to 75 years based upon agreed water budgets, (3) to facilitate agreements and actions which will enhance the certainty and reliability of Colorado River water supplies available to the Parties and assist the Parties in meeting their water demands within California's apportionment of Colorado River water by identifying the terms, conditions and incentives for the conservation and transfer of Colorado River water within California. IID seeks to settle disputes with CVWD and MWD and to use proceeds from the acquisition of Conserved Water (as defined in the QSA)[1] to improve the reliability, efficiency and management of its Colorado River water supply. CVWD seeks to settle disputes with IID and MWD and to acquire Conserved Water for agricultural uses to accommodate anticipated reductions in groundwater extraction. MWD seeks to settle disputes with IID and CVWD and to ensure the reliability of its Colorado River supplies.

2.0 TERM

The QSA must become effective on or before December 31, 2002, and will terminate upon the earlier of (1) a non-consensual termination of the IID/San Diego County Water Authority (SDCWA) Water Conservation and Transfer Agreement[2] or (2) December 31 of year 75 of the QSA.

3.0 RELATED AGREEMENTS

The QSA provides for a number of agreements, activities and transactions. The QSA anticipates certain related agreements (Related Agreements), which will implement components of the QSA. The Related Agreements include the following:

(1) The Acquisition Agreements, which document various water transfers including the IID/SDCWA Water Conservation and Transfer Agreement, as amended, the IID/CVWD Acquisition Agreement, the IID/MWD Acquisition Agreement, the

1 The QSA defines "Conserved Water" as water made available for acquisition under the QSA and the Related Agreements attributable to (1) temporary land fallowing or crop rotation for up to the term of the QSA, if an allowed use is for irrigation, or (2) projects or programs that enable the use of less water to accomplish the same purpose or purposes of allowed use, subject in both cases to further restrictions.

2 "Agreement for Transfer of Conserved Water" executed between IID and SDCWA, on April 29, 1998, as amended.

CVWD/MWD Acquisition Agreement, and the MWD/CVWD State Water Project (SWP) Transfer and Exchange Agreement;

(2) The IID/MWD 1988 Agreement[3];

(3) The IID/MWD/Palo Verde Irrigation District (PVID)/CVWD 1989 Approval Agreement;

(4) The MWD/CVWD 1989 Agreement to Supplement Approval Agreement;

(5) The Allocation Agreement (for allocation of the Conserved Water resulting from lining of the All American Canal (All American Canal Lining Project) and the lining of the Coachella Canal (Coachella Canal Lining Project);

(6) The Implementation Agreement (the agreement among IID, CVWD, MWD, SDCWA and the Secretary of the Interior (Secretary) containing the terms of agreement by the Secretary to honor the terms of the QSA and the Related Agreements);

(7) The Environmental Cost Sharing Agreement; and

(8) The Protest Dismissal Agreement, relating to the State Water Resources Control Board (SWRCB) proceeding.

The key components of the QSA and Related Agreements are described in succeeding sections.

4.0 WATER BUDGETS

Currently, IID, CVWD and PVID (each of which serves agricultural water users) collectively have the right to consumptively use 3.85 million acre-feet per year (MAFY) of Colorado River water under Priorities 1, 2 and 3 of the priority system which applies to California holders of Colorado River water rights; however, there are no separate individual limits of apportionments between CVWD and IID. The QSA establishes water budgets that will govern Consumptive Use (as defined in the QSA)[4] of Colorado River water by the Parties during the term of the QSA, including a quantified division of Priority 3a.

The net effect of the QSA water budgets is to individually cap IID's and CVWD's Priority 3a rights during the QSA term to a total of 3.430 MAFY, and to specify quantities and priorities to Priority 6a water among MWD, IID and CVWD. All the Parties will forbear enough Consumptive Use from their respective Priorities to permit the Secretary to satisfy the water rights of holders of Miscellaneous Present Perfected Rights (PPRs) and Federal Reserved Rights.

3 "Agreement for Implementation of a Water Conservation Program and Use of Conserved Water" executed between IID and MWD, and dated December 22, 1988.

4 The QSA defines "Consumptive Use" as the diversion of water from the main stream of the Colorado River, including water drawn from the main stream by underground pumping, net of measured and unmeasured return flows.

4.1 IID's Priority 3a Cap

IID's Consumptive Use entitlement under its share of Priority 3a will be capped at 3.1 MAFY at Imperial Dam, less (1) the Conserved Water made available by IID for use by others under the QSA, and (2) the water made available by IID for use by Miscellaneous PPRs and Federal Reserved Rights, to the extent charged to Priority 3a, and plus any conserved water made available to IID as a result of the All American Canal Lining Project and the Coachella Canal Lining Project. The cap will be subject to adjustment as permitted under or required by the Inadvertent Overrun and Payback Policy (IOP). Any Colorado River water acquired from any party pursuant to a transaction permitted under the QSA will be in addition to this cap.

4.2 CVWD's Priority 3a Cap

CVWD's Consumptive Use entitlement under its share of Priority 3a will be capped at 330 thousand acre-feet per year (KAFY) at Imperial Dam, less (1) the Conserved Water made available from the Coachella Canal Lining Project, as specified in the QSA, and (2) the water made available by CVWD for use by Miscellaneous PPRs and Federal Reserved Rights, to the extent charged to Priority 3a. This cap will be subject to adjustment as permitted under or required by the IOP. Any Colorado River water acquired from any party pursuant to a transaction contemplated or permitted by the QSA will be in addition to this cap.

4.3 MWD's Priority 4 and 5 Cap

MWD's Consumptive Use entitlements under Priorities 4 and 5 will be capped by the QSA at 550 KAFY and 662 KAFY, respectively, at Lake Havasu, less any water made available for use by Miscellaneous PPRs and Federal Reserved Rights, to the extent charged to Priority 4 or 5. The cap will be subject to adjustment as permitted under or required by the IOP. Water made available by MWD to CVWD in any year pursuant to the QSA can be charged, at MWD's option, to any water available to MWD in that year. Any Colorado River water acquired from any party pursuant to a transaction contemplated or permitted by the QSA will be in addition to this cap.

4.4 Miscellaneous Present Perfected Rights and Federal Reserved Rights

IID and CVWD shall forbear Consumptive Use, up to a maximum of 11.5 KAFY and 3 KAFY, respectively, when necessary, in conjunction with the IOP, to permit the Secretary to make water available for Consumptive Use to holders of Miscellaneous PPRs and Federal Reserved Rights Colorado River water rights in the aggregate amount sufficient to satisfy such rights. The obligation of IID to forbear use of water for this purpose may be charged, at IID's option, to its rights under Priorities 6a, 7 or 3a, as available. The obligation of CVWD to forbear use of water for this purpose may be charged, at CVWD's option, to its rights under Priorities 6a, 7 or 3a, as available. In the event that it is not necessary in any year for IID and CVWD to collectively forbear a total of 14.5 thousand acre-feet (KAF) for this purpose, then a credit equal to the difference between 14.5 KAF and the amount of actual necessary forbearance shall be shared 75 percent to IID and 25 percent to CVWD.

MWD shall forbear Consumptive Use, when necessary, in an amount in excess of the 14.5 KAFY forborne by IID and CVWD, collectively, in conjunction with the IOP, in the aggregate amount

necessary to permit the Secretary to make water available for Consumptive Use to satisfy the rights of holders of Miscellaneous PPRs and Federal Reserved Rights. MWD's obligation to forbear Consumptive Use for this purpose shall be charged at MWD's option to any Priority pursuant to which MWD has water available.

4.5 IID and CVWD Priority 6a Forbearance and Priority 7 Use

IID and CVWD agree to forbear Consumptive Use under Priority 6a sufficient to enable IID, CVWD and MWD to consumptively use Priority 6a water as it may be available in accordance with the following order of use, except as provided in the Interim Surplus Guidelines adopted by the United States Bureau of Reclamation:

(1) 38 KAFY to MWD;

(2) 63 KAFY to IID;

(3) 119 KAFY to CVWD; and

(4) Any balance of Priority 6a and 7 water available in accordance with the priorities identified in IID's, CVWD's and MWD's contracts with the Secretary for delivery of Colorado River water.

If IID, CVWD or MWD does not Consumptively Use all or any of the Priority 6a or 7 water available to it under the above priority schedule, any unused volume will be available in the above order to meet the next lower order Consumptive Use needs.

4.6 MWD's Responsibility for Overruns in Priorities 1, 2 and 3b

The historical average annual Consumptive Use of Priorities 1, 2, and 3b is 420 KAFY. If the actual total Consumptive Use of Priorities 1, 2 and 3b exceeds 420 KAFY, MWD shall repay the overrun of Priorities 1, 2 and 3b, in conjunction with the IOP. To the extent that the actual total Consumptive Use of Priorities 1, 2 and 3b is less than 420 KAFY, MWD shall have the exclusive right to Consumptively Use such unused water.

5.0 ACQUISITION OF WATER BY THE PARTIES

The QSA and the Related Agreements state the terms of a number of approved water transfers among the Parties to the QSA (IID, MWD and CVWD) and SDCWA. The transfers and the applicable governing agreements are:

(1) The transfer of 130 KAFY to 200 KAFY of Conserved Water from IID to SDCWA, governed by the IID/SDCWA Water Conservation and Transfer Agreement, as amended.

(2) The transfer of up to 100 KAFY of Conserved Water from IID to CVWD, governed by the IID/CVWD Acquisition Agreement.

(3) The transfer of up to 100 KAFY of Conserved Water from IID to MWD (only to the extent that CVWD does not exercise its right to the 100 KAFY as described above), governed by the IID/MWD Acquisition Agreement.

(4) The acquisition of up to 50 KAFY of water by CVWD from MWD after IID's obligation to provide 50 KAFY of Conserved Water to CVWD expires after Year 45 of the QSA term.

(5) The transfer of 35 KAFY of MWD's SWP Table A entitlement to CVWD and the exchange of the SWP water for Colorado River water from MWD's Colorado River water supplies, governed by the MWD/CVWD 35,000 AF Exchange Agreement.

These transfers will help California stay within its 4.4 MAFY normal year allocation of Colorado River water by conserving water currently being used for agricultural uses and transferring it to more urban use.

6.0 OTHER PROVISIONS

6.1 All-American Canal and Coachella Canal Water for San Luis Rey Indian Water Rights Settlement Act Purposes

The lining of the All American Canal (All American Canal Lining Project) will produce 67.7 KAFY of Conserved Water, and the lining of the Coachella Canal (Coachella Canal Lining Project) will produce 26 KAFY of Conserved Water. After the effective date of the QSA, up to 16 KAFY of Conserved Water attributable to the All American Canal Lining Project and the Coachella Canal Lining Project will be made available to the Secretary to facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act. The volume available to the Secretary from each canal lining project will be in proportion to its percentage of the total water conserved, 11.5 KAFY from the All American Canal Lining Project and 4.5 KAFY from the Coachella Canal Lining Project. The remaining Conserved Water will be made available to MWD and, during surplus years, to IID. As the Conserved Water to be made available by the All American Canal Lining Project and the Coachella Canal Lining Project is produced, it will be made available 83 percent to MWD (or IID) and 17 percent to the Secretary. For decree accounting purposes, Consumptive Use of the Conserved Water made available to the Secretary will be assigned to the Secretary and not charged to IID or CVWD, but will be deducted from IID's Consumptive Use cap and CVWD's Consumptive Use cap in proportion to the Conserved Water made available from the All-American Canal Lining Project and the Coachella Canal Lining Project, respectively. Consumptive Use of the balance of the Conserved Water made available by these projects will be deducted from IID's Consumptive Use cap and Coachella's Consumptive Use cap according to the QSA and Allocation Agreement, and added to the Consumptive Use cap of the party (MWD or IID) using it.

6.2 Other Acquisitions of Colorado River Water

During the term of the QSA, IID, CVWD, and MWD may acquire Colorado River water from persons other than from each other, without objection by any of the three agencies, so long as such acquisition is not inconsistent with the QSA and Related Agreements and does not materially reduce the water available to the Parties.

6.3 CVWD Utilization of Water

Except as provided in the IID/CVWD Acquisition Agreement, CVWD will not utilize its water budget to facilitate any water use outside of Improvement District No. 1 other than for direct and in-lieu recharge, and shall use its best efforts to utilize its water budget to address the groundwater overdraft problem in Improvement District No. 1, and to implement a program designed to help achieve a safe yield within Improvement District No. 1 by approximately Year 31 of the QSA term. IID and MWD will not object to the utilization of Colorado River water in the Coachella Valley, but outside Improvement District No. 1, in order to maximize the effectiveness of Improvement District No. 1's water use and recharge programs. CVWD will make no claim as a matter of right to any additional Colorado River water in Priorities 3 or 6.

6.4 CVWD Groundwater Storage of IID Water

Subject to the physical availability of storage in the Coachella Valley after accounting for the storage to be utilized by CVWD for the MWD/CVWD conjunctive use program, and other conditions, if implemented, CVWD will provide groundwater storage for IID's use in accordance with the IID/CVWD Acquisition Agreement and related agreements.

6.5 Public Awareness Program

IID, CVWD, and MWD will each implement and maintain a water conservation public awareness program.

6.6 Shortage and Sharing of Reduced Water Availability

If for any reason there is less than 3.85 MAF available to Priorities 1, 2 and 3 in any year, the QSA will not terminate and shortages will be shared as set forth in the Acquisition Agreements and the Allocation Agreement.

6.7 MWD Mitigation of Certain Effects of Interim Surplus Guidelines

If application of the Interim Surplus Guidelines reduces Priority 3a Consumptive Use by IID and CVWD, MWD shall assume IID's and CVWD's responsibility for any payback of overruns as a result of such reduction, but limited by the aggregate amount of surplus water allocated to and Consumptively Used by MWD under Full Domestic Surplus and/or Partial Domestic Surplus conditions, as determined by the Secretary under the Interim Surplus Guidelines.

7.0 CONDITIONS TO THE PARTIES' QSA OBLIGATIONS

IID, MWD, and CVWD's obligations under the QSA are subject to the satisfaction or waiver of a number of conditions on or before December 31, 2002, including those set forth below.

7.1 General Conditions

7.1.1 Environmental Review

The Parties shall have completed all environmental review and assessment required under the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA),

and applicable federal, state and agency regulations implementing the same, to the extent required to authorize implementation of the activities contemplated by the QSA.

7.1.2 Resource Approvals

All permits, approvals and authorizations pursuant to the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), any other federal or state resource protection laws, and any regulations implementing the same, shall have been finalized to the extent required as described in the QSA.

7.1.3 Approval of Environmental Requirements

Each Party shall have approved and accepted the terms and conditions and mitigation measures of the environmental review processes and the resource approvals, to the extent such Party is responsible, in whole or in part, for compliance, performance or payment of the costs thereof.

7.1.4 Inadvertent Overrun and Payback Policy

The United States Bureau of Reclamation shall have adopted on or before December 31, 2002, standards and procedures for an IOP to be implemented during the first 30 years of the QSA term, which IOP is in all material respects acceptable to the Parties.

7.1.5 Interim Surplus Guidelines

Interim Surplus Guidelines, implemented pursuant to the Secretary's Record of Decision dated January 16, 2001, shall be in full force and effect.

7.1.6 PVID Waiver

PVID shall have agreed for the term of the QSA: (a) to waive any call rights on Conserved Water from the All American Canal Lining Project and the Coachella Canal Lining Project, (b) to the amendment to the IID/MWD/PVID/CVWD 1989 Approved Agreement, and (c) other terms as identified in the QSA.

7.1.7 Execution of the Acquisition Agreements

The Acquisition Agreements shall have been executed for delivery as of the Closing Date, which shall occur no later than December 31, 2000.

7.1.8 State Water Resources Control Board Approval

The SWRCB shall have entered a final order of approval of the Petition for Change relating to the IID/SDCWA Water Conservation and Transfer Agreement and the IID/CVWD Acquisition Agreement upon terms and conditions set forth in the QSA.

7.1.9 Other Agreements in Effect

Certain Agreements shall be in effect, including the IID/SDCWA Water Conservation and Transfer Agreement, the Environmental Cost Sharing Agreement among the Parties, and the Implementation Agreement to be executed by the Secretary.

7.2 Particular Conditions to IID's Obligations

IID shall have determined that its responsibility for environmental process and mitigation costs shall not exceed $15,000,000 in 1998 dollars.

7.3 Particular Conditions to CVWD's Obligations

The Amendment to the contract between the United States of America and CVWD for replacing a portion of the Coachella Canal shall have been executed by the United States of America.

7.4 Particular Conditions to MWD's Obligations

7.4.1 Decree Accounting

The Unites States Bureau of Reclamation shall have agreed with the Parties to develop a process for establishing a statistically significant trend test for increases in Priorities 1, 2 and 3b.

7.4.2 Waiver

SDCWA shall have waived any rights under the IID/SDCWA Water Conservation and Transfer Agreement with respect to Conserved Water that may be acquired by MWD pursuant to the IID/MWD Acquisition Agreement, in conjunction with MWD's agreement that, should IID transfer less than 200 KAFY to SDCWA, but later make available additional Conserved Water for transfer to SDCWA, MWD would exchange such additional amounts up to a total of 200 KAFY under the terms of the 1998 Agreement between MWD and SDCWA for the Exchange of Water.

7.4.3 Environmental Costs

MWD shall have determined that its responsibility for environmental process and mitigation costs shall not exceed $5,000,000 in 2001 dollars.

PREFACE TO APPENDIX D

The following appendix contains components applicable to the analysis of the QSA from the *Technical Memorandum No. 1: Analysis of River Operations and Water Supply*, prepared as part of the Secretarial Implementation Agreement dated December 7, 2001. The full technical memorandum appears as Appendix G of *Implementation Agreement, Inadvertent Overrun and Payback Policy and Related Federal Actions Draft Environmental Impact Statement* prepared by the US Bureau of Reclamation in January 2002. This appendix does not contain all the information contained in *Technical Memorandum No. 1* because that study included additional project components (i.e., Inadvertent Overrun and Payback Policy) that required study of a broader geographic area than the proposed project. This appendix does contain all information appearing in the original *Technical Memorandum No. 1* related to River system operations, River system modeling, and modeling results from Lake Mead to Imperial Dam, including modeling of salinity.

Technical Memorandum No. 1 does contain information on "Cumulative Effects." The reader should be aware, however, that many more projects were included as cumulative projects in CEQA analysis of the potential cumulative affects of the QSA than were included within the modeling process described in *Technical Memorandum No. 1*. These additional projects do not have a direct effect on Colorado River dependent resources. This appendix and *Technical Memorandum No. 1* are best used as a means to understand the modeling process performed to estimate impact to the lower Colorado River resulting from changes in flows and points of diversion that could occur with implementation of the QSA and Secretarial Implementation Agreement.

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1.0 RIVER SYSTEM OPERATIONS

The term *operation of the Colorado River system* refers to how the water is managed once it enters the Colorado River system and includes operation of the system reservoirs, dams and other Colorado River system facilities.

1.1 OPERATION OF THE COLORADO RIVER SYSTEM OVERVIEW

Operation of the Colorado River system and delivery of Colorado River water to the seven Basin States and Mexico are conducted in accordance with a body of documents often referred to as the *Law of the River*. The *Law of the River* provides that water cannot be released from storage unless there is a reasonable beneficial use for the water. The exceptions to this are releases required for flood control, river regulation or dam safety. In the Lower Basin, water is released from the system to satisfy approved water delivery orders and to satisfy other stated purposes. The principal facilities that were built to manage the water in the Colorado River System include Glen Canyon Dam and Hoover Dam.

The Colorado River system is operated by the Bureau of Reclamation (Reclamation) pursuant to the Long Range Operating Criteria (LROC) and the Annual Operating Plan (AOP). The AOP is required by the Colorado River Basin Project Act of 1968 (CRBPA). The AOP is formulated for the upcoming year under a variety of potential scenarios or conditions. The plan is developed based on projected demands, existing storage conditions and probable inflows. The AOP is prepared by Reclamation, acting on behalf of the Secretary, in consultation with the Basin States, the Upper Colorado River Commission, Indian tribes, appropriate federal agencies, representatives of the academic and scientific communities, environmental organizations, the recreation industry, water delivery contractors, contractors for the purchase of federal power, others interested in Colorado River operations, and the general public.

Prior to the beginning of the calendar year, Lower Basin diversion schedules are requested from major water users entitled to use Colorado River water as discussed in Section 4.4. These schedules are estimated monthly diversions and return flows that allow Reclamation to determine a tentative schedule of monthly releases through the Hoover Powerplant. Actual monthly releases are determined by the demand for water downstream of Hoover Dam. Daily changes in water releases are made to accommodate emergencies and weather.

A minimum of 1.5 million acre feet (maf) is delivered annually to Mexico in accordance with the Mexican Water Treaty. The Treaty contains provisions for delivery of up to 200,000 acre feet (af) above the 1.5 maf when there exists water in excess of that necessary to satisfy the uses in the United States and the guaranteed

quantity of 1.5 maf to Mexico. Additionally, excess flows above the 200,000 af may become available to Mexico coincident with Lake Mead flood control releases and Gila River flood flows provided that the reasonable beneficial uses of the Lower Division states have been satisfied.

1.2 DESCRIPTION AND OPERATION OF HOOVER DAM

Hoover Dam and Lake Mead are operated with the following three main priorities: 1) river regulation, improvement of navigation, and flood control, 2) irrigation and domestic uses, including the satisfaction of present perfected water rights, and 3) power. The Boulder Canyon Project Act of 1928 specified flood control as the project purpose having first priority for operation of Hoover Dam and Lake Mead.

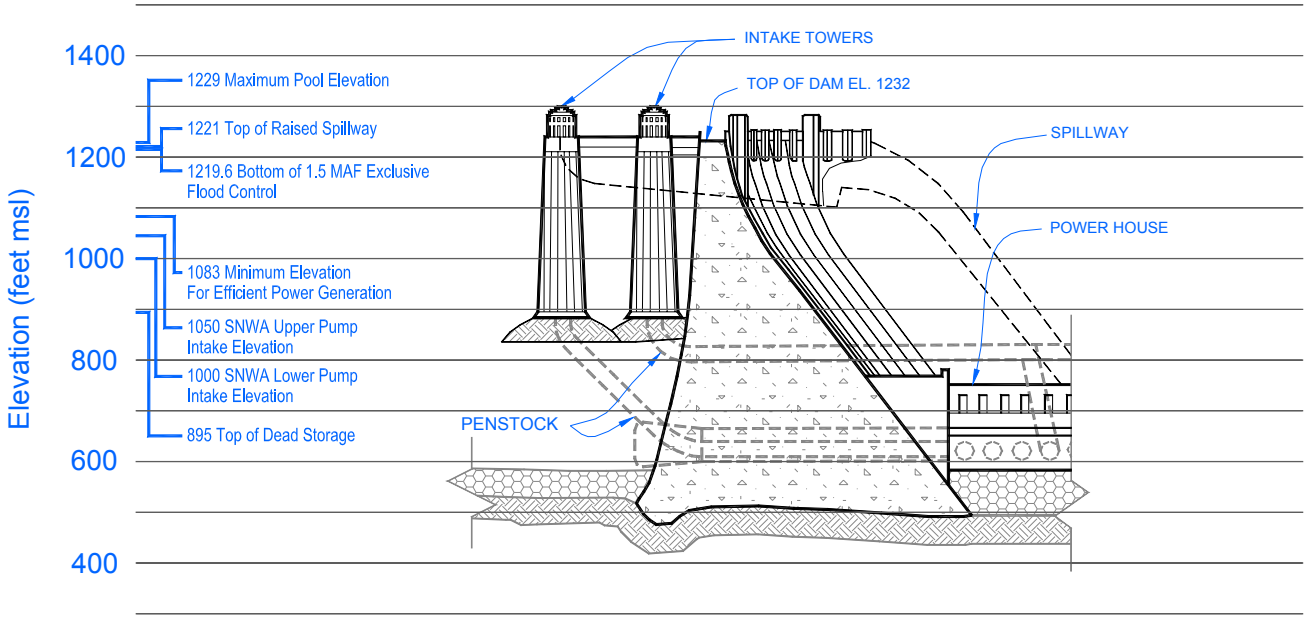
Hoover Dam is the northernmost Reclamation facility on the lower Colorado River and is located 326 miles downstream of Lee Ferry. Hoover Dam provides flood control protection and Lake Mead provides the majority of the storage capacity for the Lower Basin as well as significant recreation opportunities. Lake Mead storage capacity is 27.38 maf at a maximum water surface elevation of 1229.0 feet msl. At this elevation, Lake Mead's water surface area would equal 163,000 acres. The dam's four intake towers draw water from the reservoir at elevations above 895 feet to drive 17 generators within the dam's powerplant. The minimum water surface elevation for efficient power generation is 1083 feet msl.

Flood control regulations for Lake Mead were established to manage potential flood events arising from rain and snowmelt. Lake Mead's uppermost 1.5 maf of storage capacity, between elevations 1219.61 and 1229.0 feet, is defined as exclusive flood control. Within this capacity allocation, 1.218 maf of flood storage is above elevation 1221.0 feet, the top of the raised spillway gates. Figure 1.2-1 illustrates some of the important Hoover Dam and Lake Mead water surface elevations that are referenced in subsequent sections.

Lake Mead is usually at its maximum water level in November and December. If required, system storage space-building is achieved between August 1 and January 1. Hoover Dam storage space-building releases are limited to 28,000 cfs, while the mean daily releases to meet the water delivery orders of Colorado River water entitlement holders normally range between 8000 cfs to 18,000 cfs.

In addition to controlled releases from Lake Mead to meet water supply and power requirements, water is also diverted from Lake Mead at the Southern Nevada Water Authority (SNWA) Saddle Island intake facilities, Boulder City's Hoover Dam intake, and the Basic Management, Inc.'s (BMI) intake facility for use in the Las Vegas area for domestic purposes by SNWA, BMI and other users.

Figure 1.2-1
Lake Mead and Hoover Dam Important Operating Elevations



The diversions by SNWA at its Saddle Island intake facilities entail pumping the water from the intake to SNWA's transmission facilities for treatment and further conveyance to the Las Vegas area. The elevation of the original SNWA intake is approximately 1000 feet msl. However, the minimum required Lake Mead water level necessary to operate the pumping units at SNWA's original intake facility is 1050 feet msl. SNWA recently constructed a second pumping plant with an intake elevation of 950 feet msl. The minimum required Lake Mead water level necessary to operate the pumping units at SNWA's second intake facility is 1000 feet msl. The new SNWA intake provides only a portion of the capacity required by SNWA to meet its Lake Mead water supply needs. Therefore, the intake elevation of SNWA's original pumping plant is critical to its ability to divert its full Colorado River water entitlement.

Hoover Dam is managed to provide at least 7.5 maf annually for consumptive use by the Lower Division states plus the United States' 1.5 maf obligation to Mexico. Hoover Dam releases are managed on an hourly basis to maximize the value of generated power by providing peaking during high-demand periods. This results in fluctuating flows below Hoover Dam that can range from 1,000 cubic feet per second (cfs) to 49,000 cfs. The upper value is the maximum flow-through capacity through the powerplant at Hoover Dam (49,000 cfs). However, because these flows enter Lake Mohave downstream, the affected zone of fluctuation is only a few miles.

Releases of water from Hoover Dam may also be affected by the Secretary's determinations relating to normal, surplus or shortage water supply conditions, as provided in the LROC. Another type of release includes flood control releases. For Hoover Dam, flood control releases are defined in this report as releases in excess of downstream demands.

Flood control was specified as a primary project purpose by the Boulder Canyon Project Act of 1928 (BCPA), the act authorizing Hoover Dam. The Corps is responsible for developing the flood control operation plan for Hoover Dam and Lake Mead as indicated in 33 CFR 208.11. The plan is the result of a coordinated effort by the Corps and Reclamation. However, the Corps is responsible for providing the flood control regulations and has authority for final approval of the plan. Any deviations from the flood control operating instructions provided by the plan must be authorized by the Corps. The Secretary is responsible for operating Hoover Dam in accordance with these regulations.

The flood control regulations specify that once Lake Mead flood releases exceed 40,000 cfs, the releases shall be maintained at the highest rate until the reservoir drops to elevation 1221.0 feet msl. Releases may then be gradually reduced to 40,000 cfs until the prescribed seasonal storage space is available. The regulations set forth two primary criteria for flood control operations related to snowmelt: 1) preparatory reservoir space requirements, and 2) application of runoff forecasts to determine releases.

In preparation for each annual season of snow accumulation and associated runoff, progressive expansion of total Colorado River system reservoir space is required during the latter half of each year. Minimum available flood control space increases from 1.5 maf on August 1 to 5.35 maf on January 1. Required flood storage space can be accumulated within Lake Mead and in specified upstream reservoirs: Powell, Navajo, Blue Mesa, Flaming Gorge and Fontenelle. The minimum required to be reserved exclusively for flood control storage in Lake Mead is 1.5 maf. Table 1.2-1 presents the amount of required flood storage space within the Colorado River system by date:

Table 1.2-1
Minimum Required Colorado River System Storage Space

Date	Storage Space (maf)
August 1	1.50
September 1	2.27
October 1	3.04
November 1	3.81
December 1	4.58
January 1	5.35

Normal space-building releases from Lake Mead to meet the required August 1 to January 1 flood control space are limited to a maximum of 28,000 cfs. Releases in any month based on water entitlement holders' demand are less than 28,000 cfs (on the order of 20,000 cfs or less).

Between January 1 and July 31, flood control releases based on forecasted inflow may be required to prevent filling Lake Mead beyond its 1.5 maf minimum space requirement. Beginning on January 1 and continuing through July, the CBRFC issues monthly runoff forecasts. These forecasts are used by Reclamation in estimating releases from Hoover Dam. The release schedule contained in the Corps' regulations is based on increasing releases in six steps as shown on Table 1.2-2.

Table 1.2-2
Minimum Flood Control Releases at Hoover Dam

Step	Amount of Cubic Feet/Second
Step 1	0
Step 2	19,000
Step 3	28,000
Step 4	35,000
Step 5	40,000
Step 6	73,000

The lowest step, zero cfs, corresponds to times when the regulations do not require flood control releases. Hoover Dam releases are then made to meet water and power objectives. The second step, 19,000 cfs, is based on the powerplant capacity of Parker Dam. The third step, 28,000 cfs, corresponds to the Davis Dam powerplant capacity. The fourth step in the Corps release schedule is 35,000 cfs. This flow corresponds to the powerplant flow-through capacity of Hoover Dam in 1987. However, the present powerplant flow-through capacity at Hoover Dam is 49,000 cfs. At the time Hoover Dam was completed, 40,000 cfs was the approximate maximum flow from the dam considered to be nondamaging to the downstream streambed. The 40,000 cfs flow now forms the fifth step. Releases of 40,000 cfs and greater would result from low-probability hydrologic events. The sixth and final step in the series (73,000 cfs) is the maximum controlled release from Hoover Dam that can occur without spillway flow.

Flood control releases are required when forecasted inflow exceeds downstream demands, available storage space at lakes Mead and Powell and allowable space in other Upper Basin reservoirs. This includes accounting for projected bank storage and evaporation losses at both lakes, plus net withdrawal from Lake Mead by the SNWA. The Corps regulations set the procedures for releasing the volume that cannot be impounded, as discussed above.

Average monthly releases are determined early in each month and apply only to the current month. The releases are progressively revised in response to updated runoff

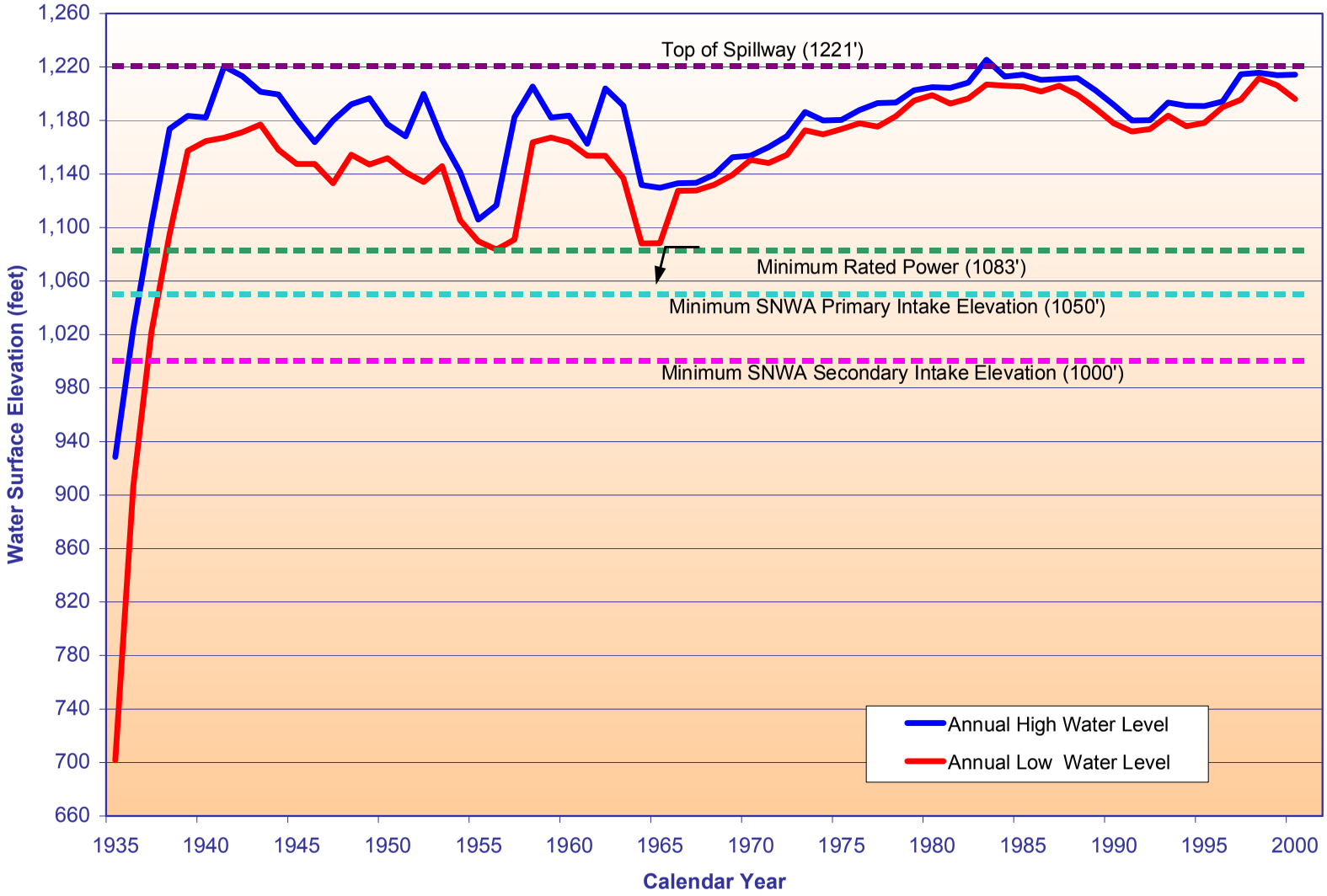
forecasts and changing reservoir storage levels during each subsequent month throughout the January 1–July 31 runoff period. If the reservoirs are full, drawdown is accomplished to vacate flood control space as required. Unless flood control is necessary, Hoover Dam is operated to meet downstream demands.

During non-flood operations, the end-of-month Lake Mead elevations are driven by consumptive use needs, Glen Canyon Dam releases and Treaty deliveries to Mexico. Lake Mead end-of-month target elevations are not fixed as are the end-of-month target elevations for Lake Mohave and Lake Havasu. Normally, Lake Mead elevations decline with increasing irrigation deliveries through June or later and then begin to rise again. Lake Mead's storage capacity provides for the majority of Colorado River regulation from Glen Canyon Dam to the International Boundary with Mexico. Figure 1.2-2 presents the historic annual water levels (annual maximum and minimum) of Lake Mead. The annual change in elevations of Lake Mead has ranged from less than ten feet to as much as 75 feet msl. The calendar year is cited to correspond with Lower Basin water accounting.

The decrease in the range of the elevations within a year observed after the mid-1960s can be attributed to the regulation provided by Lake Powell. Historic Lake Mead low water levels have dropped to the minimum rated power elevation (1083 feet msl) of the Hoover Powerplant during two periods (1954 to 1957 and 1965 to 1966). The maximum Lake Mead water surface elevation of approximately 1225.6 feet msl occurred in only one year, 1983.

Four Lake Mead water surface elevations of interest are also shown in Figure 1.2-2. The first elevation is 1221 feet msl, the top of the spillway gates. The second elevation is 1083 feet msl, the minimum elevation for the effective generation of power. The third elevation is 1050 feet msl, the minimum elevation required for the operation of SNWA's original intake facility. The final elevation is 1000 feet msl, the minimum elevation required for the operation of SNWA's second intake facility.

Figure 1.2-2
Historic Lake Mead Water Levels
(Annual Highs and Lows)



1.3 NATURAL RUNOFF AND STORAGE OF WATER

Most of the natural flow in the Colorado River system originates in the Upper Basin and is highly variable from year to year. The natural flow represents an estimate of runoff flows that would exist without storage or depletion by man and was used in the modeling of the baseline conditions and interim surplus criteria alternatives. About 86 percent of the Colorado River System annual runoff originates in only 15 percent of the watershed—in the mountains of Colorado, Utah, Wyoming and New Mexico. While the average annual natural flow at Lees Ferry is calculated at 15.1 maf, annual flows in excess of 23 maf and as little as 5 maf have occurred. Immediately downstream of Hoover Dam, the river flows consist almost entirely of water released from Lake Mead. Downstream of Hoover Dam, the river gains additional water from tributaries such as the Bill Williams River and the Gila River, groundwater discharge, and return flows.

Figure 1.3-1 presents the annual natural flow calculated at Lees Ferry for calendar years 1906 through 2000. The natural flow represents an estimate of the flows that would occur at Lees Ferry without storage or depletion by human activity. This is different than the recorded or historical stream flows that represent actual measured flows. Figure 1.3-2 presents the annual historical flows recorded at Lees Ferry for the period 1922 through 2000 (calendar year).

Figure 1.3-1
Natural Flow at Lees Ferry Stream Gage

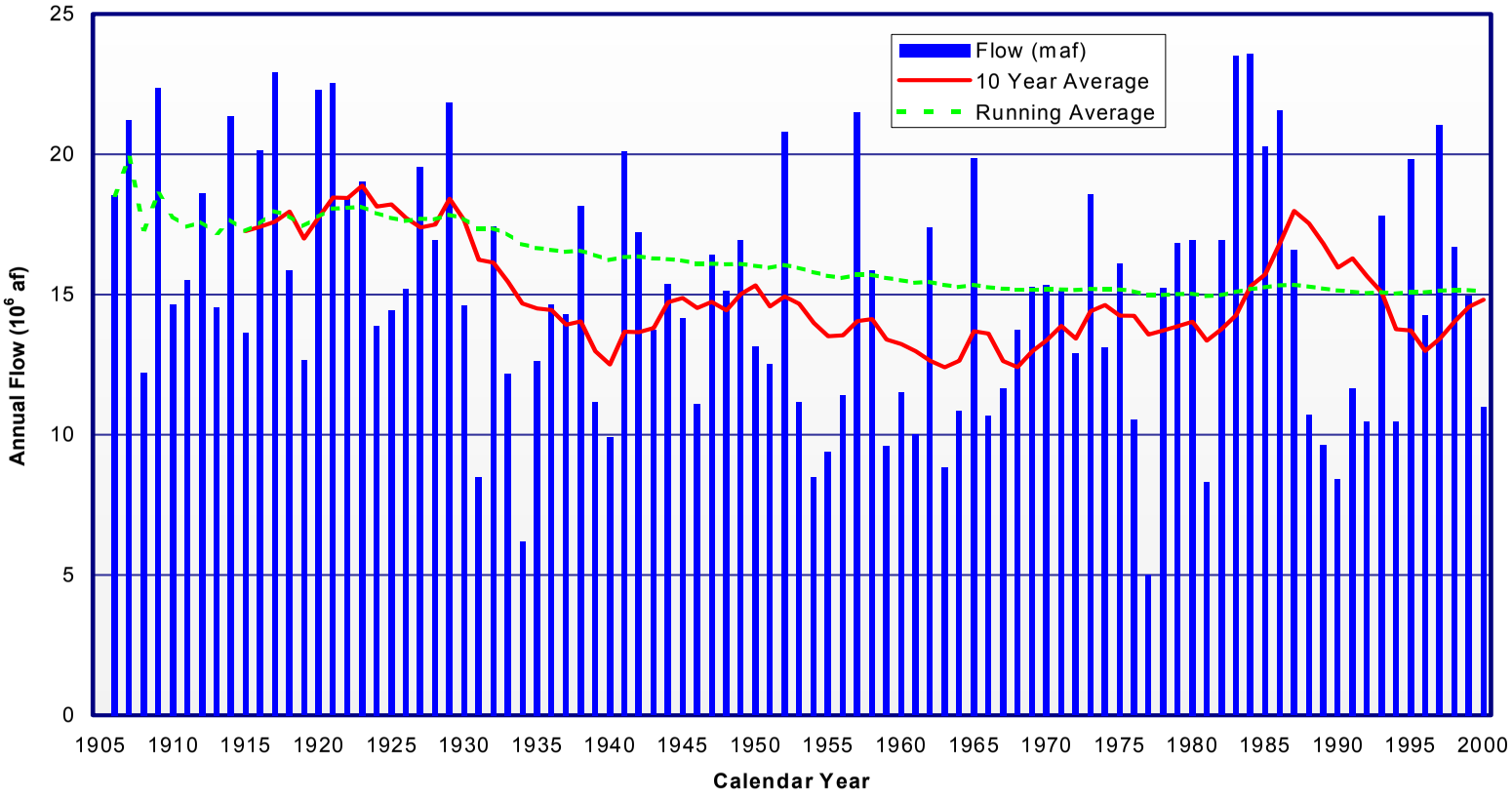
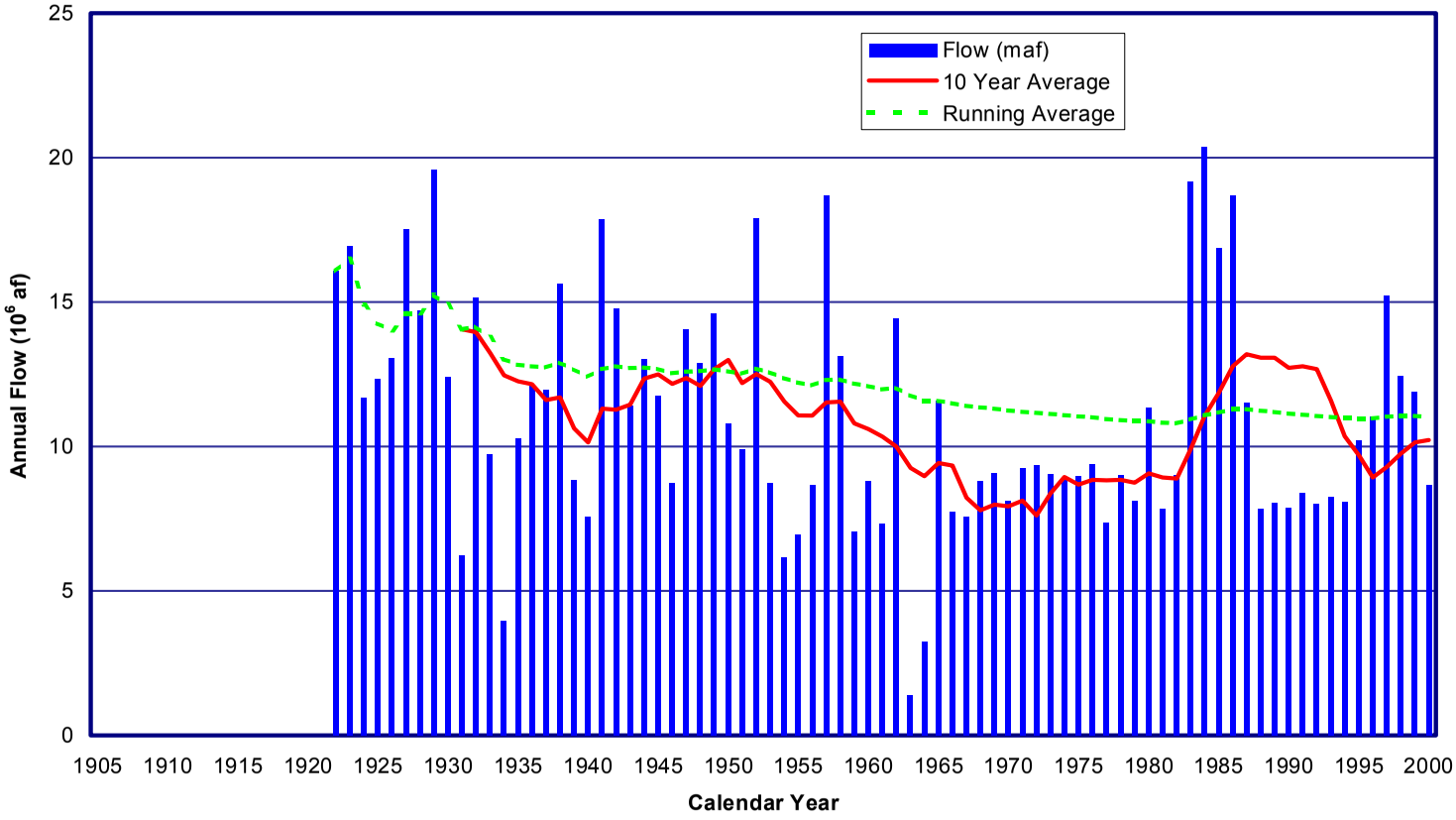


Figure 1.3-2
Historic Annual Flow at Lees Ferry Stream Gage



2.0 RIVER SYSTEM MODELING

This section addresses the modeling and analysis procedures used to simulate river system operation for various operational scenarios. The scenarios were chosen to analyze hydrologic changes that are likely to occur due to execution of the Secretarial Implementation Agreement (IA), which is necessary to implement the water transfers and exchanges proposed in the Quantification Settlement Agreement (QSA). Additional scenarios were modeled to analyze the cumulative effects of the combined Interim Surplus Guidelines (ISG) and QSA.

2.1 MODEL CONFIGURATION

Future river system conditions for each scenario were simulated using a computerized model. The model framework used for this process is the commercial river modeling software called RiverWare (Zagona et al, 2001). RiverWare was developed by the University of Colorado in cooperation with Reclamation and the Tennessee Valley Authority. RiverWare was configured to simulate the Colorado River System and its operation and integrates the Colorado River Simulation System (CRSS) model that was developed by Reclamation in the 1970s. River operation parameters modeled by CRSS on a monthly basis include the water entering the river system, storage in system reservoirs, releases from storage, river flows, and the water demands of and deliveries to the Basin States and Mexico. The water supply used by the model consists of the natural inflow in the river system over the 85-year period from 1906 through 1990, at 29 individual inflow points on the system.

Future Colorado River water demands were based on demand and depletion projections prepared by the Basin States. Depletions are defined as diversions from the river less return flow credits, where applicable. Return flow credits are applied when a portion of the diverted water is returned to the river system. In cases where there are no return flow credits associated with the diversions, the depletion is equal to the diversion. The simulated operation of Glen Canyon Dam, Hoover Dam and other elements of the Colorado River system was consistent with the LROC, applicable requirements for storage and flood control management, water supply deliveries to contractors and federal establishments in the Basin States, Indian tribes, and Mexico, and flow regulation downstream of the system dams.

2.2 CRITERIA MODELED AND ANALYZED

Four Colorado River operational scenarios are considered in this report and are listed in Table 2.2-1. A more detailed description of the assumptions of the four operation scenarios can be found in Section 2.3.

Table 2.2-1
Colorado River Operational Scenarios Modeled

Operational Scenario	Assumptions
No Action	1988/89 agreement (110 kaf transfer from IID to MWD) No other California water transfers (i.e., no QSA) Interim Surplus Guidelines 2002-2016, 70R 2017-2076 MWD meets ISG ROD benchmarks, permitting the Interim Surplus Guidelines to remain in place.
Implementation Agreement	1988/89 agreement (110 kaf transfer from IID to MWD) QSA (388 kaf transfer by 2026) Interim Surplus Guidelines 2002-2016, 70R 2017-2076 ISG ROD benchmarks are met via QSA
Baseline for Cumulative Analysis	1988/89 agreement (110 kaf transfer from IID to MWD) No other California water transfers (i.e., no QSA) No Interim Surplus Guidelines (70R for entire period 2002-2076) No ISG ROD benchmarks to be met
Cumulative Analysis	1988/89 agreement (110 kaf transfer from IID to MWD) QSA (388 kaf transfer by 2026) Additional reduction in diversion by PVID of up to 111 kafs permitting the Secretary to make an equivalent amount of water available to MWD. Interim Surplus Guidelines 2002-2016, 70R 2017-2076 ISG Rod benchmarks are met via QSA

The 1988/89 agreement cited in Table 2.2-1 provides for a 110 kaf reduction in diversion by IID from water conservation to permit the Secretary to make an equivalent amount of water available to MWD.

The operational scenarios in Table 2.2-1 were used in two separate analyses as follows:

1. An analysis that evaluates the potential effects resulting from the implementation of the proposed water transfers (i.e., QSA). Under this analysis, the results of the modeled No Action and Implementation Agreement modeled operational scenarios were compared. The focus of this analysis was to ascertain the potential cumulative impacts to the river system and water deliveries to the Basin states and Mexico resulting from the implementation of the proposed water transfers.

2. An analysis that evaluates the potential cumulative effects from the implementation of the Interim Surplus Guidelines, water transfers proposed in the QSA, and the Palo Verde Irrigation District Land Management, Crop Rotation and Water Supply Program (PVID/MWD program). Under this analysis, the results of the modeled Baseline for Cumulative Analysis and Cumulative Analysis modeled operational scenarios were compared. The focus of this analysis was to ascertain the potential cumulative impacts to the

river system and water deliveries to the Basin states and Mexico resulting from the implementation of these water management programs.

2.3 MODELING ASSUMPTIONS

Due to the high degree of uncertainty in future inflows, projecting the future state of the Colorado River system is also highly uncertain. For this report, this uncertainty is dealt with in two ways. First, the uncertainty due to hydrologic variability is quantified by running many simulations, each with a different assumption of the future inflows. This technique is explained more fully in Section 2.5. Secondly, when comparing operational scenarios, the majority of modeling assumptions is kept consistent between the scenarios, and only those assumptions that are specific to the particular scenario are changed.

The important modeling assumptions used for the scenarios studied are detailed below.

2.3.1 ASSUMPTIONS CONSISTENT FOR ALL OPERATIONAL SCENARIOS

For all scenarios, system conditions were simulated for the period 2002-2076, using the same initial reservoir elevations for January 1, 2002. Reclamation's 24 month study model (a model also implemented in RiverWare) was used to project these elevations, using actual elevations as of April 2001 (the month in which these studies began) and projected operations for the remainder of the 2001 calendar year. These elevations are shown on Table 2.3-1.

Table 2.3-1
Projected Jan 1, 2002 Reservoir Elevations Used as Initial Conditions for Modeling Study

Reservoir	Elevation, feet msl
Fontenelle	6484.89
Flaming Gorge	6023.21
Taylor Park	9309.50
Blue Mesa	7486.72
Morrow Point	7153.73
Crystal	6746.05
Navajo	6074.60
Powell	3669.91
Mead	1182.01
Mohave	638.71
Havasu	445.78

The operation of the Upper Basin reservoirs including Lake Powell, was consistent for all scenarios, as were the Upper Division States depletion projections. These projections were provided by the Upper Colorado River Commission (December 1999) and include new

Indian tribe schedules as documented in the Interim Surplus Criteria FEIS. These schedules are detailed in Attachment B.

The operation of the Lower Basin reservoirs, including Lake Mead was consistent for all scenarios with the exception of the depletion schedules for specific California entities and the criteria under which surplus conditions were determined. These exceptions are discussed in detail in Section 2.3.2. Particular modeling assumptions for the Lower basin that were consistent for all scenarios include:

- Lake Mead is operated to meet downstream demand, (including Mexico), except when additional releases are necessary to meet the Corps flood control regulations.
- Lakes Mohave and Havasu are operated in accordance with their existing rule curves.
- Lower Basin shortage conditions are determined by the strategies detailed in Section 2.4.
- Water deliveries to Mexico are pursuant to the requirements of the Treaty, which provide annual deliveries of 1.5 maf to Mexico under normal conditions, up to 1.7 maf under Lake Mead flood control release conditions, and less than 1.5 maf under conditions of extreme shortage when California's delivery is also cut.

Several other modeling assumptions may be of interest. First, Mexico's principal diversion is at Morelos Dam where most of its Colorado River apportionment of 1.5 maf is diverted. In practice, up to 140 thousand acre-feet (kaf) is delivered to Mexico near the Southerly International Boundary (SIB). The model, however, extends to just south of the Northerly International Boundary (NIB) to include the diversion at Morelos Dam and accounts for the entire Treaty delivery at that point. Under normal conditions, the model sets the diversion and depletion schedule for the Mexican Treaty delivery at Morelos Dam to 1.515 mafy. The additional 15,000 af accounts for typical scheduling errors and over-deliveries.

Secondly, the Yuma Desalting Plant was assumed to remain in ready reserve status with 120,000 acre-feet per year (afy) bypassed to the Cienega de Santa Clara in Mexico from 2002-2021. For modeling purposes, this depletion is not counted as part of the Treaty delivery. The desalting plant is assumed to operate beginning in 2022, reducing the bypass to 52,000 afy. Similarly, for modeling purposes, this bypass is not counted as part of the Treaty delivery. It should be noted that the United States recognizes that it has an obligation to replace, as appropriate, the bypass flows and the assumptions made herein, for modeling purposes, do not necessarily represent the policy that Reclamation will adopt for replacement of bypass flows. The assumptions made with respect to modeling the bypass flows are intended only to provide a thorough and comprehensive accounting of Lower Basin water supply. The United States is exploring options for replacement of the bypass flows, including options that would not require operation of the Yuma Desalting Plant.

Lastly, all Arizona shortages are assumed to be absorbed by the Central Arizona Project (CAP). Reclamation acknowledges that under the current priority framework, there would be some sharing of Arizona shortage between the Central Arizona Project and other Priority 4 users. However, the bases or formula for the sharing of Arizona shortages is the subject of current negotiations and thus could not be adequately modeled. The water supply conditions modeled were used to evaluate the relative differences in water deliveries to users in each state under each operational scenario. The normal, surplus and shortage condition water depletion schedules modeled are consistent with the depletion schedules prepared by the Basin states for this purpose.

2.3.2 MODELING ASSUMPTIONS SPECIFIC TO EACH OPERATIONAL SCENARIO

As previously mentioned, the differences in modeling assumptions between the operational scenarios involve the depletion schedules for specific California entities and the criteria used to determine surplus conditions. A description of these differences follows.

No Action Scenario

In this scenario, no water transfers specified in the QSA are in effect. However, the existing conservation program implemented by IID and funded by MWD (the 1988/89 Agreements) is assumed to continue throughout the study period (2002-2076) at 110 kaf per year. Detailed schedules for the Lower Division state entities under normal conditions for the No Action scenario are presented and discussed in Attachment A.

Surplus conditions are determined under the No Action Scenario using the Interim Surplus Guidelines for the period 2002-2016. For the period 2017-2076, surplus conditions are determined using the "70R" strategy. An overview of these strategies and the corresponding surplus depletion schedules are presented in Attachment C.

One additional assumption should be noted here. In the Interim Surplus Guidelines Record of Decision (ISG ROD), benchmarks for reductions of agricultural use of Colorado River water in California were specified. Since these benchmarks are not met from QSA water transfers under the No Action scenario, it was assumed that the Metropolitan Water District (MWD) would reduce its use to meet the benchmarks and therefore, keep the ISG in effect. Further explanation and the resulting MWD surplus schedules are detailed in Attachment C.

Implementation Agreement Scenario

In this scenario, water transfers consistent with the QSA are assumed under normal conditions. These transfers are in addition to the 110 kafy due to the 1988/89 Agreement between IID and MWD. Most of these transfers are assumed to "ramp up" over the first 25 years. The total amount of water transferred from California

agricultural use to MWD is 388.2 kaf by the year 2026 and remains at that amount for the period 2027 – 2047.

In 2047, the total amount of water transferred to MWD is assumed to drop to 338.2 kaf per year and remain at that level through 2076. This 50 kaf drop is the result of assuming that the "Second 50 kafy" transfer (see section 2.2.1.1 of the DEIS) from IID does not occur. This assumption was made to model the "worst case" with regard to reduced river flows in the Parker to Imperial reach.

Further details of the water transfers assumed under the IA scenario can be found in Attachment A.

Surplus conditions are determined under the IA scenario identical to those of the No Action Scenario (i.e., ISG 2002-2016, 70R 2017-2076). The surplus depletion schedules are also identical, with the exception of the MWD schedules, since the ISG ROD benchmarks are met with the QSA water transfers. These schedules are detailed in Attachment C.

Baseline for Cumulative Analysis Scenario

In this scenario, the normal depletion schedules are identical to those used for the No Action scenario (i.e., no water transfers except for the 1988/89 Agreements).

Surplus conditions are determined under this scenario using the 70R strategy for the entire period, 2002-2076. Interim Surplus Guidelines are not in effect, and therefore, there are no benchmark reductions to meet. A further explanation of this strategy and the corresponding surplus schedules are detailed in Attachment C.

Cumulative Analysis Scenario

In this scenario, the normal depletion schedules are identical to those used for the IA scenario (i.e., 388 kaf of transfers by 2026), but with the addition of approximately 110 kaf/year of transfers from PVID to MWD under the PVID/MWD program. These schedules are detailed in Attachment A.

Surplus conditions are determined under this scenario identical to those of the IA scenario. The surplus depletion schedules are also identical to those used for the IA scenario.

2.4 LAKE MEAD WATER LEVEL PROTECTION ASSUMPTIONS

There are no established shortage criteria for the operation of Lake Mead. However, it was necessary to include some shortage criteria in the model simulation to address concerns related to low Lake Mead water levels. Three important Lake Mead water elevations were selected for analysis. The significance of these selected elevations relates to known economic and/or socioeconomic impacts that would occur if Lake Mead water levels were lowered below the selected water levels. Elevation 1083 feet msl is the minimum water level for efficient power generation at the Hoover Powerplant based on its existing turbine configuration. Elevation 1050 feet msl is the minimum water level necessary for operation of SNWA's upper water intake. Water withdrawn from the Lake Mead through this intake is delivered to Las Vegas Valley, Boulder City and other parts of Clark County. Even though SNWA has constructed a second intake at a lower elevation, the original intake at elevation 1050 feet msl is needed to meet full SNWA summer diversions. Elevation 1000 feet msl is the minimum water level necessary for operation of SNWA's lower water intake.

In the absence of specific shortage criteria, the Lake Mead level protection assumptions listed below were assumed for all operational scenarios modeled.

First Level Shortage:

- The Lake Mead water level of 1083 feet msl was designated as a level that should be protected. The "protection line" (to prevent the water level from declining below elevation 1083 feet msl with approximately an 80 percent probability) used for the Interim Surplus Criteria Final Environmental Impact statement (Reclamation, 2000) was extrapolated from 2050 through 2076 and used for this study. A graph of this protection line is presented in Attachment D. Sensitivity analysis of using a 1050-foot protection line is also discussed in Attachment D.
- A "first-level" shortage would be determined to exist for any year in which the Lake Mead water level was below the protection line at the beginning of the year.
- During first level shortage conditions, the annual water delivery to CAP was set to 1.0 maf, and the Southern Nevada Water Authority (SNWA) was assigned four percent of the total shortage.

Second Level Shortage:

- A second level shortage would be determined to exist for any year if the Lake Mead water surface elevation was projected at the beginning of the year to fall below 1000 feet msl by the end of the year.

- During second level shortage conditions, the CAP and SNWA consumptive use would be reduced as needed to maintain the Lake Mead water level at 1000 feet msl. Once the delivery to the CAP is reduced to zero, deliveries to MWD and to Mexico would be reduced to maintain the Lake Mead water level at 1000 feet msl.

2.5 COMPUTATIONAL PROCEDURES

As previously discussed, the model was used to simulate the future state of the Colorado River system on a monthly basis, in terms of reservoir levels, releases from the dams, hydroelectric energy generation, flows at various points along the system and diversions to and return flows from various water users. The input data for the model included the monthly tributary inflows, various physical process parameters (such as the evaporation rates for each reservoir) and the diversion and depletion schedules for entities in the Basin States and Mexico. The common and specific modeling assumptions were also input for each scenario being studied.

Despite the differences in the modeling assumptions for each scenario, the future state of the Colorado River system (i.e., water levels at Lake Mead and Lake Powell) is most sensitive to the future inflows. As discussed in Section 1.4, observations over the period of historical record (1906–present) show that inflow into the system has been highly variable from year to year. Predictions of the future inflows, particularly for long-range studies, are highly uncertain. Although the model does not predict future inflows, it can be used to analyze a range of possible future inflows and to quantify the probability of particular events (i.e., lake levels being below or above certain levels).

Several methods are available for ascertaining the range of possible future inflows. On the Colorado River, a particular technique (called the Indexed Sequential Method) has been used since the early 1980s and involves a series of simulations, each applying a different future inflow scenario (USBR, 1985; Ouarda, *et al.,* 1997). Each future inflow scenario is generated from the historical natural flow record by "cycling" through that record. Currently, the natural flow record from water years 1906-1990 is utilized, although work is on-going to compute the natural flows for all 29 inflow points from 1991 to present. For example, the first simulation assumes that the inflows for 2002 through 2076 will be the 1906 through 1980 record, the second simulation assumes the inflows for 2002 through 2076 will be the 1907 through 1981 record, and so on. As the method progresses, the historical record is assumed to "wrap-around" (i.e., after 1990, the record reverts back to 1906), yielding a possible 85 different inflow scenarios. The result of the Indexed Sequential Method is a set of 85 separate simulations (referred to as "traces") for each operating criterion that is analyzed. This enables an evaluation of the respective criteria over a broad range of possible future hydrologic conditions using standard statistical techniques.

2.6 POST-PROCESSING AND DATA INTERPRETATION PROCEDURES

The various hydrologic, environmental and socioeconomic analyses in the DEIS requires the sorting and arranging of various types of model output data into tabulations or plots of specific operational conditions, or parameters, at various points on the system. This was done through the use of statistical methods and other numerical analyses.

The model generates data on a monthly time step for some 300 points (or nodes) on the river system. Furthermore, through the use of the Indexed Sequential Method, the model generates 85 possible outcomes for each node for each month over the time period 2002 through 2076. These very large data sets are generated for each surplus alternative and baseline conditions and can be visualized as three-dimensional data "cubes" with the axes of time, space (or node) and trace (or outcome for each future hydrology). The data are typically aggregated to reduce the volume of data and to facilitate comparing the operational scenarios. The type of aggregation varies depending upon the needs of the particular resource analysis. The post-processing techniques used for this report fall into two basic categories: those that aggregate in time, space or both, and those that aggregate the 85 possible outcomes.

For aggregation in time and space, simple techniques are employed. For example, deliveries of Colorado River water to all California diversion nodes in the model are summed to produce the total delivery to the state for each calendar year. Similarly, lake elevations may be chosen on an annual basis (i.e., end of December) to show long-term lake level trends as opposed to short-term fluctuations. For comparison purposes, three time periods are routinely used in this analysis. They are the 15-year period that coincides with the interim surplus guidelines period (2002 through 2016), the 60 year period of time that follows (2017 through 2076), and the entire 75-year period of analysis. The particular time period used will be noted in the methodology section for each resource.

Once the appropriate temporal and spatial aggregation is chosen, standard statistical techniques are used to analyze the 85 possible outcomes for a fixed time. Statistics that may be generated include the mean and standard deviation. However, the most common technique simply ranks the outcomes at each time (from highest to lowest) and uses the ranked outcomes to compute other statistics of interest. For example, if end-of-calendar year Lake Mead elevations are ranked for each year, the median outcome for a given year is the elevation for which half of the values are below and half are above the median value, which is also referred to as the 50^{th} percentile value. Similarly, the elevation for which 10 percent of the values are less than or equal to, is the 10^{th} percentile outcome.

Several presentations of the ranked data are then possible. A graph (or table) may be produced that compares the 90^{th} percentile, 50^{th} percentile, and 10^{th} percentile outcomes

from 2002 through 2076 for the cases analyzed. It should be noted that a statistic such as the 10th percentile is not the result of any one hydrologic trace (i.e., no historical sequence produced the 10th percentile).

3.0 RIVER SYSTEM MODELING RESULTS

This section presents general and specific discussions of the Colorado River System operation modeling results. The following sequence of topics is used to address the potentially affected river system components:

- River flows between Glen Canyon Dam and Lake Mead,
- Lake Mead water levels, and
- River flows below Hoover Dam.

Two separate analyses are presented in this section, each covering the four topics listed above. These analyses are as follows:

- An analysis of the Implementation Agreement. This analysis compares conditions under the Implementation Agreement with No Action.
- A cumulative analysis of the Implementation Agreement and other projects affecting river operation. This analysis compares conditions under the Cumulative Analysis with a specific Baseline for Cumulative Analysis.

The operational scenarios used for these two analyses were described in Section 2.2.

As noted previously, the focus of this analysis is the potentially affected portion of the Colorado River system extending from Lake Powell to the SIB. Although lakes Mohave and Havasu are within the potentially affected area, it has been determined that the Implementation Agreement would have no effect on the operation of these facilities. Lakes Mohave and Havasu are operated pursuant to monthly target elevations that are used to manage the storage, water release, and power production at these facilities. Under the respective target elevations, the annual water level fluctuation is approximately 14 feet for Lake Mohave and approximately four feet for Lake Havasu. Under all future operating scenarios considered under this analysis, lakes Mohave and Havasu would continue to be operated under their current respective monthly target elevations.

3.1 GENERAL OBSERVATIONS CONCERNING MODELING RESULTS

The following general observations apply to the results of operational modeling of the Implementation Agreement and the cumulative analysis:

- Future water levels of Lake Mead will probably be lower than historical levels due to increasing Upper Basin depletions under the No Action conditions and the Implementation Agreement.
- Median Lake Mead water levels decline throughout the period of analysis for the No Action conditions and the Implementation Agreement because Lower

Division depletions and evaporation exceed long-term inflow. Median Lake Powell levels decline for a number of years and then stabilize under the No Action conditions as well as under the Implementation Agreement. The declining median trend in Lake Powell levels under the No Action and Implementation Agreement conditions is due to increasing Upper Division depletions. Lake Powell water levels eventually stabilize under the No Action and Implementation Agreement conditions. This behavior is caused by less frequent equalization releases from Lake Powell to Lake Mead (due to the 602(a) storage requirements) as the Upper Division states continue to increase their use of Colorado River water.

- Under normal conditions, deliveries to the Lower Basin users are always equal to the normal depletion schedules, including those for the Indian tribes. Under shortage conditions, only CAP and SNWA share in the shortage until CAP goes to zero (which was not observed in any of the modeling runs done for this FEIS). Therefore, all tribes in the 10 Tribe Partnership in the Lower Basin receive their scheduled depletion, with the exception of the Cocopah Tribe which holds a right to some Arizona Priority 4 water. As discussed above, as a modeling assumption, all Arizona shortages were assigned to CAP for this FEIS.

The Cumulative Analysis covers the effects of the recently implemented interim surplus guidelines, the proposed Implementation Agreement, and the certain other proposed water transfers within California. The modeling study indicated that the cumulative effects would be as follows, when measured at the median of the values produced (50^{th} percentile) unless otherwise noted.

- The water levels of Lake Mead would be lower during and immediately after the interim surplus period but after several decades water levels would be the same as those under baseline conditions.

- The annual river flows below the Havasu National Wildlife Refuge would be greater under Cumulative Analysis conditions than under the Baseline for Cumulative Analysis through 2016, after which flow conditions would be essentially the same as under the baseline.

- The annual river flows below Parker Dam and below the Palo Verde Irrigation District diversion would be lower under Cumulative Analysis conditions than under the Baseline for Cumulative Analysis through 2016, after which flow conditions would remain lower than under the baseline.

- The flows in the Colorado River below Morelos Dam, which lie in the realm of the 90^{th} percentile of annual flow, would be approximately the same under Cumulative Analysis conditions as under the Baseline for Cumulative Analysis,

although the cumulative values would vary above and below the baseline from year to year.

3.2 ANALYSIS OF WATER TRANSFERS

3.2.1 LAKE MEAD WATER LEVELS

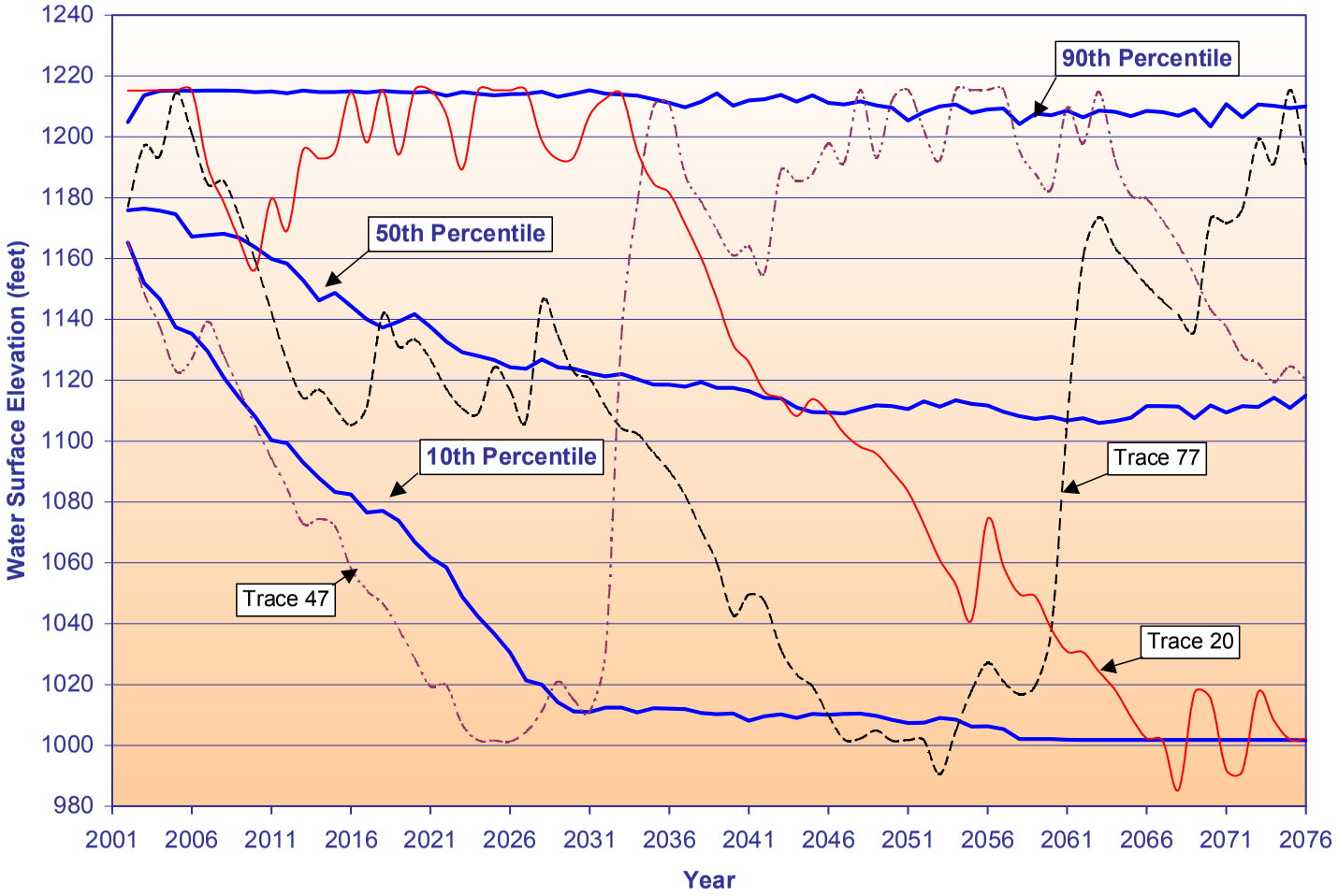
This section summarizes the results of the future Lake Mead water level simulations under No Action conditions and Implementation Agreement conditions.

3.2.1.1 MODELING RESULTS OF NO ACTION

Under the No Action conditions, the water surface elevation of Lake Mead is projected to fluctuate between full level and decreasingly lower levels during the period of analysis (2002 to 2076). Figure 3.2-1 illustrates the range of water levels (end of December) by three lines, labeled 90th Percentile, 50th Percentile and 10th Percentile. The 50th percentile line shows the median water level for each future year. The median water level under No Action conditions is shown to decline to 1144 feet msl by 2016 and to 1115 feet msl by 2076. The 10th percentile line shows there is a 10 percent probability that the water level would decline to 1082 feet msl by 2016 and to 1002 feet msl by 2076. It should also be noted that the Lake Mead elevations depicted in Figure 3.2-1 represent water levels at the end of December which is when lake levels are at a seasonal high. Conversely, the Lake Mead water level generally reaches its annual low in July.

Three distinct traces are added to Figure 3.2-1 to illustrate what was actually simulated under the various traces and respective hydrologic sequences and to highlight that the 90th, 50th and 10th percentile lines do not represent actual traces, but rather the ranking of the data from the 85 traces for the conditions modeled. The three traces illustrate the variability among the different traces and that the reservoir levels could temporarily decline below the 10th percentile line. The trace identified as Trace 20 represents the hydrologic sequence that begins in year 1925. The trace identified as Trace 47 represents the hydrologic sequence that begins in year 1952. The trace identified as Trace 77 represents the hydrologic sequence that begins in year 1982.

Figure 3.2-1
Lake Mead End-of-December Water Elevations Under No Action Conditions
90th, 50th and 10th Percentile Values and Representative Traces



In Figure 3.2-1, the 90th and 10th percentile lines bracket the range where 80 percent of future Lake Mead water levels simulated for the No Action conditions occur. The highs and lows shown on the three traces would likely be temporary conditions. The reservoir level would tend to fluctuate through multi-year periods of above average and below average inflows. Neither the timing of water level variations between the highs and the lows, nor the length of time the water level would remain high or low can be predicted. These events would depend on the future variation in basin runoff conditions.

Figure 3.2-2 presents the 90th, 50th and 10th percentile plots obtained for the No Action conditions and those obtained for the Implementation Agreement. This figure is best used for comparing the relative differences in the general lake level trends between the simulated No Action and Implementation Agreement conditions.

Figure 3.2-3 shows the frequency at which future Lake Mead end of December water surface elevations under No Action conditions would be at or exceed 1200 feet msl. The corresponding frequency with the Implementation Agreement is also plotted. The lines represent the percentage of values of all 85 traces that are equal to or greater than elevation 1200 feet msl. In year 2016, under the No Action conditions, the percentage of values greater than or equal to elevation 1200 feet msl is 19 percent. After 2016 the annual percentages of values equal to or greater than elevation 1200 feet msl vary around 20 percent for a decade and then decrease gradually to 13 percent in 2076 under No Action conditions.

Figure 3.2-4 provides a comparison of the frequency that future Lake Mead end of December water levels would be at or above elevation 1083 feet msl under No Action and Implementation Agreement conditions. In year 2016, under the No Action conditions, the percentage of values greater than or equal to elevation 1083 feet msl is 89 percent. After 2016 the annual percentages of values equal to or greater than elevation 1083 feet msl decline to 56 percent in 2076 under No Action conditions.

Figure 3.2-2
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement and No Action Conditions
90th, 50th and 10th Percentile Values

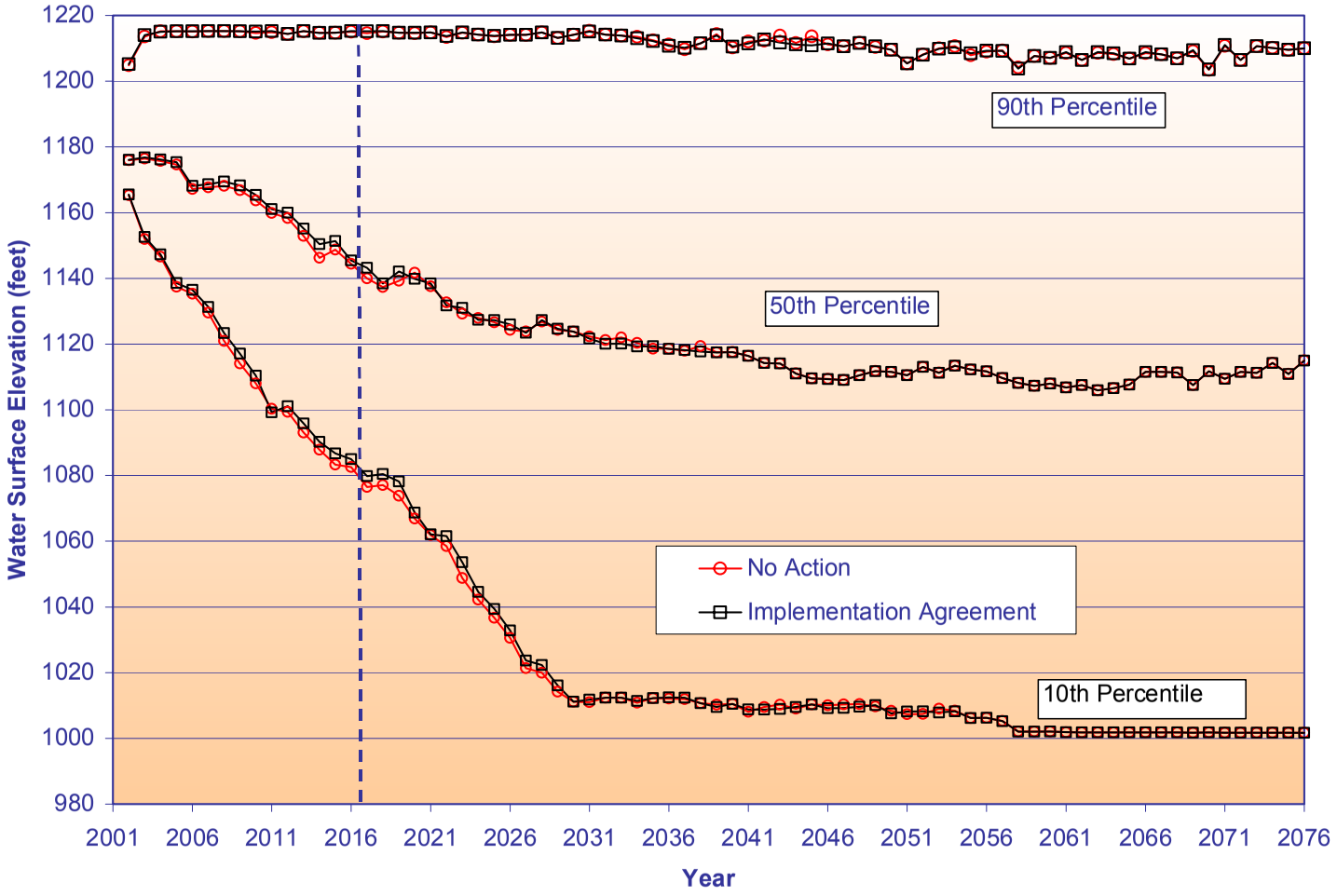


Figure 3.2.3
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement and No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1200 Feet

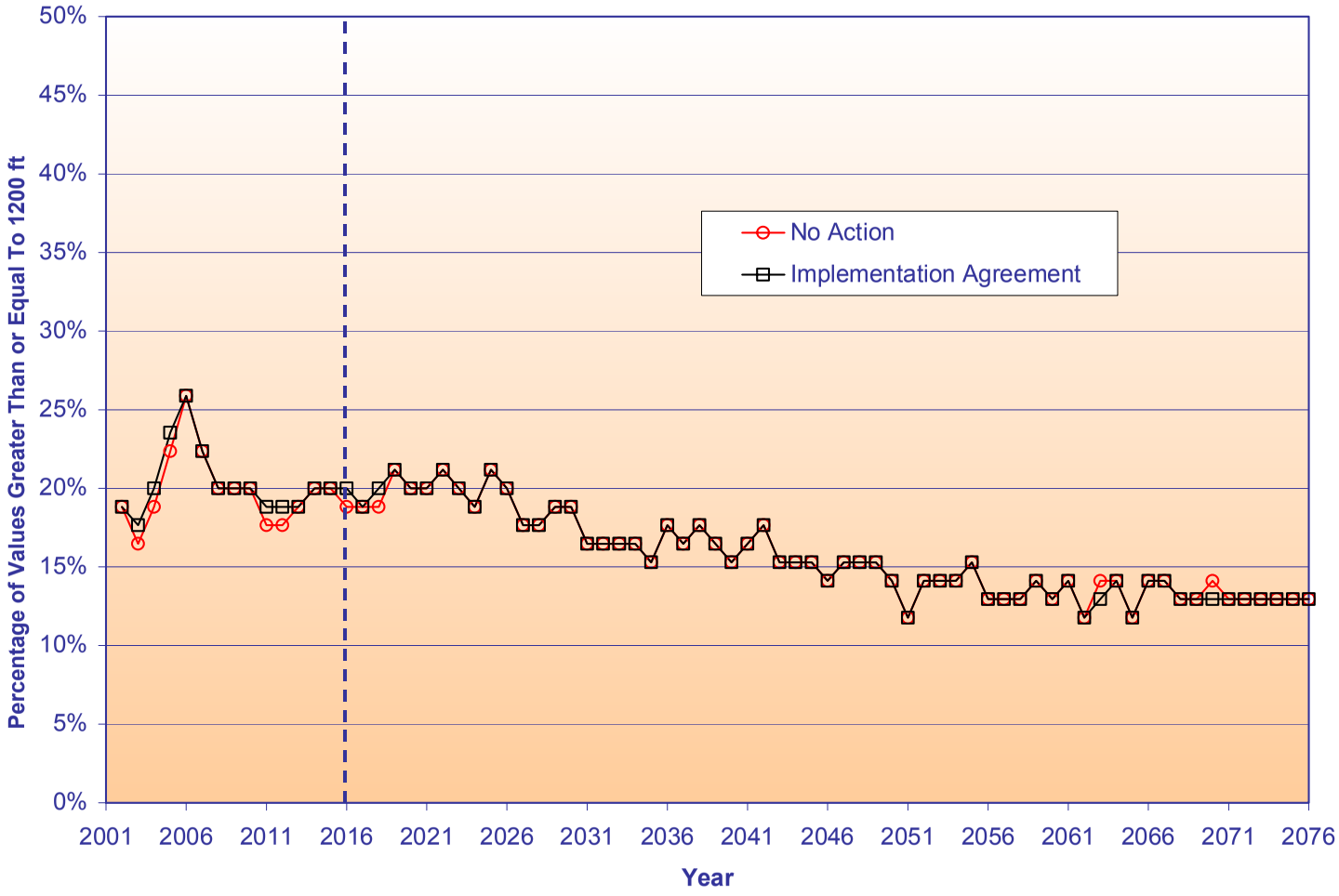


Figure 3.2-4
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1083 Feet

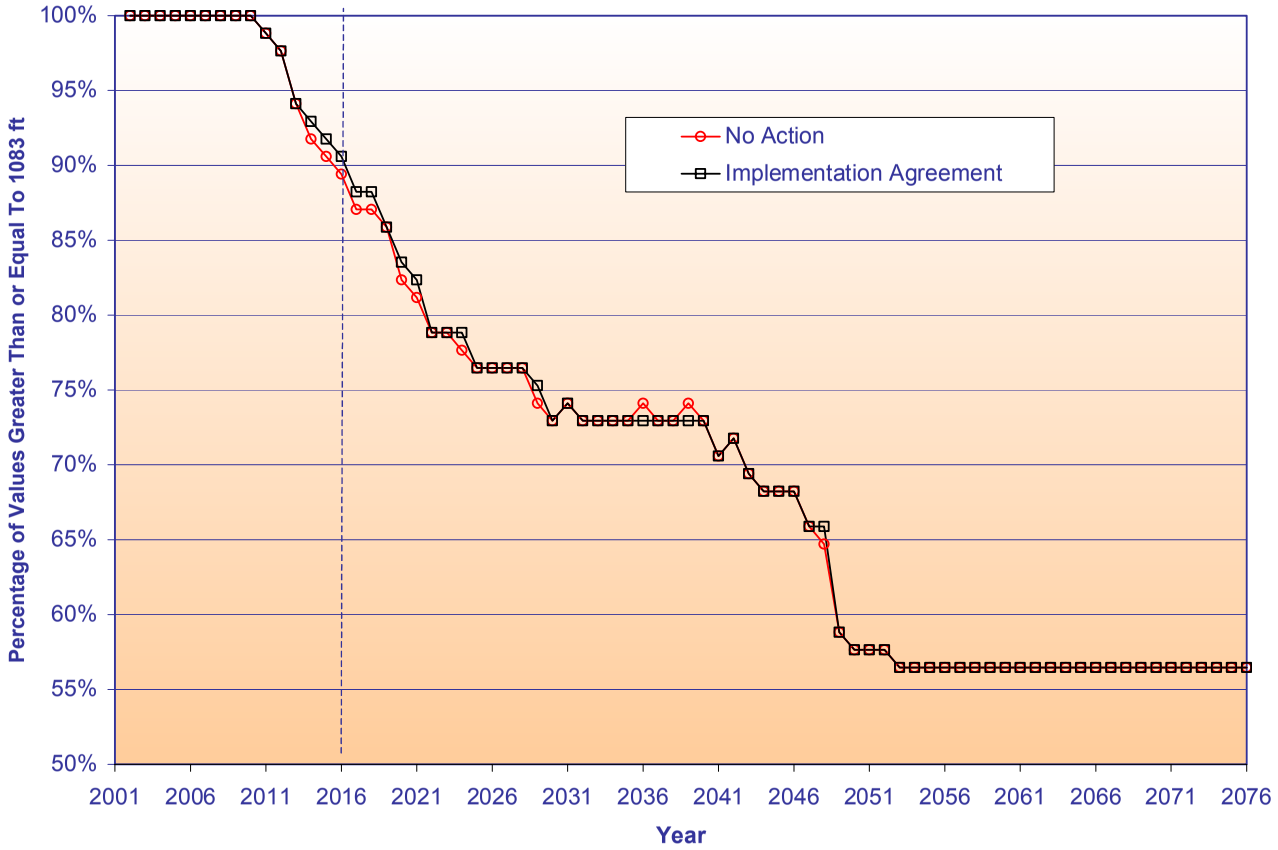


Figure 3.2-5 provides a comparison of the frequency that future Lake Mead end of December water levels would be at or above elevation 1050 feet msl under No Action and Implementation Agreement conditions. Between 2002 and 2016, under No Action conditions, the percentage of values greater than or equal to elevation 1050 feet msl is 100 percent. After 2016 the annual percentages of values equal to or greater than elevation 1050 feet msl decline to 60 percent in 2071 under No Action conditions.

Figure 3.2-6 provides a comparison of the frequency that future Lake Mead end of December water elevations under No Action conditions and the Implementation Agreement would be at or exceed a lake water elevation of 1000 feet msl. Between 2002 and 2016, under the No Action conditions, the percentage of values greater than or equal to elevation 1000 feet msl is 100 percent. After 2016 the annual percentages of values equal to or greater than elevation 1000 feet msl remain at 100 percent for several decades before declining to 94 percent in 2076 under No Action conditions.

3.2.1.2 COMPARISON OF IMPLEMENTATION AGREEMENT TO NO ACTION

Figure 3.2-3 compared the 90th, 50th and 10th percentile water levels of the Implementation Agreement to those of the No Action conditions. As discussed above, under No Action conditions, future Lake Mead water levels at the upper and lower 10th percentiles would likely be temporary and the water levels are expected to fluctuate between them in response to multi-year variations in basin runoff conditions. The same would apply to the Implementation Agreement.

The 90th percentile, median (50th percentile) and 10th percentile values of the Implementation Agreement are compared to those of the No Action conditions in Table 3.2-4. The values presented in this table are for years 2016, 2026, 2036, 2046, and 2076. There are no significant differences between the values under Implementation Agreement and No Action Conditions.

Table 3.2-1
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
90th, 50th and 10th Percentile Values

Year	No Action			Implementation Agreement		
	90th Percentile	50th Percentile	10th Percentile	90th Percentile	50th Percentile	10th Percentile
2016	1215	1144	1083	1215	1146	1085
2026	1214	1124	1031	1214	1126	1033
2036	1213	1119	1012	1211	1119	1013
2046	1211	1109	1010	1211	1109	1009
2076	1210	1115	1002	1210	1115	1002

Figure 3.2-5
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1050 Feet

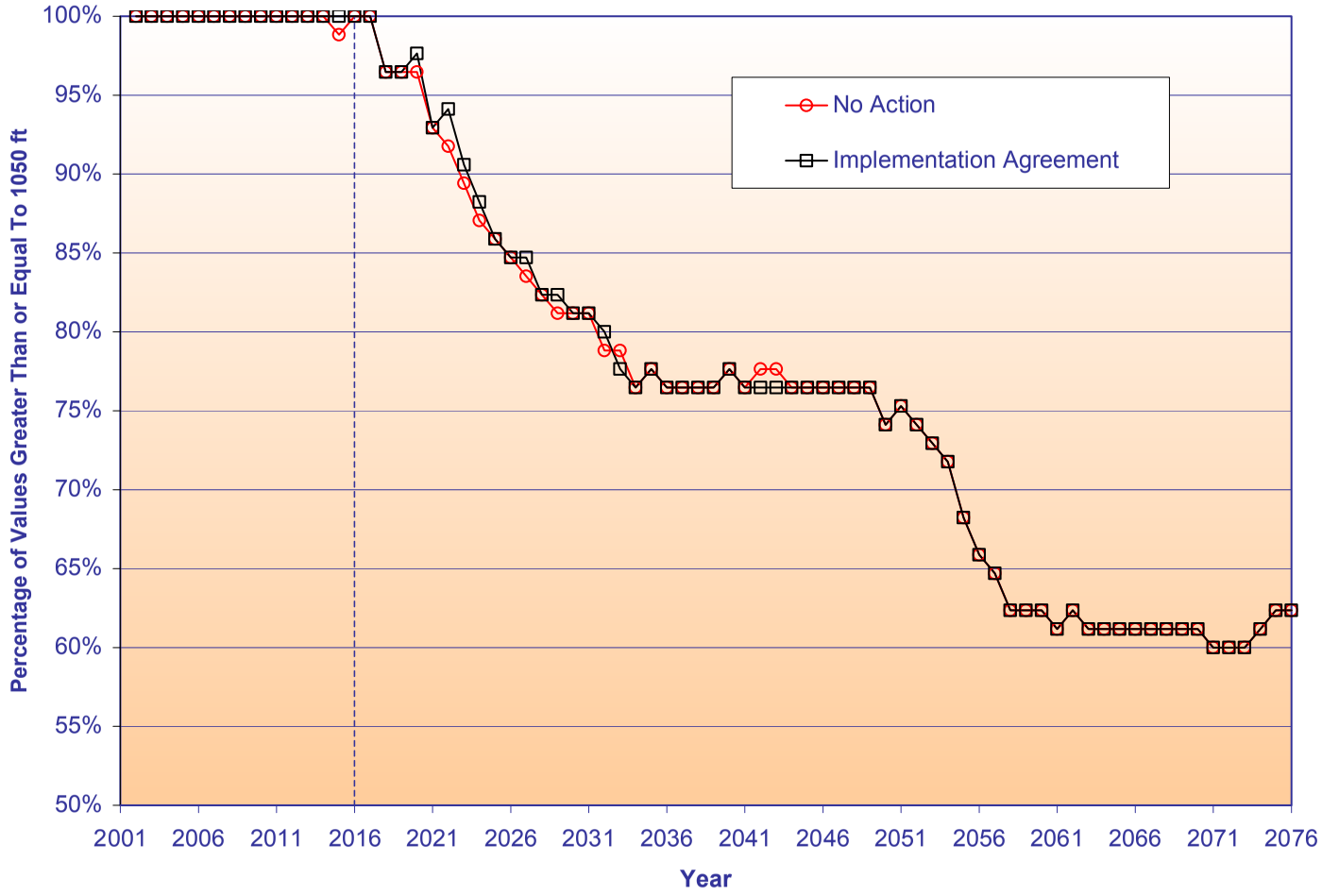


Figure 3.2-6
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1000 Feet

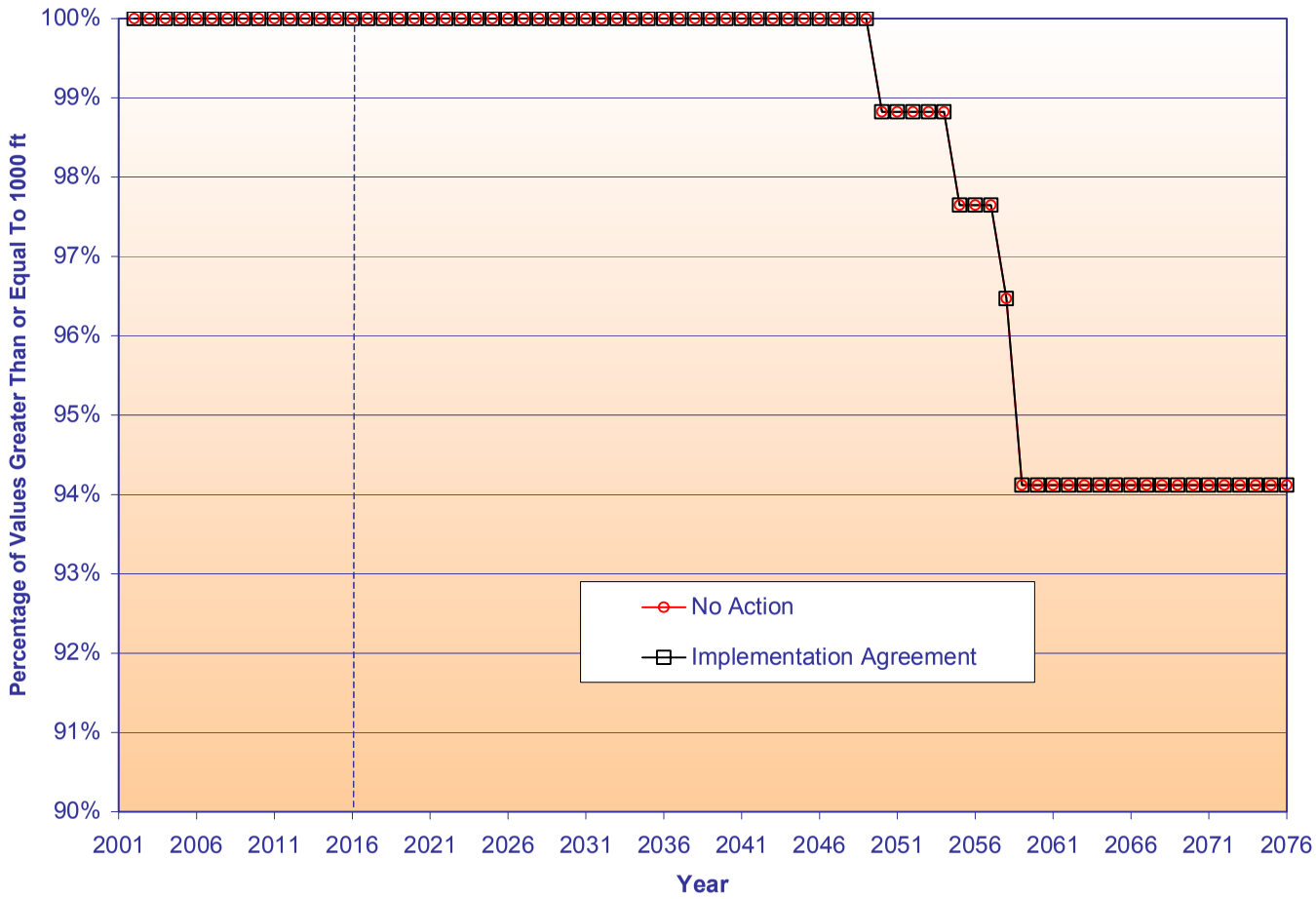


Figure 3.2-3 compared the percentage of Lake Mead elevations that were at or above 1200 feet msl for the Implementation Agreement and No Action conditions. Table 3.2-2 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.2-2
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1200 Feet

Year	No Action	Implementation Agreement
2016	19%	20%
2026	20%	20%
2036	18%	18%
2046	14%	14%
2076	13%	13%

Figure 3.2-4 compared the percentage of Lake Mead elevations that were at or above 1083 feet msl for the Implementation Agreement and No Action conditions. Table 3.2-3 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.2-3
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1083 Feet

Year	No Action	Implementation Agreement
2016	89%	91%
2026	76%	76%
2036	74%	73%
2046	68%	68%
2076	56%	56%

Figure 3.2-5 compared the percentage of Lake Mead elevations that were at or above 1050 feet msl for the Implementation Agreement and No Action conditions. Table 3.2-4 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.2-4
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1050 Feet

Year	No Action	Implementation Agreement
2016	100%	100%
2026	85%	85%
2036	76%	76%
2046	76%	76%
2076	62%	62%

Figure 3.2-6 compared the percentage of Lake Mead elevations that were at or above 1000 feet msl for the Implementation Agreement and No Action conditions. Table 3.2-7 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.2-5
Lake Mead End-of-December Water Elevations
Comparison of Implementation Agreement to No Action Conditions
Percentage of Values Greater than or Equal to Elevation 1000 Feet

Year	No Action	Implementation Agreement
2016	100%	100%
2026	100%	100%
2036	100%	100%
2046	100%	100%
2076	94%	94%

3.2.1.3 SENSITIVITY ANALYSIS

The water surface elevations of Lake Mead presented above are based on model operations in which the Lake Mead water surface elevation of 1083 feet msl was assumed to be the shortage protection level. In order to test the sensitivity of that assumption on the results of the model operation, model runs were also conducted with an assumed Lake Mead protection level of 1050 feet msl. With the 1050-foot protection level, the resulting water levels on Lake Mead range up to approximately 13 feet lower than those based on the 1083-foot protection level under Implementation Agreement Conditions, after 2010 for the 50^{th} and 10^{th} percentiles. Lake Mead water level plots based on the use of the 1050-foot protection level are included in Attachment D.

3.2.2 RIVER FLOWS BELOW HOOVER DAM

This section describes results of the analysis of the simulated Colorado River flows below Hoover Dam. The model of the Colorado River system was used to simulate future mean monthly flows under No Action and Implementation Agreement conditions. Four specific river locations were selected to represent flows within selected river reaches below Hoover Dam. The river reaches and corresponding flow locations are listed in Table 3.2-6 and shown on Map 3.2-1.

Table 3.2-6
Colorado River Flow Locations Identified for Evaluation

Colorado River Reach	Selected River Flow Locations	
	Description	Approximate River Mile [1]
Between Hoover Dam and Parker Dam	Havasu National Wildlife Refuge (NWR)	242.3
Between Parker Dam and Palo Verde Diversion Dam	Upstream of Colorado River Indian Reservation	180.8
Between Palo Verde Diversion and Imperial Dam	Downstream of the Palo Verde Diversion Dam	133.8
Between Imperial Dam and SIB	Below the Mexico Diversion at Morelos Dam	23.1

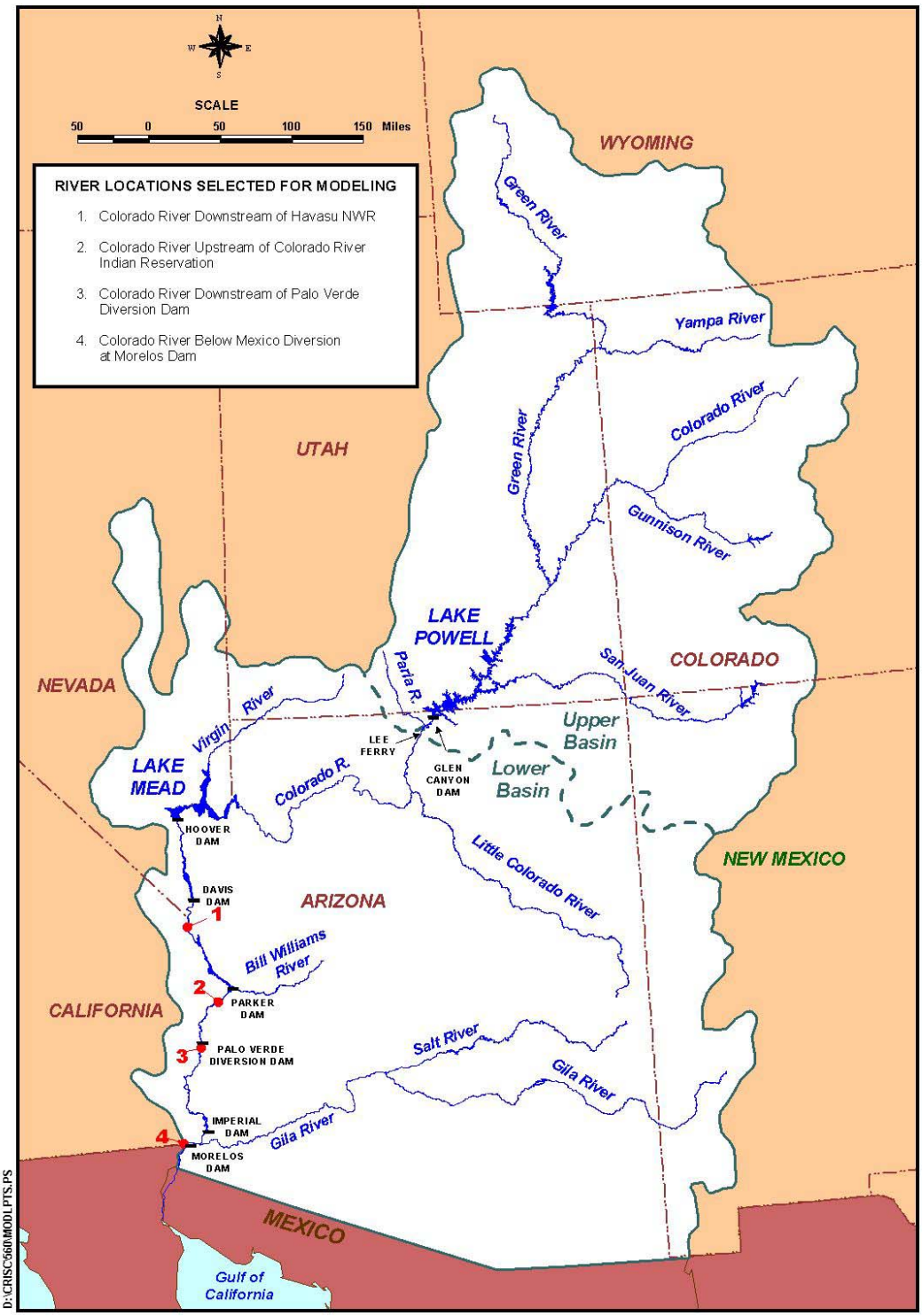
[1] River miles as measured from the southerly international boundary with Mexico

Two types of analysis of the potential of Implementation Agreement to affect river flows were conducted. In the first analysis, the potential effects on the total annual volume of flow in each reach were evaluated. In this analysis, the mean monthly flows were first summed over each calendar year. The 90^{th}, 50^{th}, and 10^{th} percentiles of the annual volumes were then computed for each year. Plots of these percentiles for No Action
and Implementation Agreement conditions are included in this section for each of the four river points. Cumulative distributions of the annual flow volumes are also presented for 2016 to aid in the understanding of the effects.

The second analysis investigated the potential effects on seasonal flows. Cumulative distributions of mean monthly flows (in cfs) were produced for specific years and selected months representative of each season. The mean monthly flows for January were used to represent the winter season flows and likewise for April, July, and October to represent spring, summer, and fall, respectively. The specific years analyzed included 2006, 2016, 2026, and 2050. The data and graphs for 2016 are presented in this section to illustrate the process.

It should be noted that the monthly demand schedules used in the model are based on a distribution of the total annual demand (a percentage for each month). Although each diversion point may use a different distribution, those percentages do not change from year to year, and cannot reflect potential future changes in the system that might affect the monthly distributions. Therefore, the seasonal differences are primarily governed by the overall changes in annual flow volumes, coupled with the effect of each diversion's distribution upstream of the point of interest.

Map 3.2-1
Colorado River Locations Selected for Modeling



Daily and hourly releases from Hoover Dam reflect the short-term demands of Colorado River water users with diversions located downstream, storage management in Lakes Mohave and Havasu, and power production at Hoover, Davis and Parker Dams. The close proximity of Lake Mohave to Hoover Dam effectively dampens the short-term fluctuations below Hoover Dam. The scheduling and subsequent release of water through Davis and Parker Dams create short-term fluctuations in river flows, depths, and water surface elevations downstream of these structures. These fluctuations of water surface elevations in the river are most noticeable in the river reaches located immediately downstream of the dams and lessen as the downstream distance increases. The Implementation Agreement, however, will have no effect on the short-term operations of Hoover, Davis and Parker Dam, and therefore, short-term fluctuations in river reaches downstream of Hoover Dam were not evaluated.

3.2.2.1 RIVER FLOWS BETWEEN HOOVER DAM AND PARKER DAM

The river flows between Hoover Dam and Parker Dam are composed mainly of flow releases from Hoover Dam and Davis Dam. Inflows from the Bill Williams River and other intermittent tributaries are infrequent and are usually concentrated into short time periods due to their dependence on localized precipitation. Tributary inflows comprise less than one percent of the total annual flow in this reach of the river.

A point on the Colorado River downstream of Davis Dam was used to evaluate the river flows for this reach, located immediately downstream of the Havasu National Wildlife Refuge (NWR). The 90^{th}, 50^{th}, and 10^{th} percentile annual flow volumes for this reach are shown in Figure 3.2-7. As shown by the 50th percentile values, annual flow volumes in this reach would be more uniform under the Implementation Agreement conditions than under the No Action conditions during the 15-year interim surplus guidelines period. The plot indicates that the Implementation Agreement would reduce the No Action highs during this period by up to approximately 10 percent. This is attributable to the reduction in California's mainstem depletions by MWD resulting from the conservation measures and water transfers implemented in California. Beyond the 15-year interim period, the annual flow volumes under the Implementation Agreement are essentially the same (within one percent) as those under the No Action conditions.

At the 90th and 10th percentile levels the flows under Implementation Agreement conditions are essentially the same as those under the No Action conditions. Figure 3.2-8 shows the distribution of annual flow volumes for year 2016.

Figures 3.2-7(a-d) present comparisons of the representative seasonal flows under No Action conditions and the Implementation Agreement for 2016. As expected, the largest flows occur in the spring and summer seasons for No Action conditions and all alternatives due to downstream irrigation demands. For flows that are due primarily to flood control releases from Lake Mead (flows in the 80th - 100th percentile range), the

range of mean monthly flows is generally unchanged by the Implementation Agreement, except during the winter season where the Implementation Agreement would cause higher flows in the 80th to 85th percentile range. In the lower percentiles, the seasonal flows with the Implementation Agreement vary slightly higher or lower than the flows under No Action conditions. The approximate departure of Implementation Agreement from No Action varied from 15 percent higher (January) to 3 percent lower (April) in 2016.

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.2-7. The values representing the seasons are the mean monthly flows in January, April, July and October.

Table 3.2-7
Comparison of Mean Monthly Flow (cfs) – Implementation Agreement to No Action Conditions
Colorado River Downstream of Havasu NWR (River Mile = 242.3)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	No Action	Implementation Agreement
Winter (January)	8,171	8,314
Spring (April)	16,198	16,041
Summer (July)	15,921	15,887
Fall (October)	11,781	11,170

Figure 3.2-7
Colorado River Downstream of Havasu NWR Annual Flow Volume (af)
Comparison of Implementation Agreement to No Action Conditions
90th, 50th and 10th Percentile Values

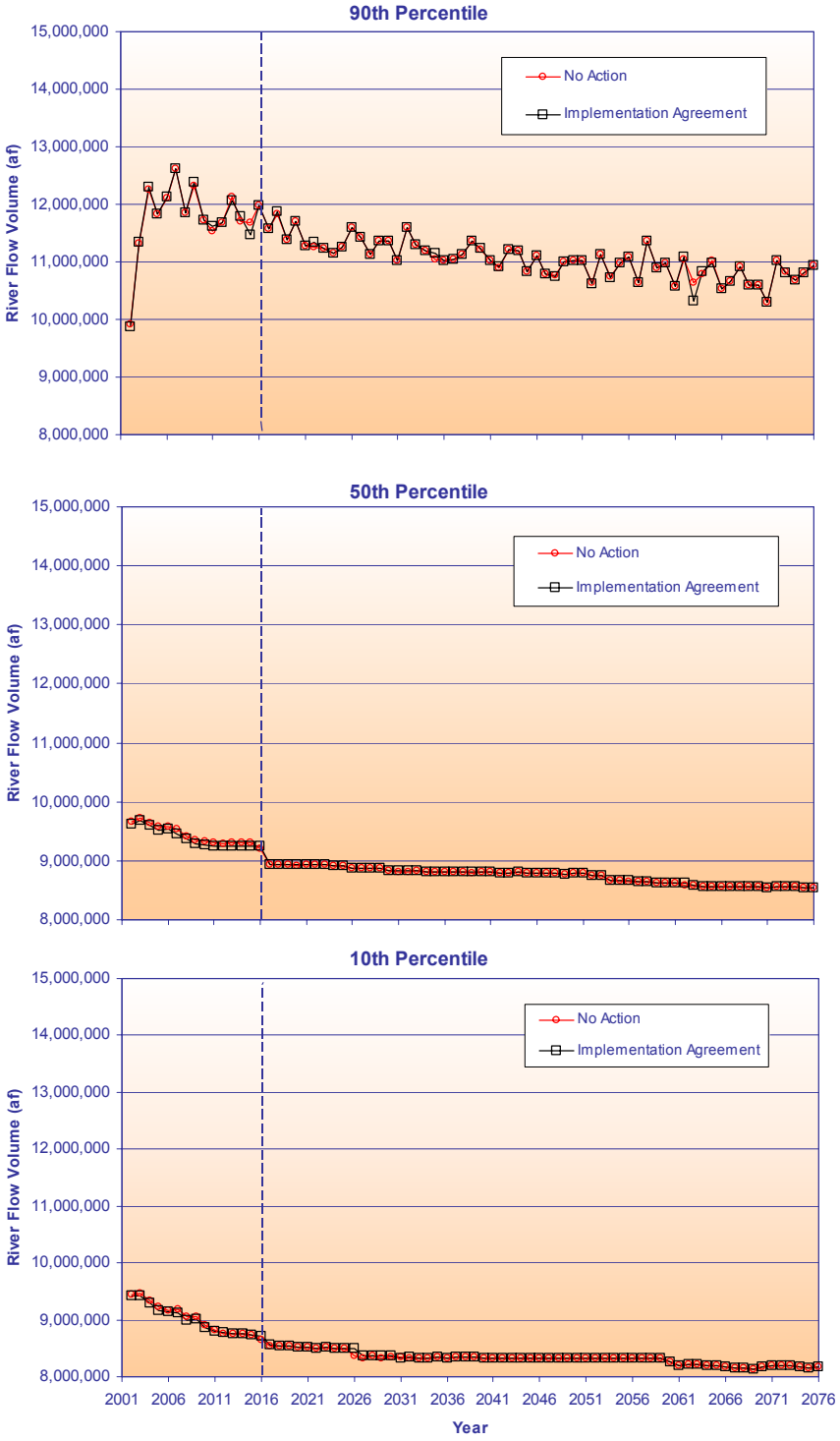


Figure 3.2-8
Colorado River Annual Flow Volume Downstream of Havasu NWR
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

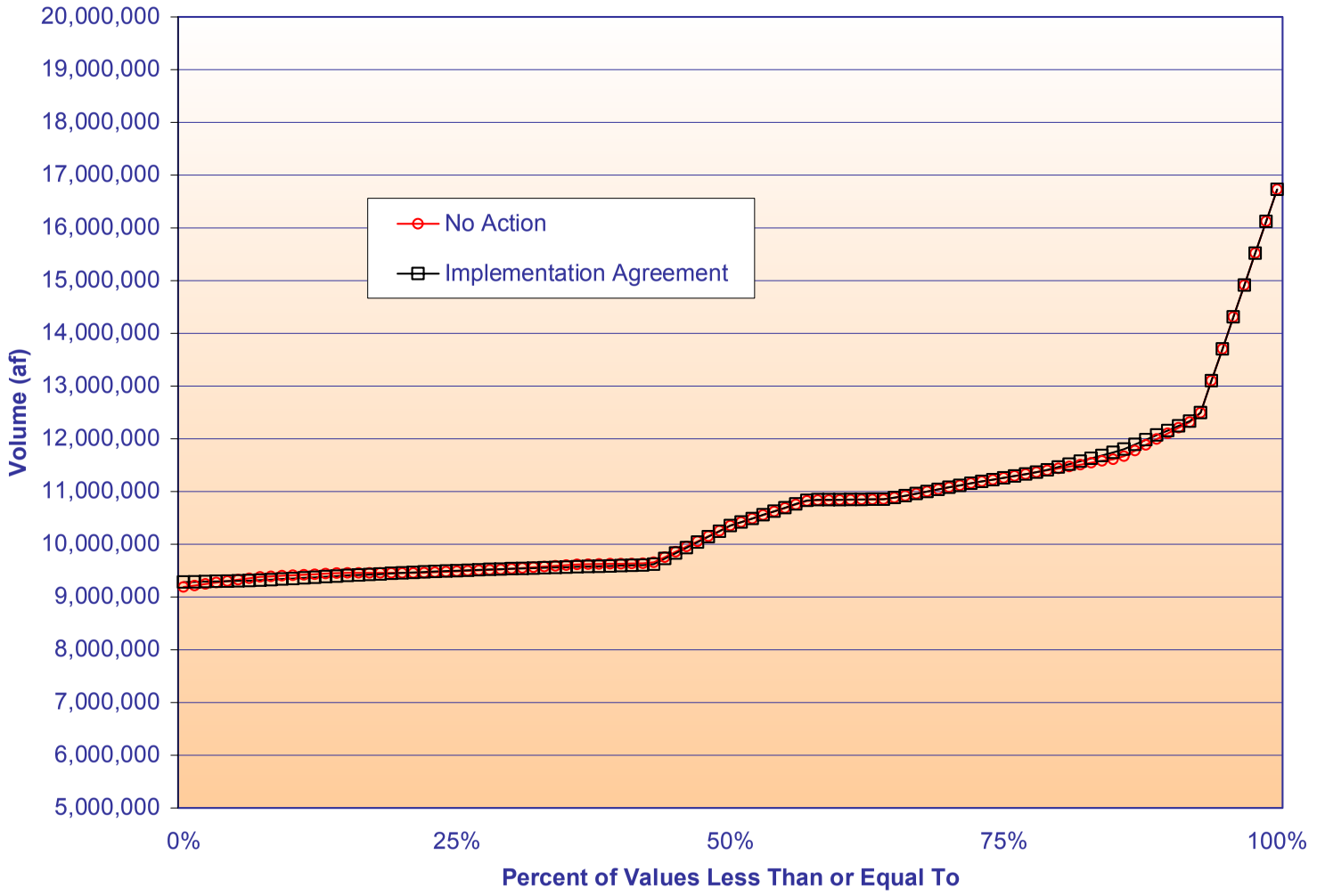


Figure 3.2-9a
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

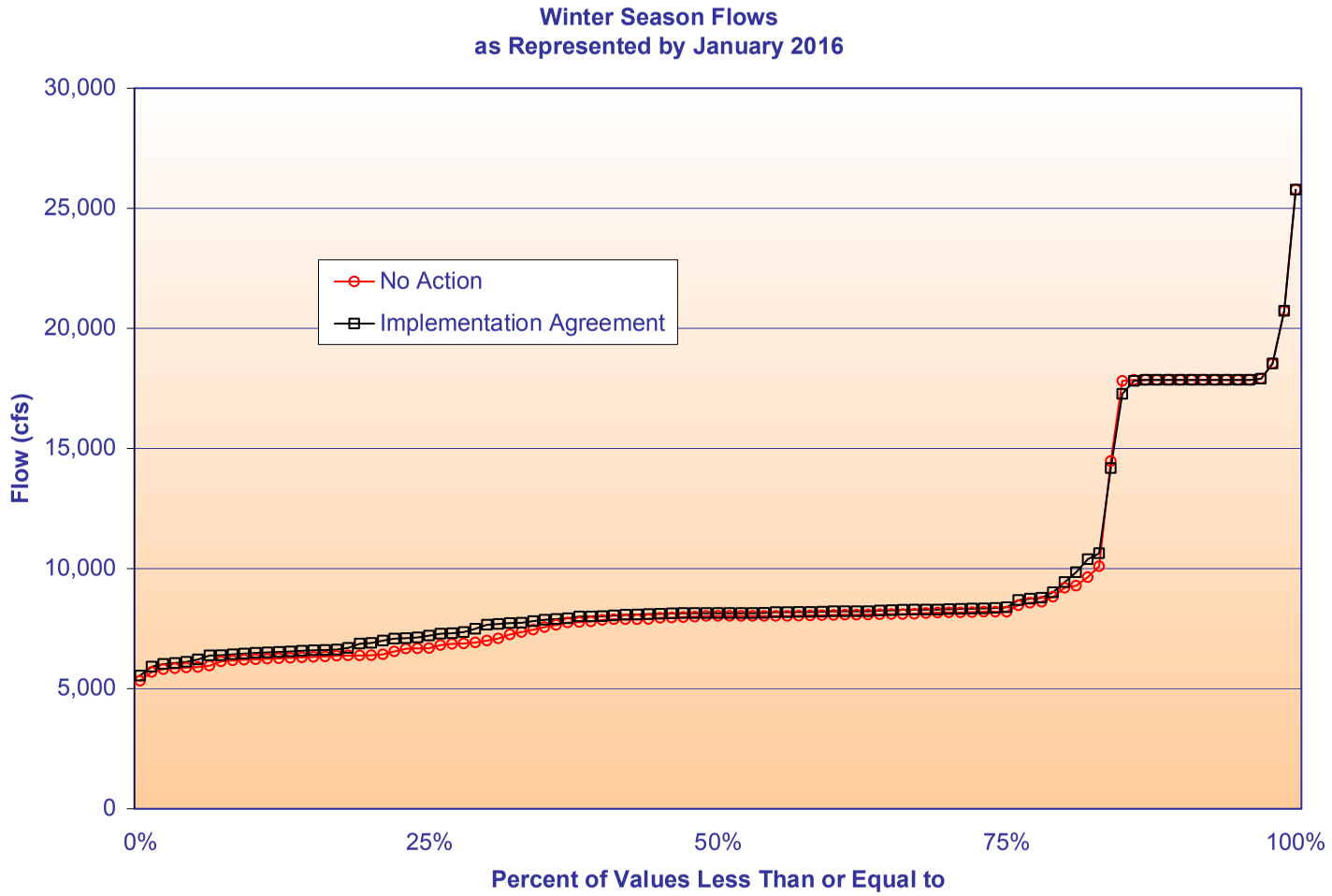


Figure 3.2-9b
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

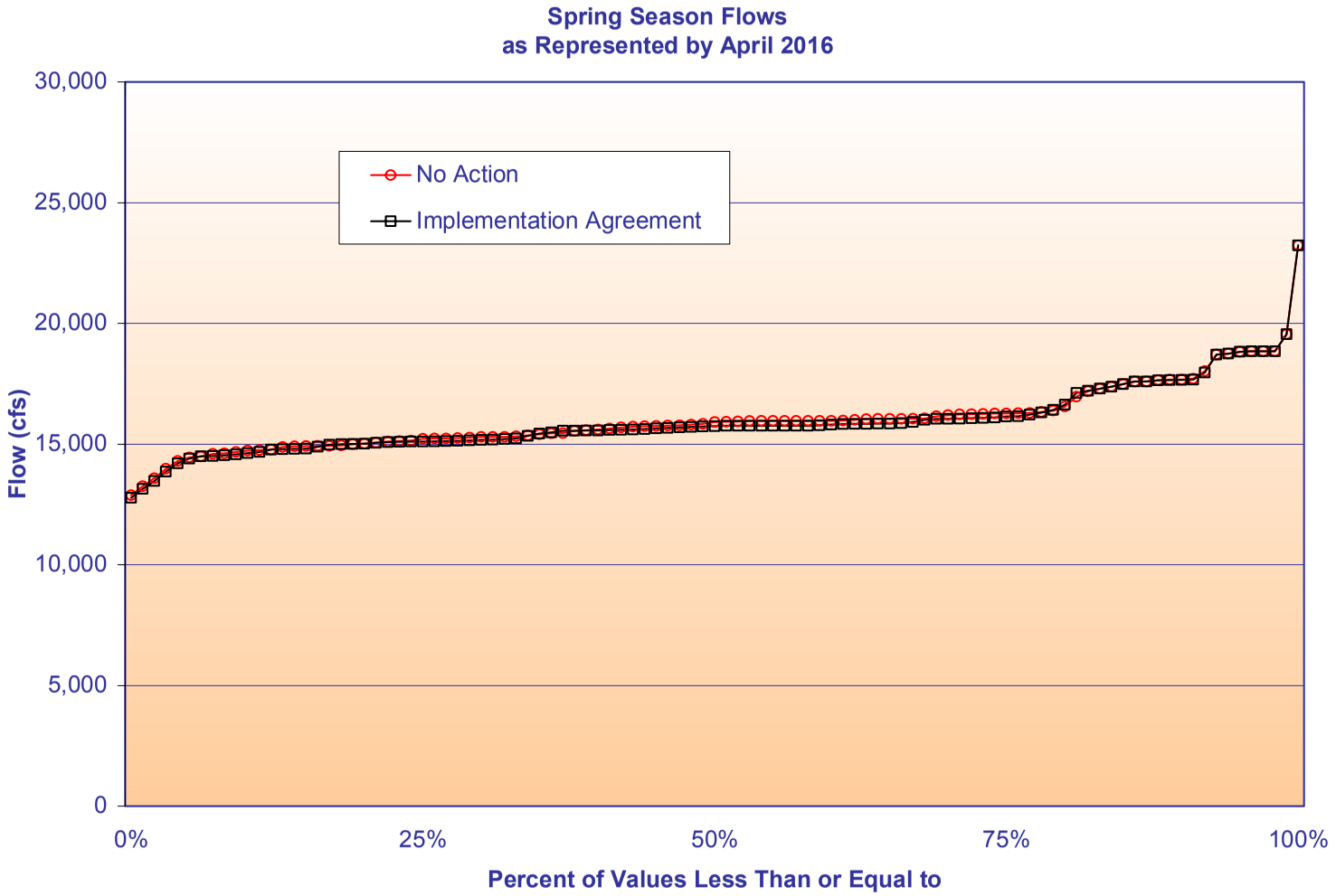


Figure 3.2-9c
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

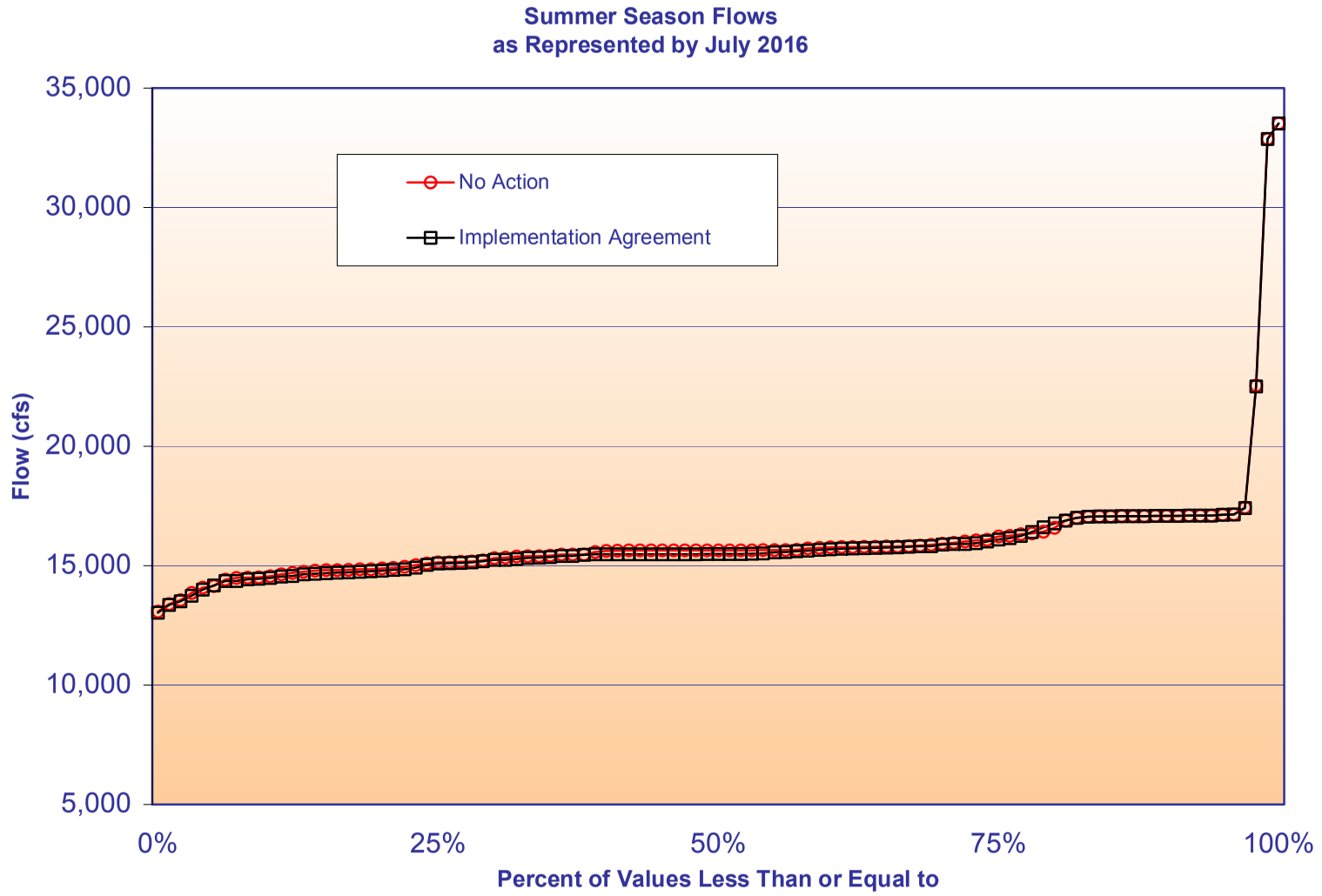
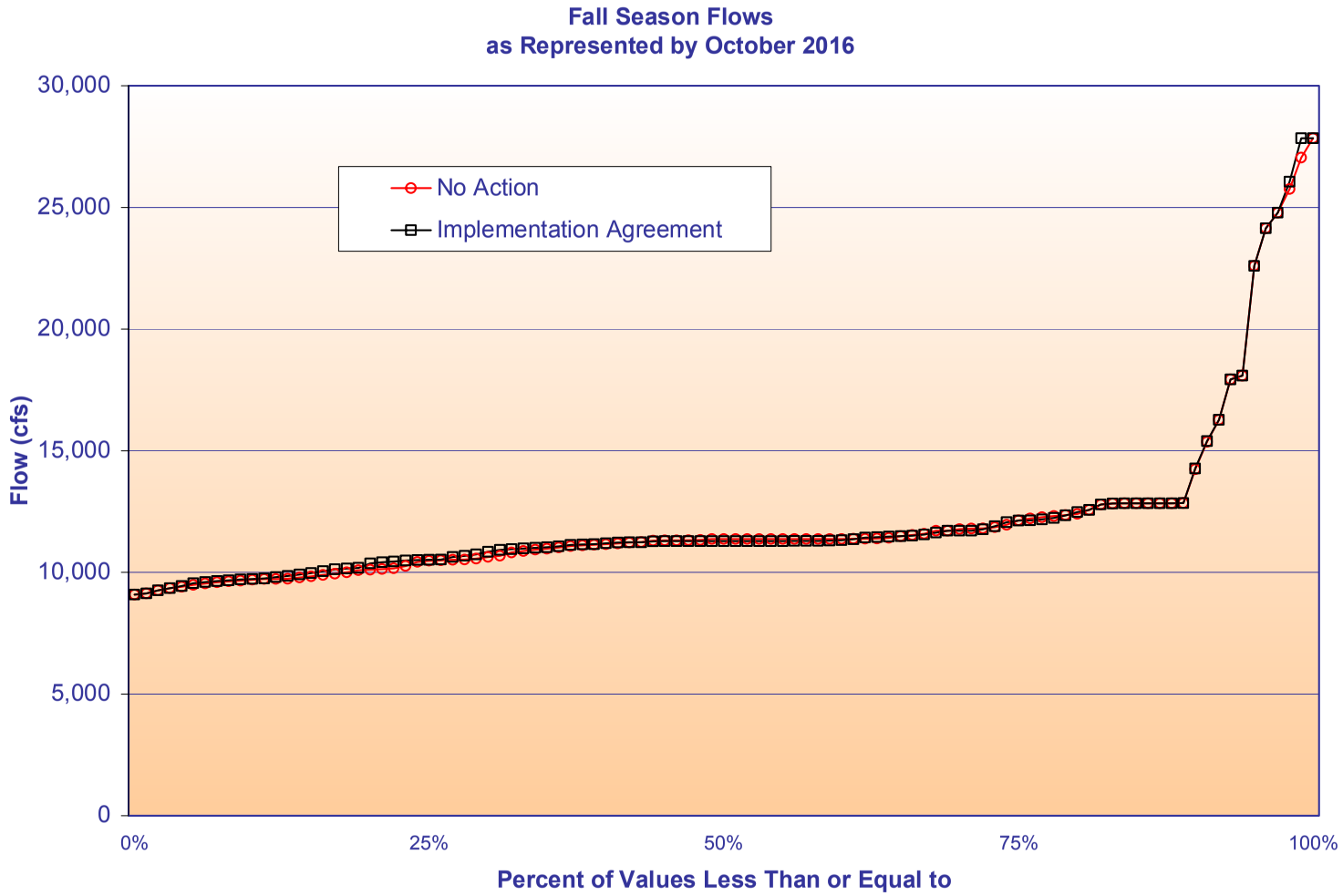


Figure 3.2-9d
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016



3.2.2.2 RIVER FLOWS BETWEEN PARKER DAM AND PALO VERDE DIVERSION DAM

The point on the Colorado used to evaluate the river flows in the reach of the river located between Parker Dam and the Palo Verde Diversion Dam is located immediately upstream of the Colorado River Indian Reservation (CRIR) diversion. The CRIR diversion is located at Headgate Rock Dam, approximately 14 miles below Parker Dam. Flows in this reach of the river result from primarily from releases from Parker Dam (Lake Havasu).

Future flows in this reach would be affected by the Implementation Agreement because the proposed water transfers and exchanges between the California agricultural water agencies and MWD would change the point of diversion from the river. For example, under a potential transfer between IID and MWD (or SDCWA), the water that would normally be diverted at Imperial Dam would now be diverted above Parker Dam.

The 90th, 50th, and 10th percentile annual flow volumes for this reach are shown in Figure 3.2-10. As shown by the 50th percentile values, the modeled annual flow volumes in this reach under the Implementation Agreement decline gradually between 2002 and 2016, as the water transfers take effect and certain amounts of California's water are diverted from Lake Havasu rather than at Imperial Dam. After 2016 the annual flow reduction continues. At the 10th percentile level, the same comparative annual flow patterns occur. Flows at the 90th percentile level are dominated by surplus water deliveries and flood flows, and do not exhibit a significant difference between the Implementation Agreement and No Action conditions.

Figure 3.2-11, shows the cumulative distribution of annual flow volumes is for year 2016.

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.2-8. The values representing the seasons are the mean monthly flows in January, April, July and October.

Table 3.2-8
Comparison of Mean Monthly Flow (cfs) – No Action Conditions and Implementation Agreement
Colorado River Upstream of CRIR Diversion (River Mile = 180.8)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	No Action	Implementation Agreement
Winter (January)	4,087	3,819
Spring (April)	12,009	11,315
Summer (July)	13,282	12,604
Fall (October)	8,120	7,838

Figures 3.2-12 (a-d) present comparisons of the representative seasonal flows under No Action conditions and the Implementation Agreement for 2016. As expected, the

largest flows occur in the spring and summer seasons under the No Action and Implementation Agreement conditions due to downstream irrigation demands. As on the 90^{th}, 50^{th}, and 10^{th} percentile plots, the seasonal flows under the Implementation Agreement are slightly lower than those under No Action conditions. For flows that are due primarily to flood control releases from Lake Mead (flows in the 90th - 100th percentile range), the range of mean monthly flows is not affected by the Implementation Agreement, since these magnitudes are dictated by the flood control regulations.

Figure 3.2-10
Colorado River Upstream of CRIR Diversion Annual Flow Volume (af)
Comparison of Implementation Agreement to No Action Conditions
90th, 50th and 10th Percentile Values

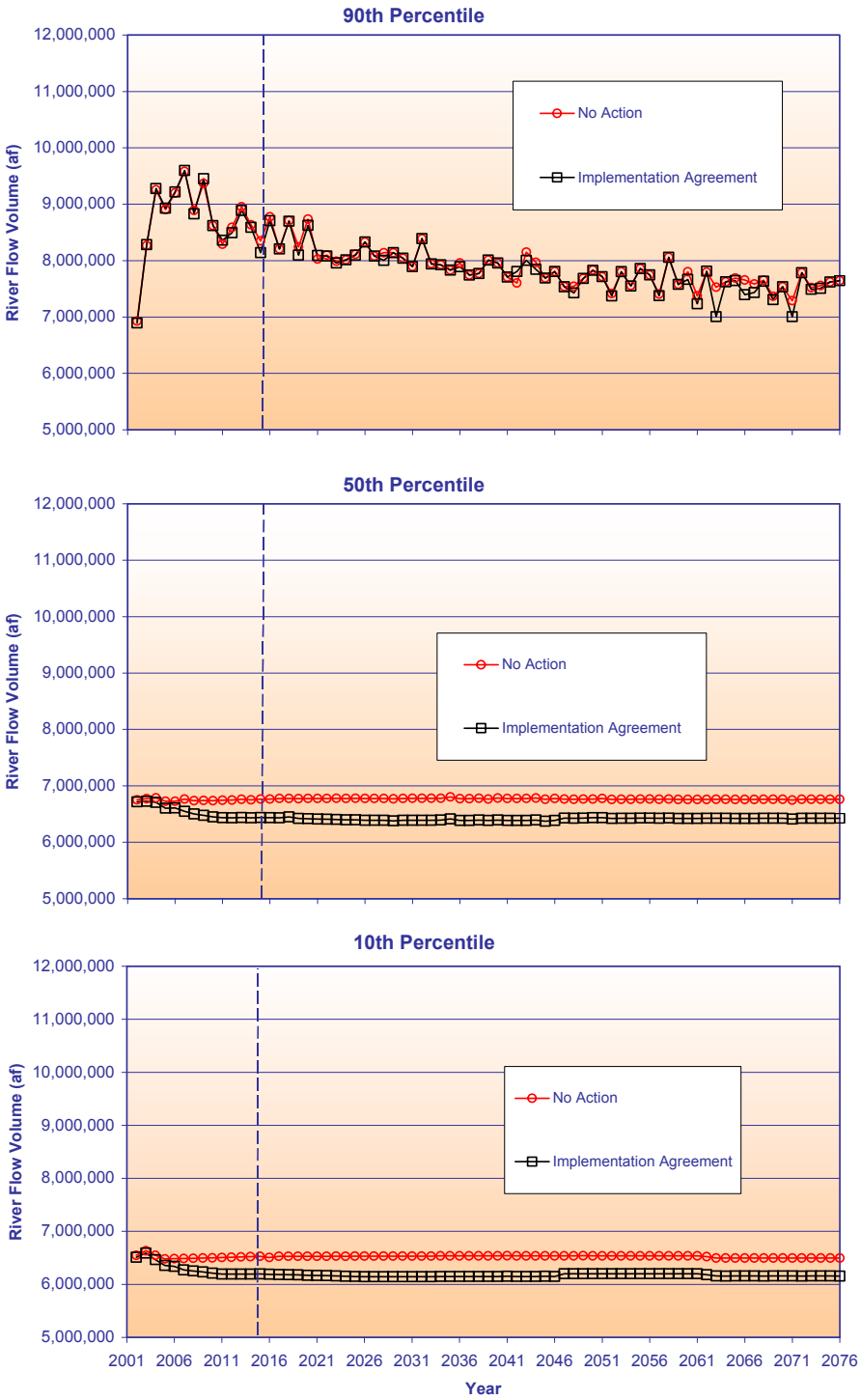


Figure 3.2-11
Colorado River Annual Flow Volumes Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

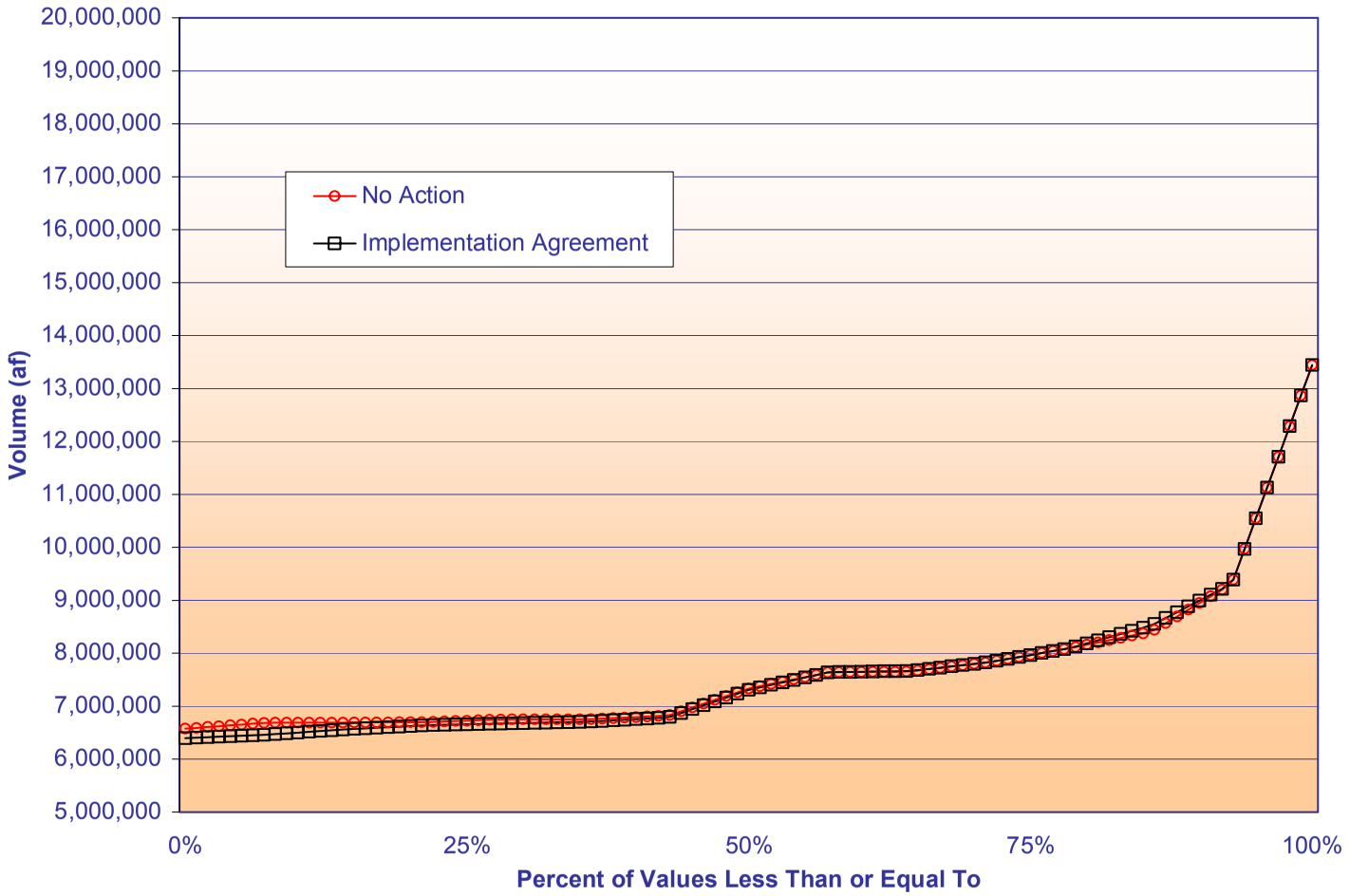


Figure 3.2-12a
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

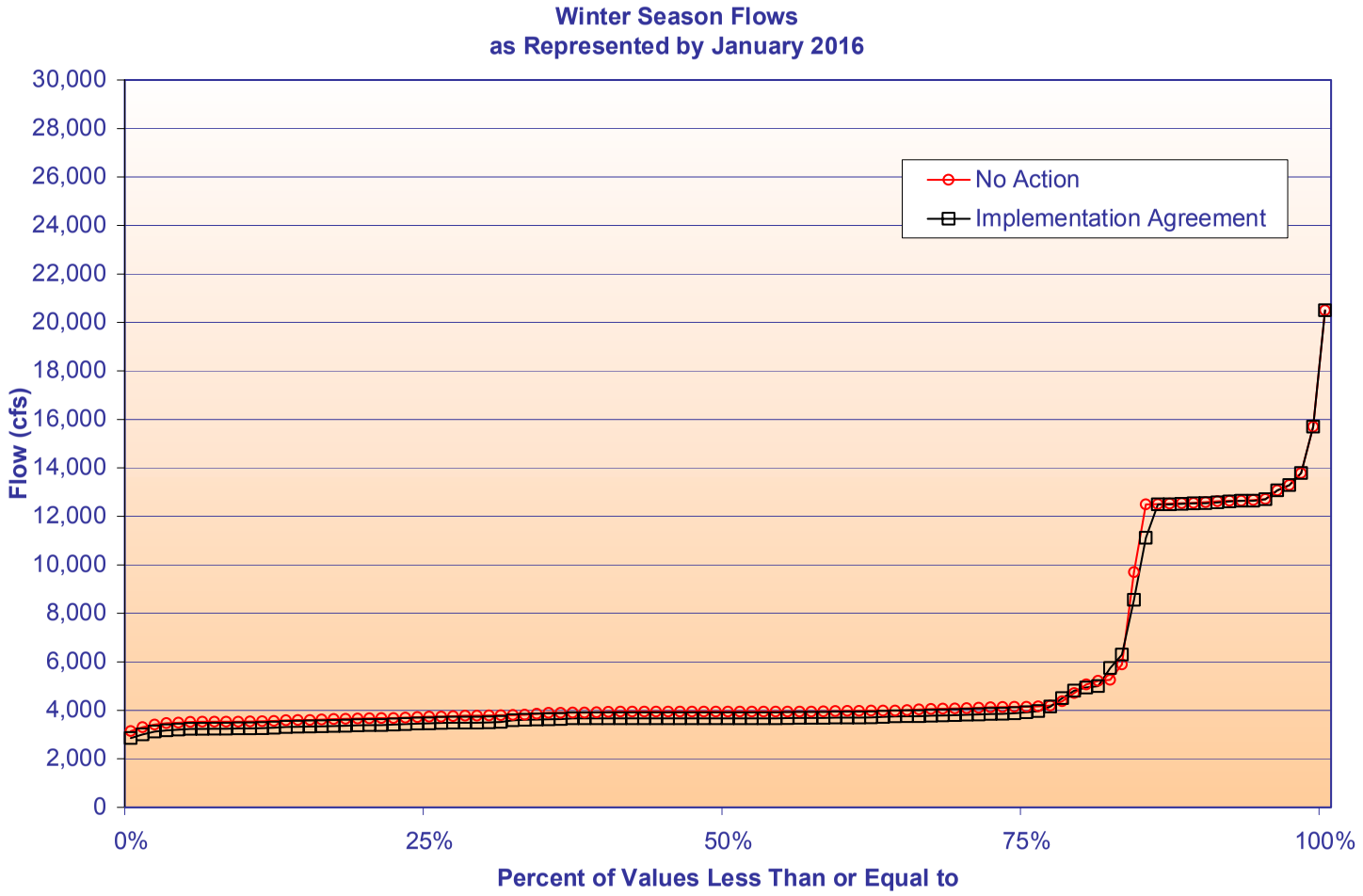


Figure 3.2-12b
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

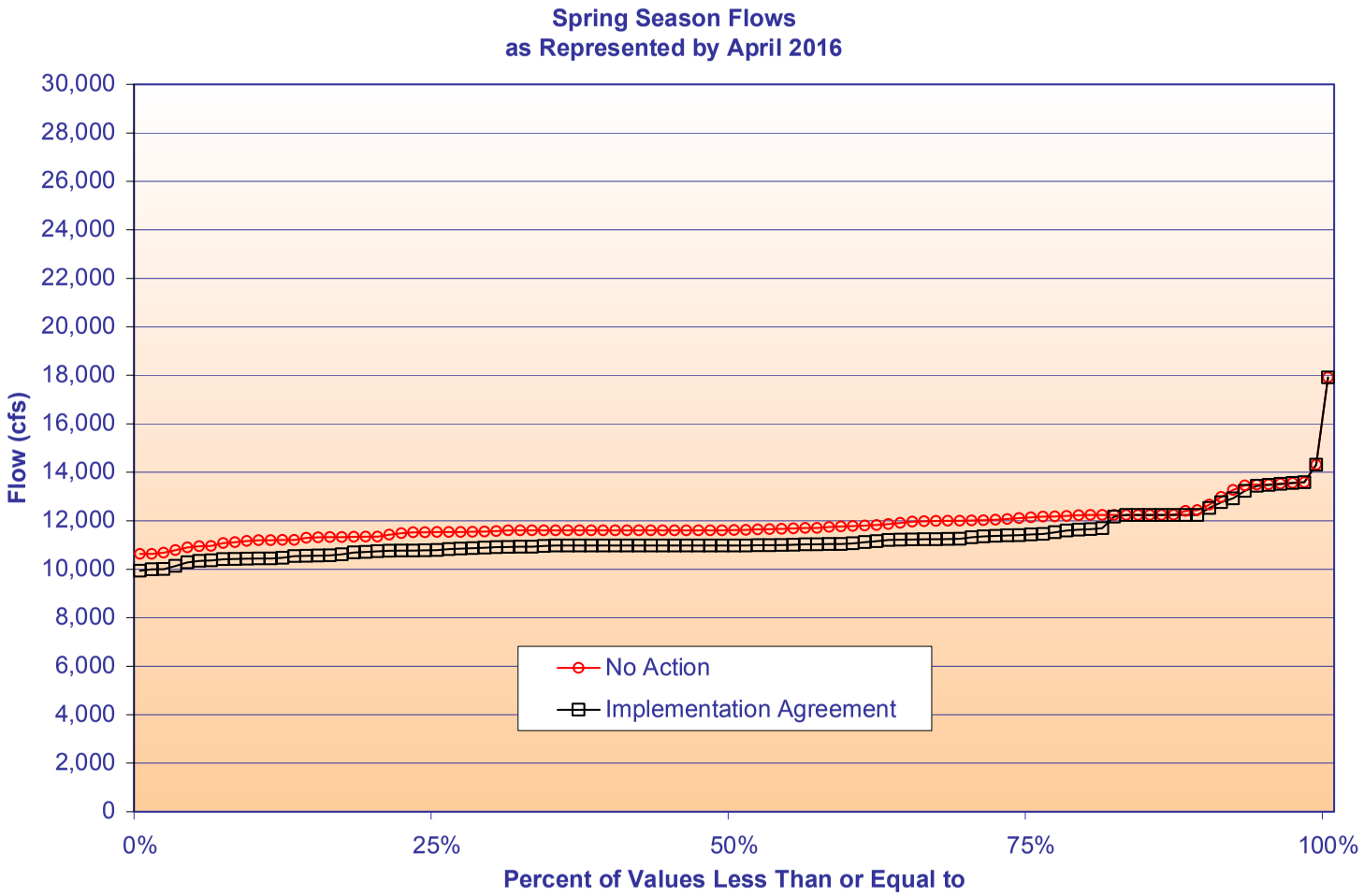


Figure 3.2-12c
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

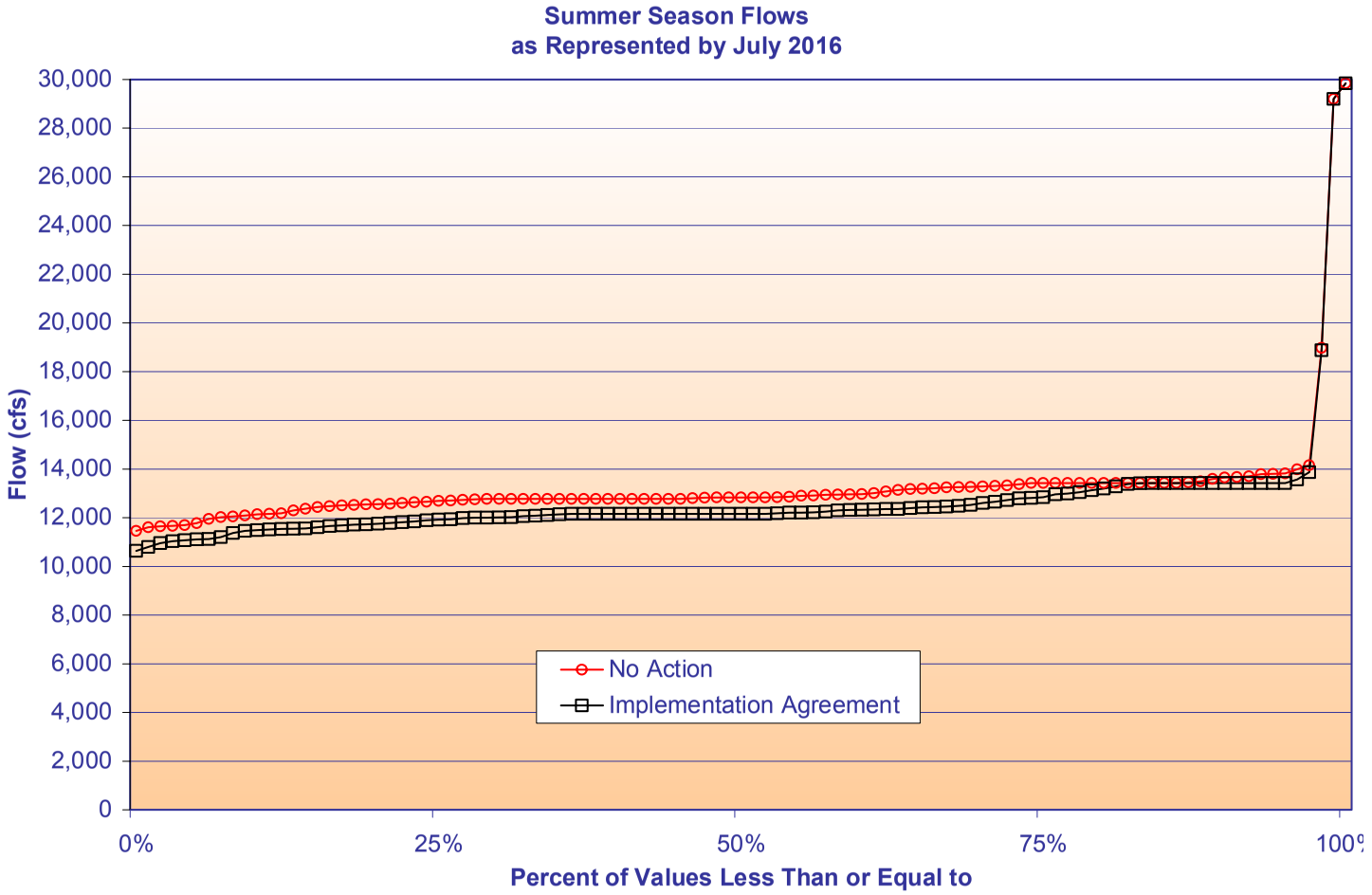
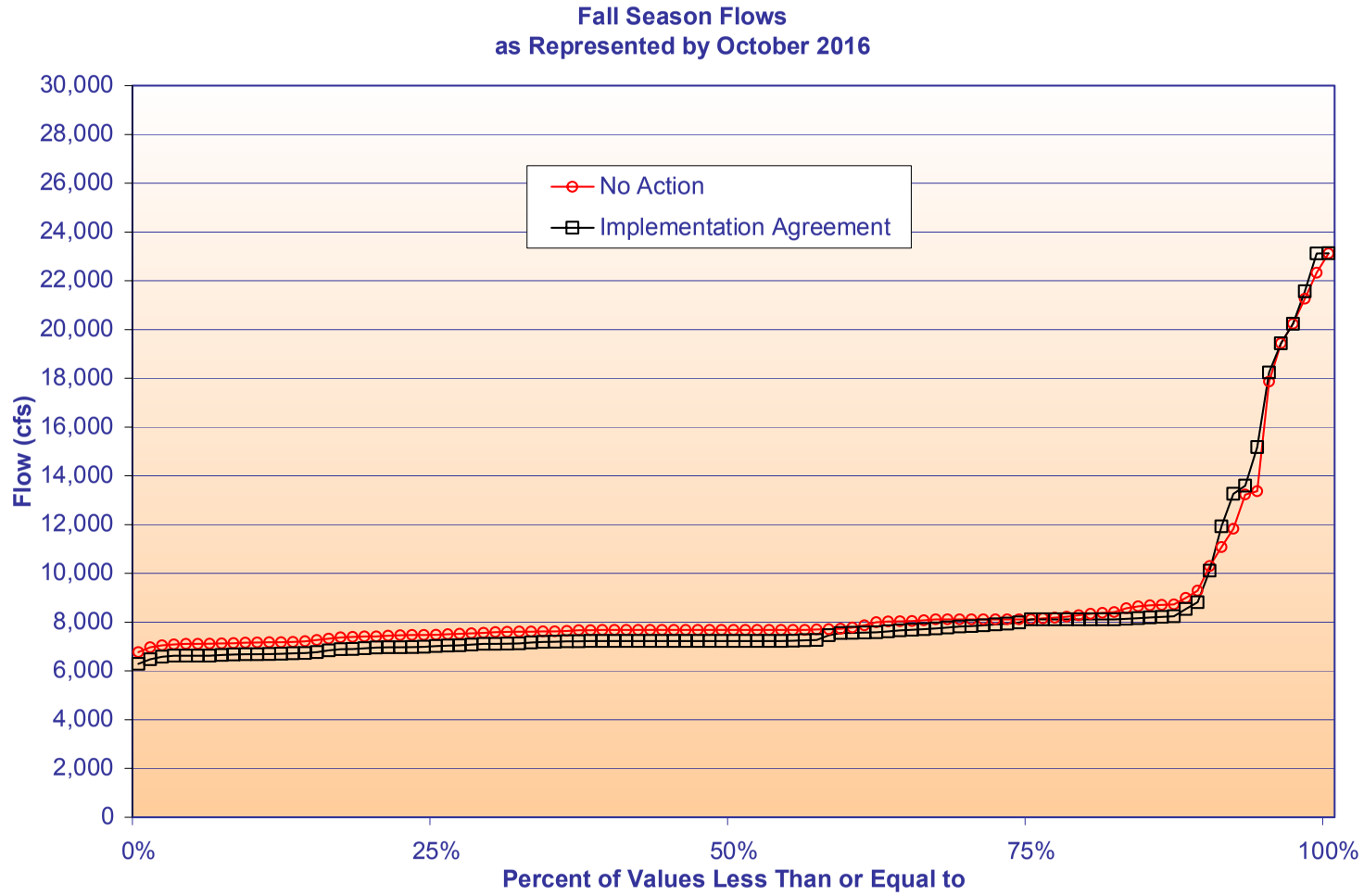


Figure 3.2-12d
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016



3.2.2.3 RIVER FLOWS BETWEEN PALO VERDE DIVERSION DAM AND IMPERIAL DAM

The flow of the Colorado River between Palo Verde Diversion Dam and Imperial Dam is normally set at the amount needed to meet the United States diversion requirements downstream of the Palo Verde Diversion plus deliveries to Mexico. The river location that was modeled for this reach of the river is located immediately downstream of the Palo Verde Diversion Dam.

Future flows in this reach would be affected by the Implementation Agreement because the proposed water transfers and exchanges between the California agricultural water agencies and MWD would change the point of diversion from the river. For example, under a potential transfer between IID and MWD (or SDCWA), the water that would normally be diverted at Imperial Dam would now be diverted above Parker Dam.

The 90th, 50th, and 10th percentile annual flow volumes for this reach are shown in Figure 3.2-13. As shown by the 50th percentile values, the modeled annual flow volumes in this reach under the Implementation Agreement decline gradually between 2002 and 2016, as the water transfers take effect and certain amounts of California's water are diverted from Lake Havasu rather than at Imperial Dam. After 2016 the annual flow reduction continues. At the 10th percentile level, the same comparative annual flow patterns occur. Flows at the 90th percentile level are dominated by surplus water deliveries and flood flows, and do not exhibit a significant difference between the Implementation Agreement and No Action conditions.

Figure 3.2-14, shows the cumulative distribution of annual flow volumes for year 2016

Figures 3.2-15 (a-d) present comparisons of the representative seasonal flows under No Action conditions and the Implementation Agreement for 2016. As expected, the largest flows occur in the spring and summer seasons under the No Action and Implementation Agreement conditions due to downstream irrigation demands. As on the 90th, 50th, and 10th percentile plots, the seasonal flows under the Implementation Agreement are slightly lower than those under No Action conditions. For flows that are due primarily to flood control releases from Lake Mead (flows in the 85th - 100th percentile range), the range of mean monthly flows is not affected by the Implementation Agreement, since these magnitudes are dictated by the flood control regulations. In the lower percentiles, the seasonal flows with the Implementation Agreement are slightly lower than the flows under No Action conditions (from six to 11 percent lower in various seasons in 2016).

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.2-9. The values representing the seasons are the mean monthly flows in January, April, July and October.

Table 3.2-9
Comparison of Mean Monthly Flow (cfs) – No Action Conditions and Implementation Agreement
Colorado River Downstream of Palo Verde Diversion Dam (River Mile = 133.8)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	No Action	Implementation Agreement
Winter (January)	3,695	3,420
Spring (April)	10,202	9,633
Summer (July)	11,008	10,458
Fall (October)	7,444	7,003

Figure 3.2-13
Colorado River Downstream Palo Verde Diversion Dam Annual Flow Volume (af)
Comparison of Implementation Agreement to No Action Conditions
90th, 50th and 10th Percentile Values

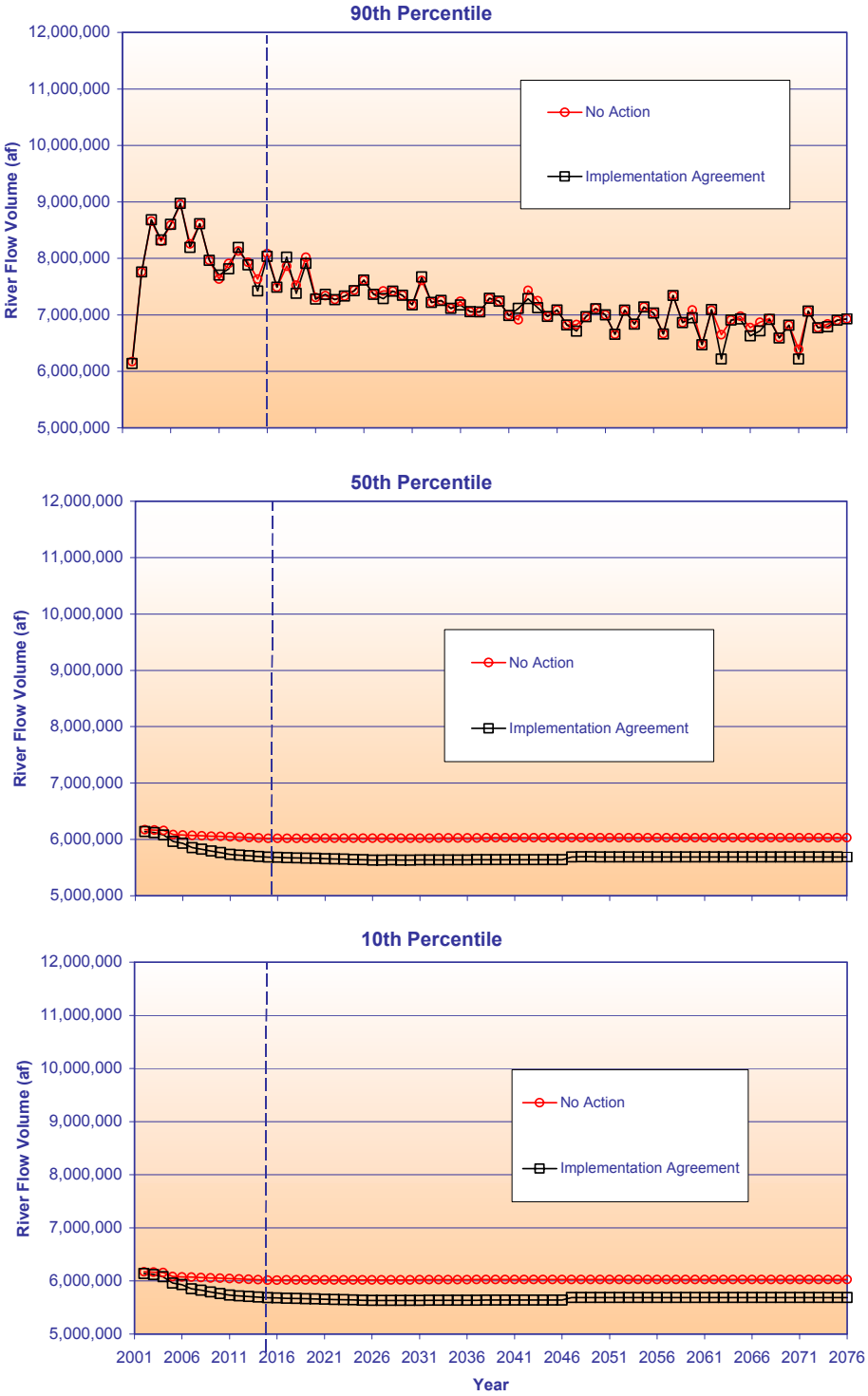


Figure 3.2-14
Colorado River Annual Flow Volumes Downstream of Palo Verde Irrigation Diversion
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

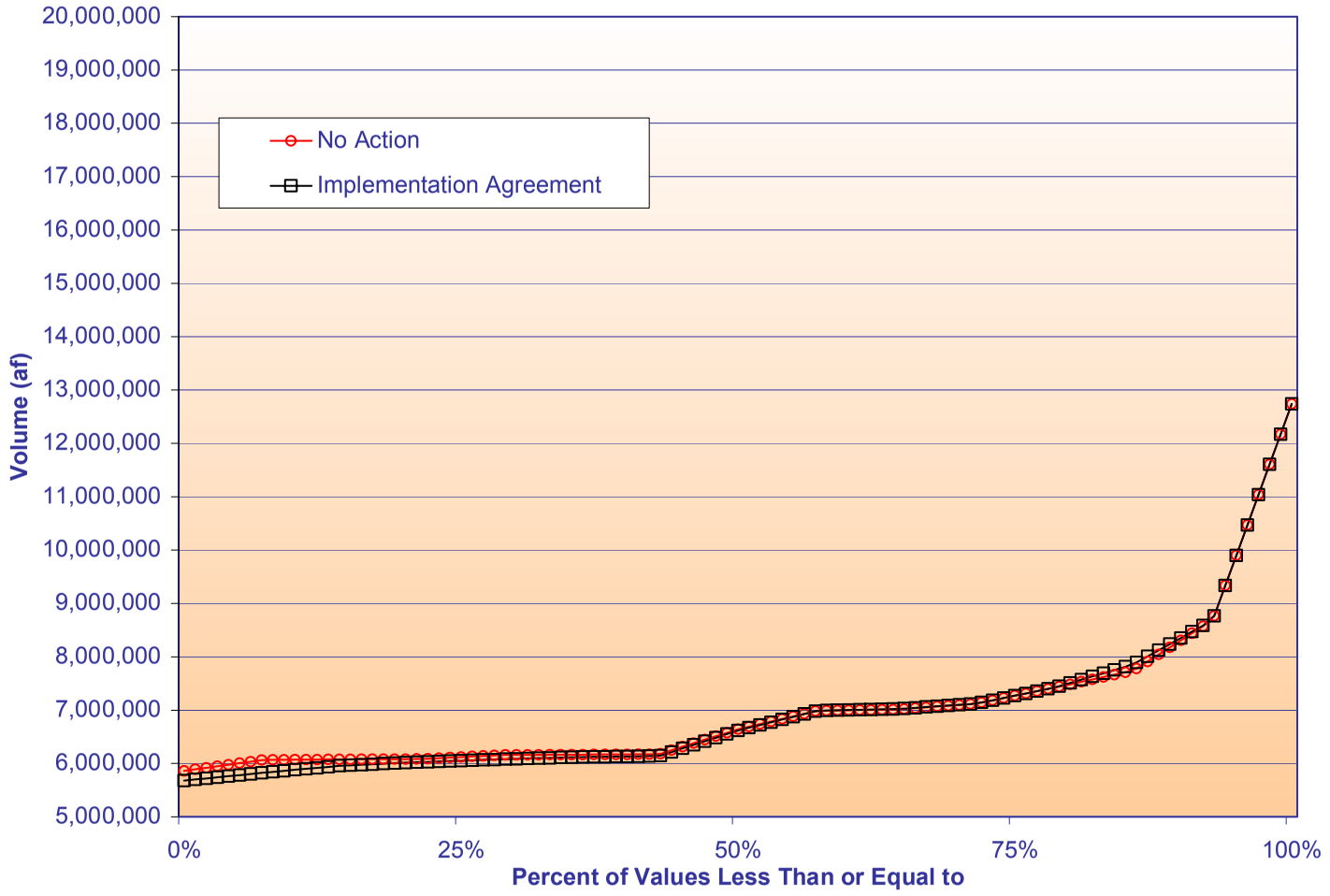


Figure 3.2-15a
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

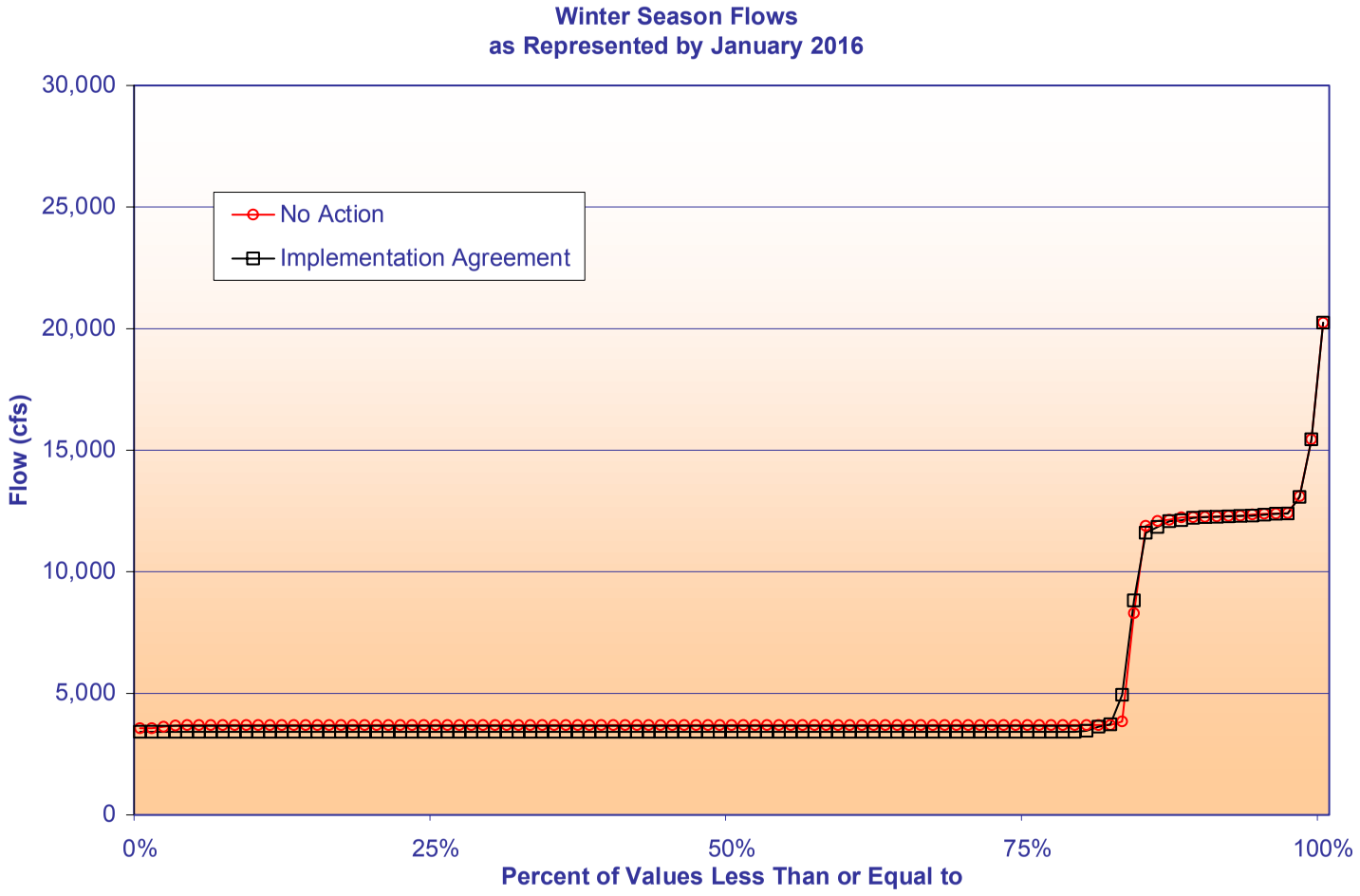


Figure 3.2-15b
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

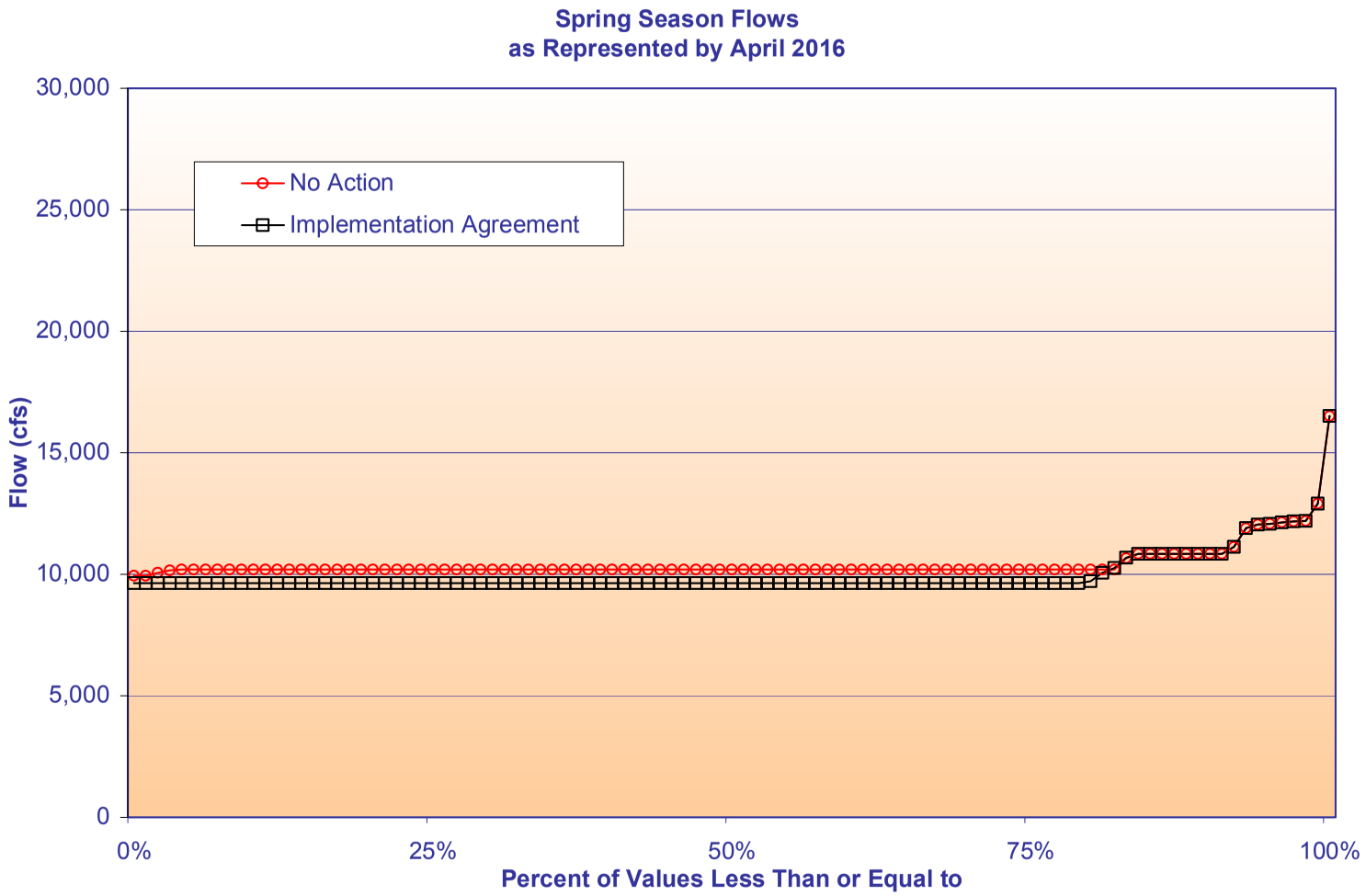


Figure 3.2-15c
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016

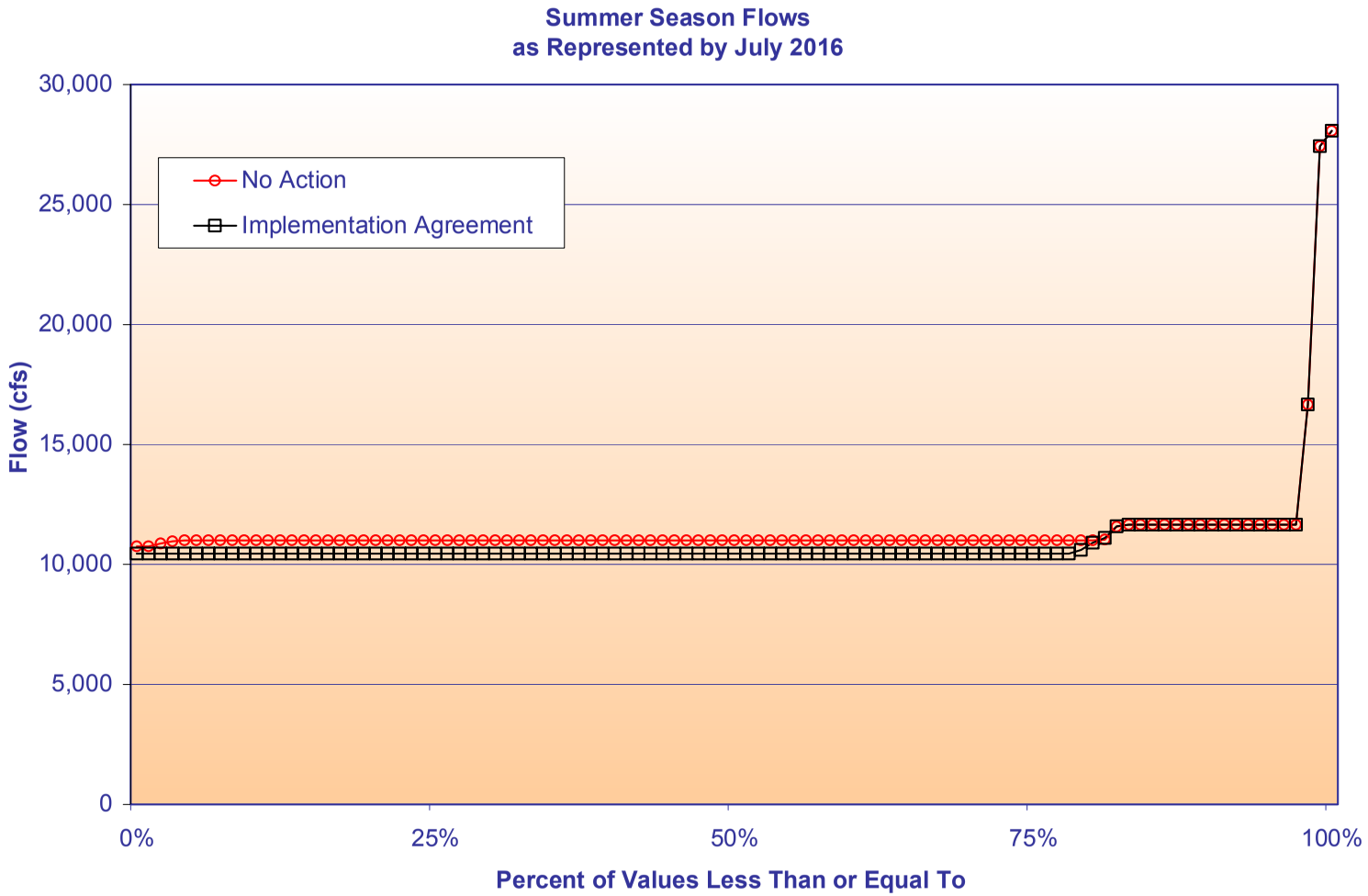
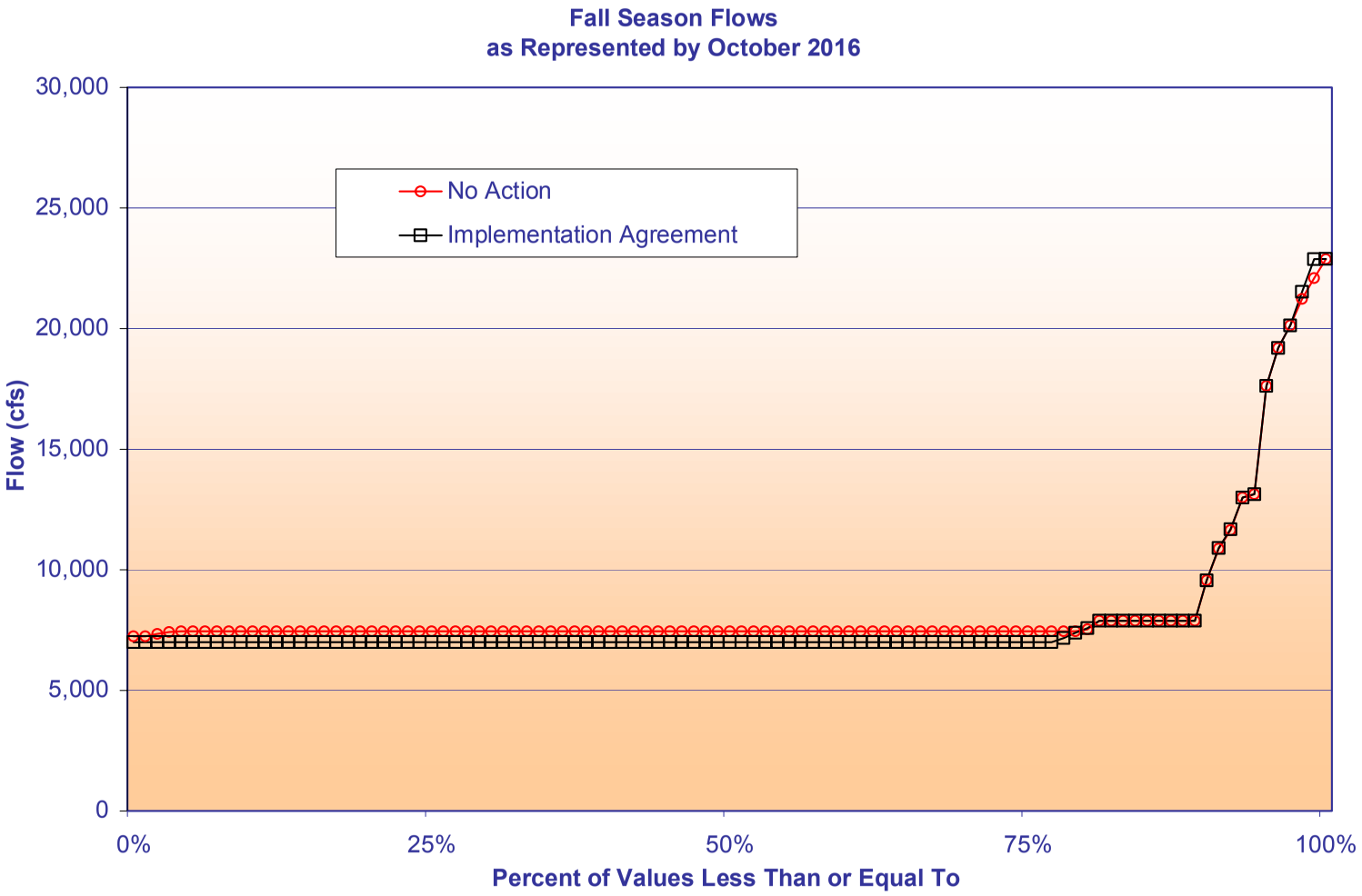


Figure 3.2-15d
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Implementation Agreement to No Action Conditions for Modeled Year 2016



3.3 ANALYSIS OF CUMULATIVE EFFECTS

This section describes the results of the analysis that evaluates the potential cumulative impacts to the level of Lake Mead and river flows resulting from the proposed implementation of all the water management programs contemplated under this Technical Memorandum**.** The modeled operational scenarios that are used to evaluate the cumulative effects of the various water management programs in this section consist of the Baseline for the Cumulative Analysis (Baseline Conditions) and the Cumulative Analysis Conditions, which are defined in Section 2.2. The period of analysis is 75 years.

3.3.1 LAKE MEAD WATER LEVELS

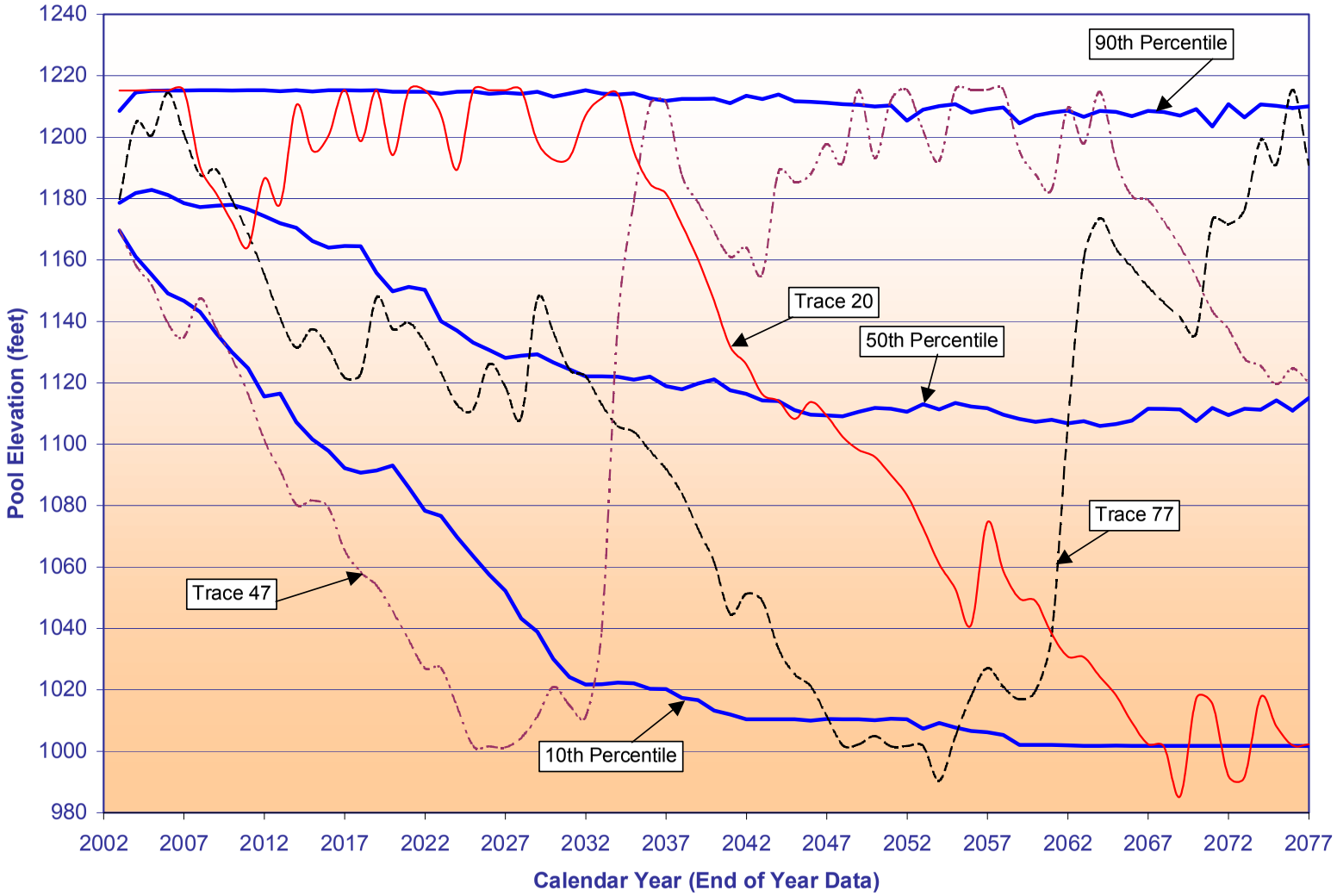
This section summarizes the results of the future Lake Mead water level simulations under Baseline for Cumulative Analysis conditions and Cumulative Analysis conditions.

3.3.1.1 MODELING RESULTS OF BASELINE FOR CUMULATIVE ANALYSIS

Under the Baseline for Cumulative Analysis conditions, the water surface elevation of Lake Mead is projected to fluctuate between full level and decreasingly lower levels during the period of analysis (2002 to 2076). Figure 3.3-1 illustrates the range of water levels (end of December) by three lines, labeled 90th Percentile, 50th Percentile and 10th Percentile. The 50th percentile line shows the median water level for each future year. The median water level under Baseline for Cumulative Analysis conditions is shown to decline to 1165 feet msl by 2016 and to 1115 feet msl by 2076. The 10th percentile line shows there is a 10 percent probability that the water level would decline to 1092 feet msl by 2016 and to 1002 feet msl by 2076. It should also be noted that the Lake Mead elevations depicted in Figure 3.3-1 represent water levels at the end of December which is when lake levels are at a seasonal high. Conversely, the Lake Mead water level generally reaches its annual low in July.

Three distinct traces are added to Figure 3.3-1 to illustrate what was actually simulated under the various traces and respective hydrologic sequences and to highlight that the 90th, 50th and 10th percentile lines do not represent actual traces, but rather the ranking of the data from the 85 traces for the conditions modeled. The three traces illustrate the variability among the different traces and that the reservoir levels could temporarily decline below the 10th percentile line. The trace identified as Trace 20 represents the hydrologic sequence that begins in year 1926. The trace identified as Trace 47 represents the hydrologic sequence that begins in year 1953. The trace identified as Trace 77 represents the hydrologic sequence that begins in year 1983.

Figure 3.3-1
Lake Mead End-of-December Water Elevations Under Baseline for Cumulative Analysis Conditions
90th, 50th and 10th Percentile Values and Representative Traces



In Figure 3.3-1, the 90th and 10th percentile lines bracket the range where 80 percent of future Lake Mead water levels simulated for the Baseline for Cumulative Analysis conditions occur. The highs and lows shown on the three traces would likely be temporary conditions. The reservoir level would tend to fluctuate through multi-year periods of above average and below average inflows. Neither the timing of water level variations between the highs and the lows, nor the length of time the water level would remain high or low can be predicted. These events would depend on the future variation in basin runoff conditions.

Figure 3.3-2 presents the 90th, 50th and 10th percentile plots obtained for the Baseline for Cumulative Analysis conditions and those obtained for the Cumulative Analysis. This figure is best used for comparing the relative differences in the general lake level trends between the simulated Baseline for Cumulative Analysis and Cumulative Analysis conditions.

Figure 3.3-3 shows the frequency at which future Lake Mead end of December water surface elevations under Baseline for Cumulative Analysis conditions would be at or exceed 1200 feet msl. The corresponding frequency with the Cumulative Analysis is also plotted. The lines represent the percentage of values of all 85 traces that are equal to or greater than elevation 1200 feet msl. In year 2016, under the Baseline for Cumulative Analysis conditions, the percentage of values greater than or equal to elevation 1200 feet msl is 21 percent. After 2016 the annual percentages of values equal to or greater than elevation 1200 feet msl increase slightly to 22 percent and then decrease gradually to 13 percent in 2076 under Baseline for Cumulative Analysis conditions.

Figure 3.3-4 provides a comparison of the frequency that future Lake Mead end of December water levels would be at or above elevation 1083 feet msl under Baseline for Cumulative Analysis and Cumulative Analysis conditions. In year 2016, under the Baseline for Cumulative Analysis conditions, the percentage of values greater than or equal to elevation 1083 feet msl is 95 percent. After 2016 the annual percentages of values equal to or greater than elevation 1083 feet msl decline gradually to 56 percent in 2076 under Baseline for Cumulative Analysis conditions.

Figure 3.3-5 provides a comparison of the frequency that future Lake Mead end of December water levels would be at or above elevation 1050 feet msl under Baseline for Cumulative Analysis and Cumulative Analysis conditions. In year 2016, under the Baseline for Cumulative Analysis conditions, the percentage of values greater than or equal to elevation 1050 feet msl is 100 percent. After 2016 the annual percentages of values equal to or greater than elevation 1200 feet msl decline gradually to 62 percent in 2076 under Baseline for Cumulative Analysis conditions.

Figure 3.3-2
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis and Baseline for Cumulative Analysis Conditions 90th, 50th and 10th Percentile Values

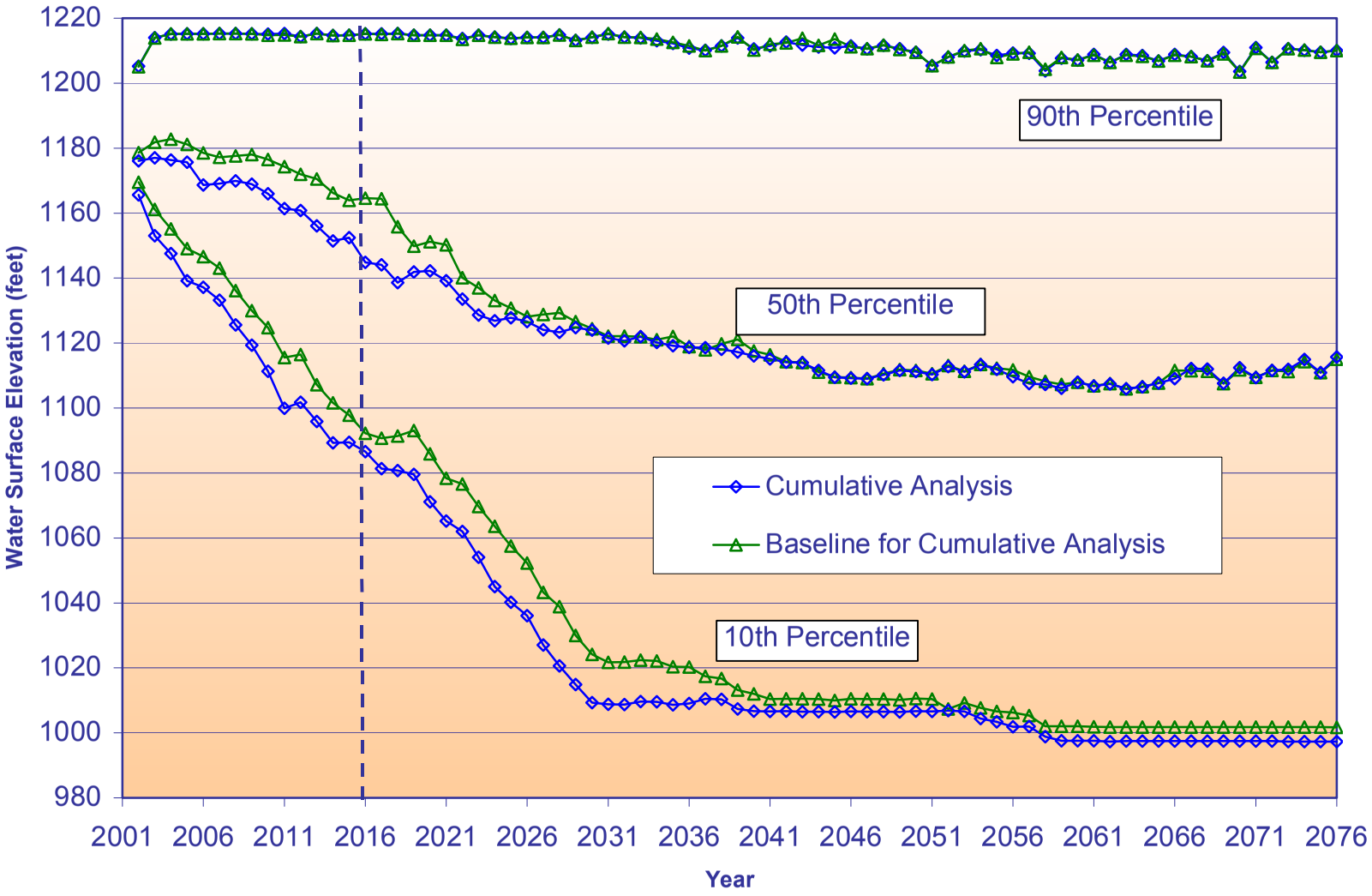


Figure 3.3.3
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis and Baseline for Cumulative Analysis Conditions
Percentage of Values Greater than or Equal to Elevation 1200 Feet

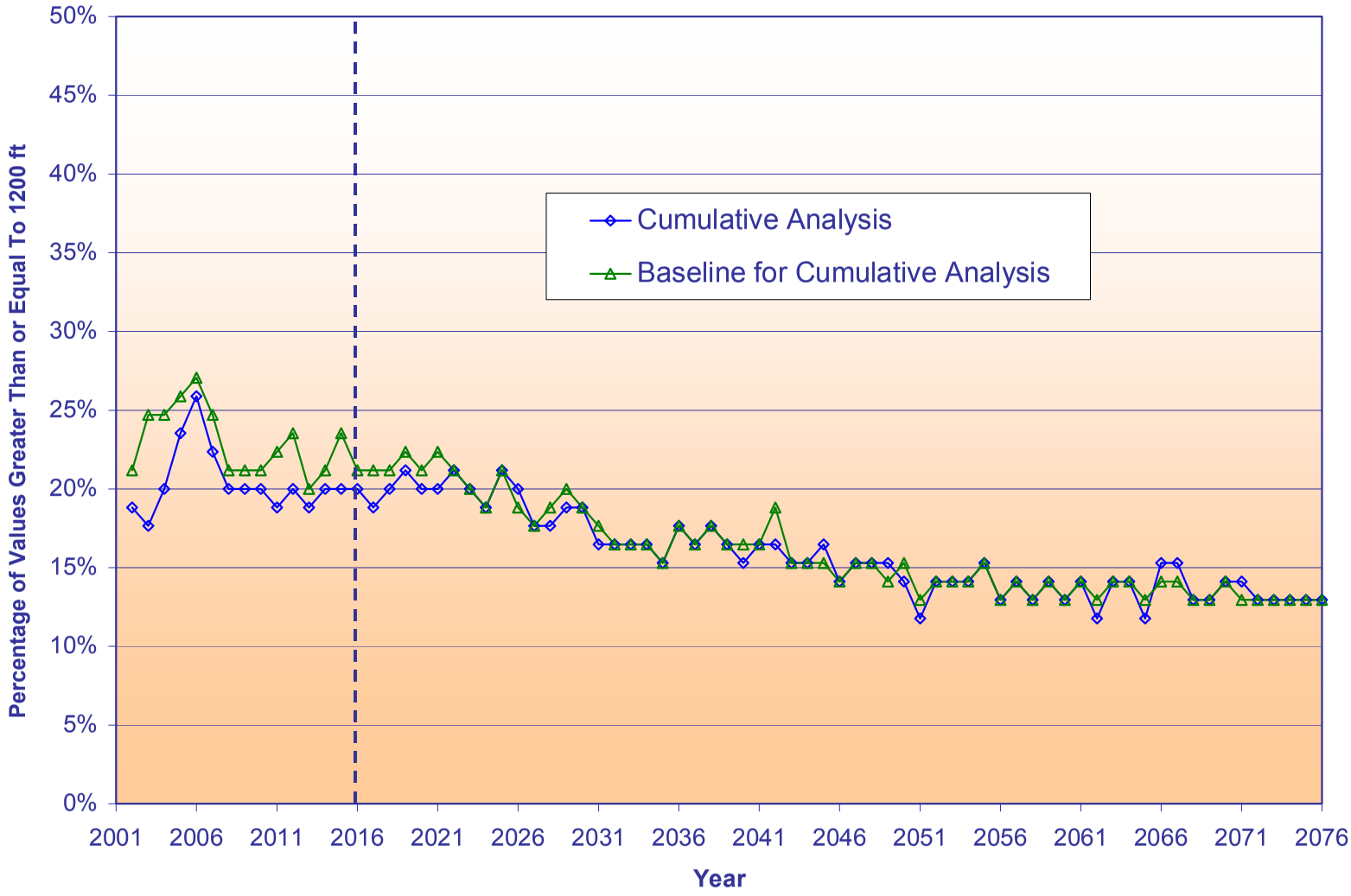


Figure 3.3-6 provides a comparison of the frequency that future Lake Mead end of December water elevations under Baseline for Cumulative Analysis conditions and the Cumulative Analysis would be at or exceed a lake water elevation of 1000 feet msl. In year 2016, under the Baseline for Cumulative Analysis conditions, the percentage of values greater than or equal to elevation 1000 feet msl is 100 percent. After 2016 the annual percentages of values equal to or greater than elevation 1200 feet msl remain at 100 percent for over three decades before declining gradually to 94 percent in 2076 under Baseline for Cumulative Analysis conditions.

3.3.1.2 COMPARISON OF CUMULATIVE ANALYSIS TO BASELINE FOR CUMULATIVE ANALYSIS

Figure 3.3-2 compared the 90th, 50th and 10th percentile water levels of the Cumulative Analysis to those of the Baseline for Cumulative Analysis conditions. The median (50th percentile) water level of Lake Mead would be lower during and immediately after the interim surplus period but after several decades water levels would be the same as those under baseline conditions. These changes are primarily the result of the Interim surplus guidelines on the river system [Ref. ISC FEIS, Page 3.3-35], offset to a minor degree by the effect of the changes anticipated under the Implementation Agreement (see Section 3.2.1).

As discussed previously, under Baseline for Cumulative Analysis conditions, future Lake Mead water levels at the upper and lower 10th percentiles would likely be temporary and the water levels are expected to fluctuate between them in response to multi-year variations in basin runoff conditions. The same would apply to the water levels under Cumulative Analysis conditions.

The 90th percentile, median (50th percentile) and 10th percentile values of the Cumulative Analysis are compared to those of the Baseline for Cumulative Analysis conditions in Table 3.3-1. The values presented in this table are for years 2016, 2026, 2036, 2046, and 2076.

Table 3.3-1
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Effects to Cumulative Analysis Baseline
90th, 50th and 10th Percentile Values

Year	Baseline for Cumulative Analysis			Cumulative Analysis		
	90th Percentile	50th Percentile	10th Percentile	90th Percentile	50th Percentile	10th Percentile
2016	1215	1165	1092	1215	1145	1087
2026	1215	1128	1052	1214	1127	1036
2036	1212	1119	1020	1211	1119	1009
2046	1211	1109	1011	1211	1109	1007
2076	1210	1115	1002	1210	1116	997

Figure 3.3-4
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions
Percentage of Values Greater than or Equal to Elevation 1083 Feet

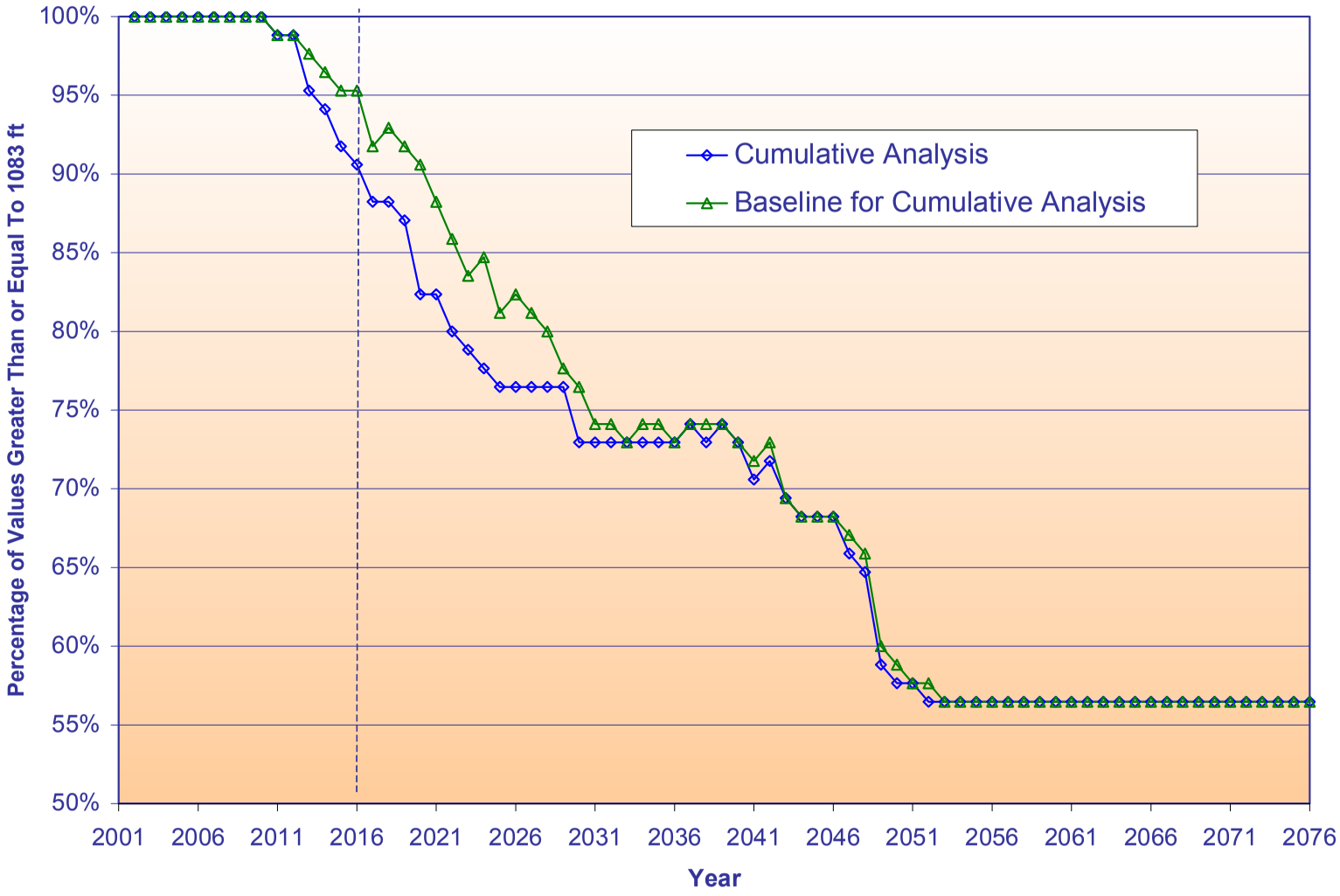


Figure 3.3-5
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions
Percentage of Values Greater than or Equal to Elevation 1050 Feet

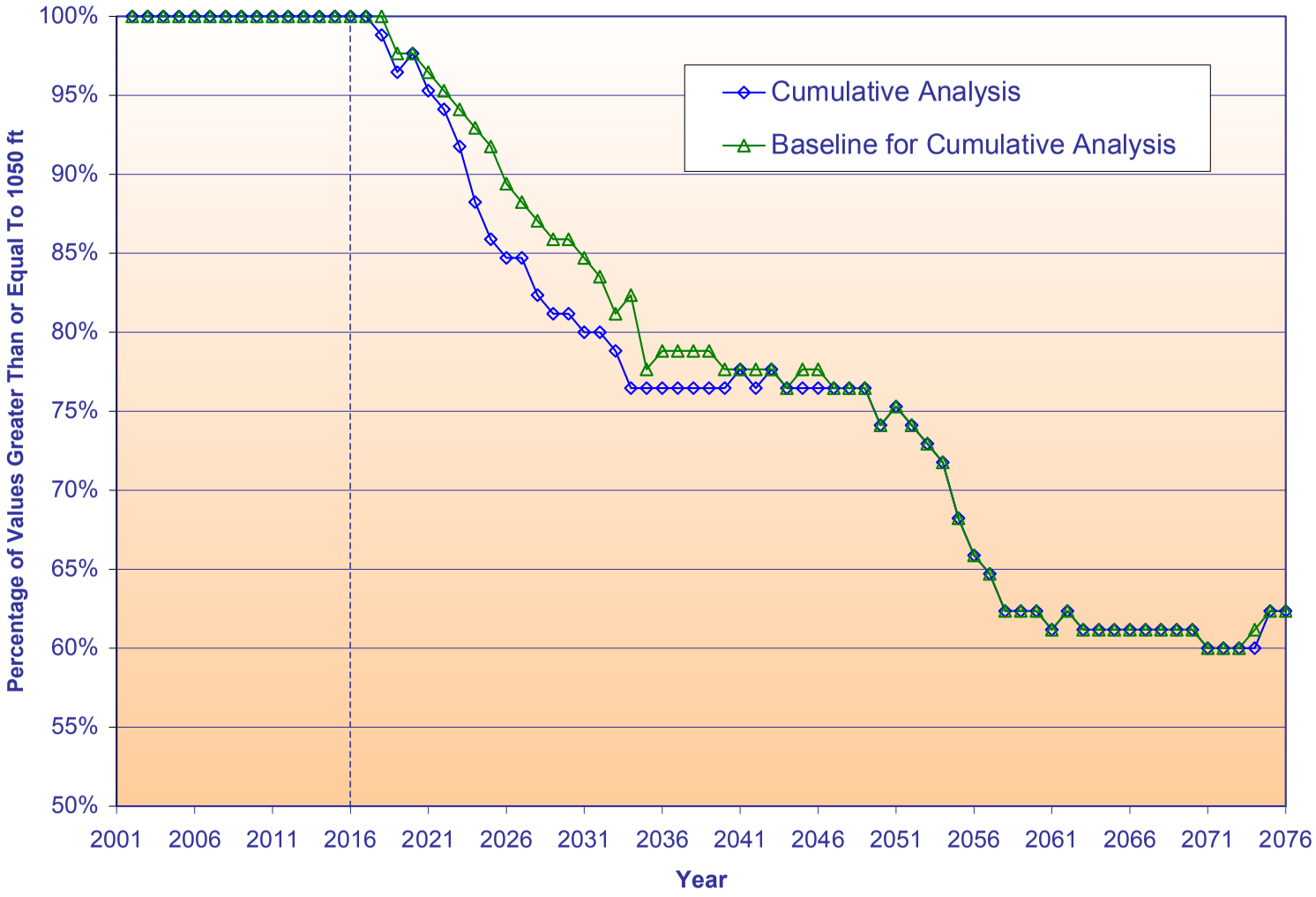


Figure 3.3-6
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions
Percentage of Values Greater than or Equal to Elevation 1000 Feet

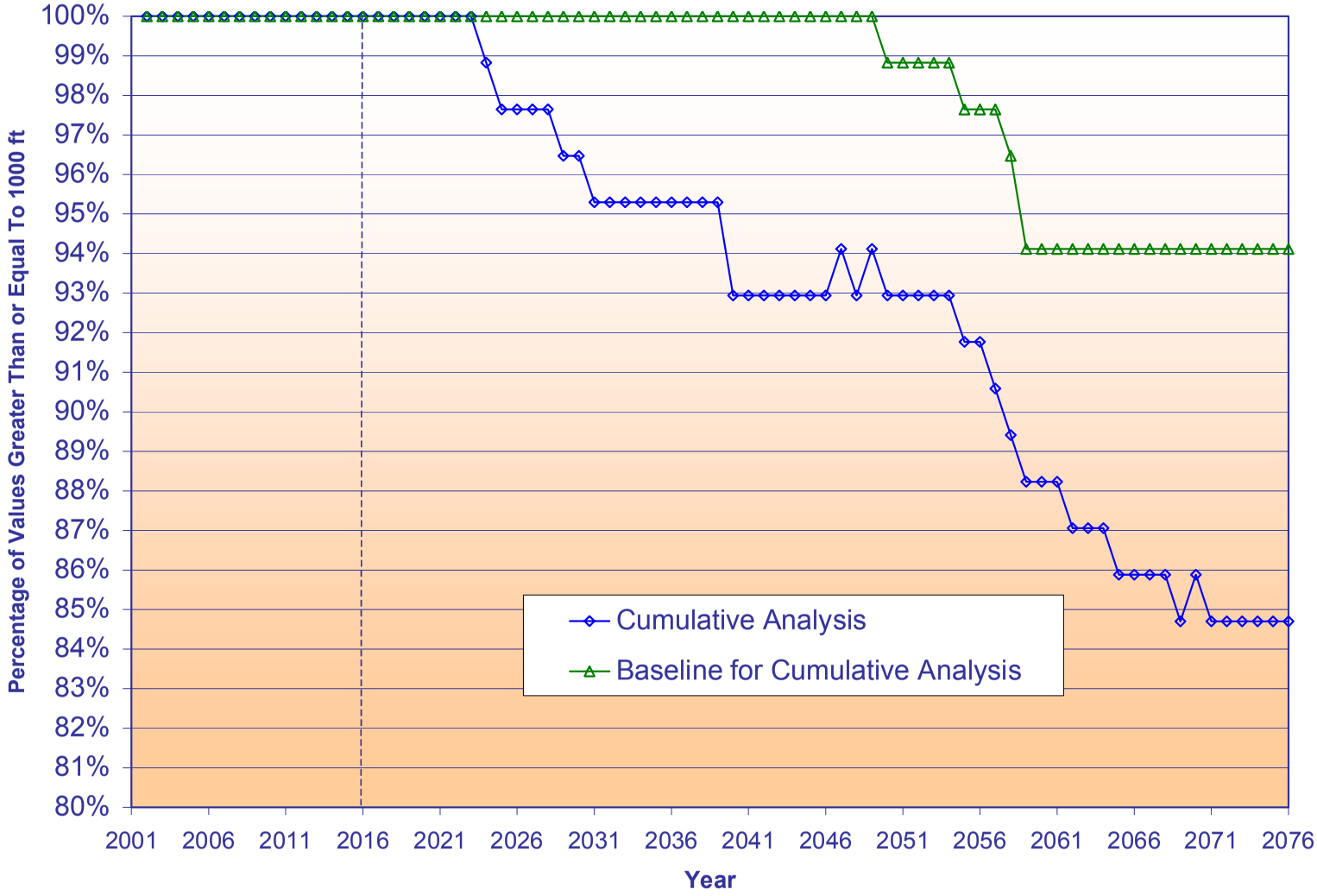


Figure 3.3-3 compared the percentage of Lake Mead elevations that were at or above 1200 feet msl for the Cumulative Analysis and Baseline for Cumulative Analysis conditions. Table 3.3-2 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.3-2
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis
Percentage of Values Greater than or Equal to Elevation 1200 Feet

Year	Baseline for Cumulative Analysis	Cumulative Analysis
2016	21%	20%
2026	19%	20%
2036	18%	18%
2046	14%	14%
2076	13%	13%

Figure 3.3-4 compared the percentage of Lake Mead elevations that were at or above 1083 feet msl for the Cumulative Analysis and Baseline for Cumulative Analysis conditions. Table 3.3-3 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.3-3
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis
Percentage of Values Greater than or Equal to Elevation 1083 Feet

Year	Baseline for Cumulative Analysis	Cumulative Analysis
2016	95%	91%
2026	82%	76%
2036	73%	73%
2046	68%	68%
2076	56%	56%

Figure 3.3-5 compared the percentage of Lake Mead elevations that were at or above 1050 feet msl for the Cumulative Analysis and Baseline for Cumulative Analysis conditions. Table 3.3-4 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.3-4
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis
Percentage of Values Greater than or Equal to Elevation 1050 Feet

Year	Baseline for Cumulative Analysis	Cumulative Analysis
2016	100%	100%
2026	89%	85%
2036	78%	76%
2046	78%	76%
2076	62%	62%

Figure 3.3-6 compared the percentage of Lake Mead elevations that were at or above 1000 feet msl for the Cumulative Analysis and Baseline for Cumulative Analysis conditions. Table 3.3-5 provides a summary of that comparison for years 2016, 2026, 2036, 2046, and 2076.

Table 3.3-5
Lake Mead End-of-December Water Elevations
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis
Percentage of Values Greater than or Equal to Elevation 1000 Feet

Year	Baseline for Cumulative Analysis	Cumulative Analysis
2016	100%	100%
2026	100%	98%
2036	100%	95%
2046	100%	93%
2076	94%	85%

3.3.1.3 SENSITIVITY ANALYSIS

The water surface elevations of Lake Mead presented above are based on model operations in which the Lake Mead water surface elevation of 1083 feet msl was assumed to be the shortage protection level. In order to test the sensitivity of that assumption on the results of the model operation, model runs were also conducted with an assumed Lake Mead protection level of 1050 feet msl. With the 1050-foot protection level, the resulting water levels on Lake Mead range up to 15 feet lower than those based on the 1083-foot protection level under Cumulative Impact Conditions, at the 50th percentile, after 2016. Lake Mead water level plots based on the use of the 1050-foot protection level are included in Attachment D.

3.3.2 RIVER FLOWS BELOW HOOVER DAM

This section describes results of the analysis of the simulated Colorado River flows below Hoover Dam. The model of the Colorado River system was used to simulate future mean monthly flows under Baseline for Cumulative Analysis and Cumulative Analysis conditions. Four specific river locations were selected to represent flows within selected river reaches below Hoover Dam. The river reaches and corresponding flow locations are listed in Table 3.3-6 and their locations were shown on Map 3.2-1 in Section 3.2.

Table 3.3-6
Colorado River Flow Locations Identified for Evaluation

Colorado River Reach	Selected River Flow Locations	
	Description	Approximate River Mile [1]
Between Hoover Dam and Parker Dam	Havasu National Wildlife Refuge (NWR)	242.3
Between Parker Dam and Palo Verde Diversion Dam	Upstream of Colorado River Indian Reservation	180.8
Between Palo Verde Diversion and Imperial Dam	Downstream of the Palo Verde Diversion Dam	133.8
Between Imperial Dam and SIB	Below the Mexico Diversion at Morelos Dam	23.1

[1] River miles as measured from the southerly international boundary with Mexico

Two types of model data analysis were used to portray cumulative impacts on river flows. In the first analysis, the potential effects on the total annual volume of flow in each reach were evaluated. In this analysis, the mean monthly flows were first summed over each calendar year. The 90^{th}, 50^{th}, and 10^{th} percentiles of the annual volumes were then computed for each year. Plots of these percentiles for the Baseline for the Cumulative Analysis and the Cumulative Analysis conditions are included in this section for each of the four river points listed above.

The second analysis investigated the potential effects on seasonal flows. The mean monthly flows for January were used to represent the winter season flows and likewise for April, July, and October to represent spring, summer, and fall, respectively. The specific years analyzed for seasonal flows included 2006, 2016, 2026, and 2050. Only the data and graphs for 2016 are presented in this section.

It should be noted that the monthly demand schedules used in the model are based on a distribution of the total annual demand (a specific percentage for each month). Although each diversion point may use a different distribution, those percentages do not change from year to year in the model, and thus can not reflect potential future changes in the system that might affect the monthly distributions. Therefore, the seasonal differences are primarily governed by the overall changes in annual flow volumes, coupled with the effect of each diversion's distribution upstream of the point of interest.

Daily and hourly releases from Hoover Dam reflect the short-term demands of Colorado River water users with diversions located downstream, storage management in Lakes Mohave and Havasu, and power production at Hoover, Davis and Parker Dams. The close proximity of Lake Mohave to Hoover Dam effectively dampens the short-term fluctuations below Hoover Dam. The scheduling and subsequent release of water through Davis and Parker Dams create short-term fluctuations in river flows, depths, and water surface elevations downstream of these structures. These fluctuations of water surface elevations in the river are most noticeable in the river reaches located immediately downstream of the dams and lessen as the downstream distance increases.

3.3.2.1 RIVER FLOWS BETWEEN HOOVER DAM AND PARKER DAM

The river flows between Hoover Dam and Parker Dam are comprised mainly of flow releases from Hoover Dam and Davis Dam. Inflows from the Bill Williams River and other intermittent tributaries are infrequent and are usually concentrated into short time periods due to their dependence on localized precipitation. Tributary inflows comprise less than one percent of the total annual flow in this reach of the river.

A point on the Colorado River downstream of Davis Dam was used to evaluate the river flows for this reach, located immediately downstream of the Havasu National Wildlife Refuge (NWR).

The 90th, 50th, and 10th percentile annual flow volumes for this reach are shown in Figure 3.3-7. As shown by the 50th percentile values, annual flow volumes in this reach would be greater under the Cumulative Analysis conditions than under the Baseline for Cumulative Analysis conditions during the 15-year interim surplus guidelines period through 2016. The plot indicates that the Cumulative Analysis conditions would increase flows above the Baseline during this period by up to approximately six percent. The difference is primarily the result of the interim surplus guidelines on the river system [Ref. ISC FEIS, Page 3.3-46], offset to a minor degree by the effect of the changes anticipated under the Implementation Agreement (See Section 3.2.2.1). Beyond the 15-year interim period, the annual flow volumes under the Cumulative Analysis are essentially the same (within one percent) as those under the Baseline for Cumulative Analysis conditions.

At the 90th percentile level the annual flow pattern under Cumulative Analysis is generally similar that of the Baseline for the Cumulative Analysis, with the Cumulative Analysis flows tending to exceed Baseline flows intermittently. The 10th percentile level exhibits a relationship similar to that described for the 50^{th} percentile level until 2016. Beyond 2016 the 10^{th} percentile flows under Cumulative Analysis conditions are essentially the same as those under the Baseline for Cumulative Analysis conditions.

Figure 3.3-8 shows the cumulative distribution of annual flow volumes for year 2016.

Figures 3.2-9(a-d) present comparisons of the representative seasonal flows under Baseline for Cumulative Analysis conditions and the Cumulative Analysis for 2016. As expected, the largest flows occur in the spring and summer seasons for Baseline for Cumulative Analysis conditions and Cumulative Analysis conditions due to downstream irrigation demands. For flows that are due primarily to flood control releases from Lake Mead (flows in the 80th - 100th percentile range), the seasonal flows under the Cumulative Analysis conditions vary higher or lower than the flows under the Baseline for Cumulative Analysis during the fall and winter seasons. In the lower percentiles, the seasonal flows under the Cumulative Analysis conditions varied from being approximately the same as Baseline flows (within one percent) to being approximately eight percent higher (January).

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.3-7. The values tabulated are the mean monthly flows in January, April, July and October.

Table 3.3-7
Comparison of Mean Monthly Flow Data –
Baseline for Cumulative Analysis and Cumulative Analysis
Colorado River Downstream of Havasu NWR (River Mile = 242.3)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	Baseline for Cumulative Analysis	Cumulative Analysis
January (January)	8,035	8,399
Spring (April)	16,038	15,979
Summer (July)	15,855	15,704
Fall (October)	12,091	11,880

Figure 3.3-7
Colorado River Downstream of Havasu NWR Annual Flow Volume (af)
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions
90th, 50th and 10th Percentile Values

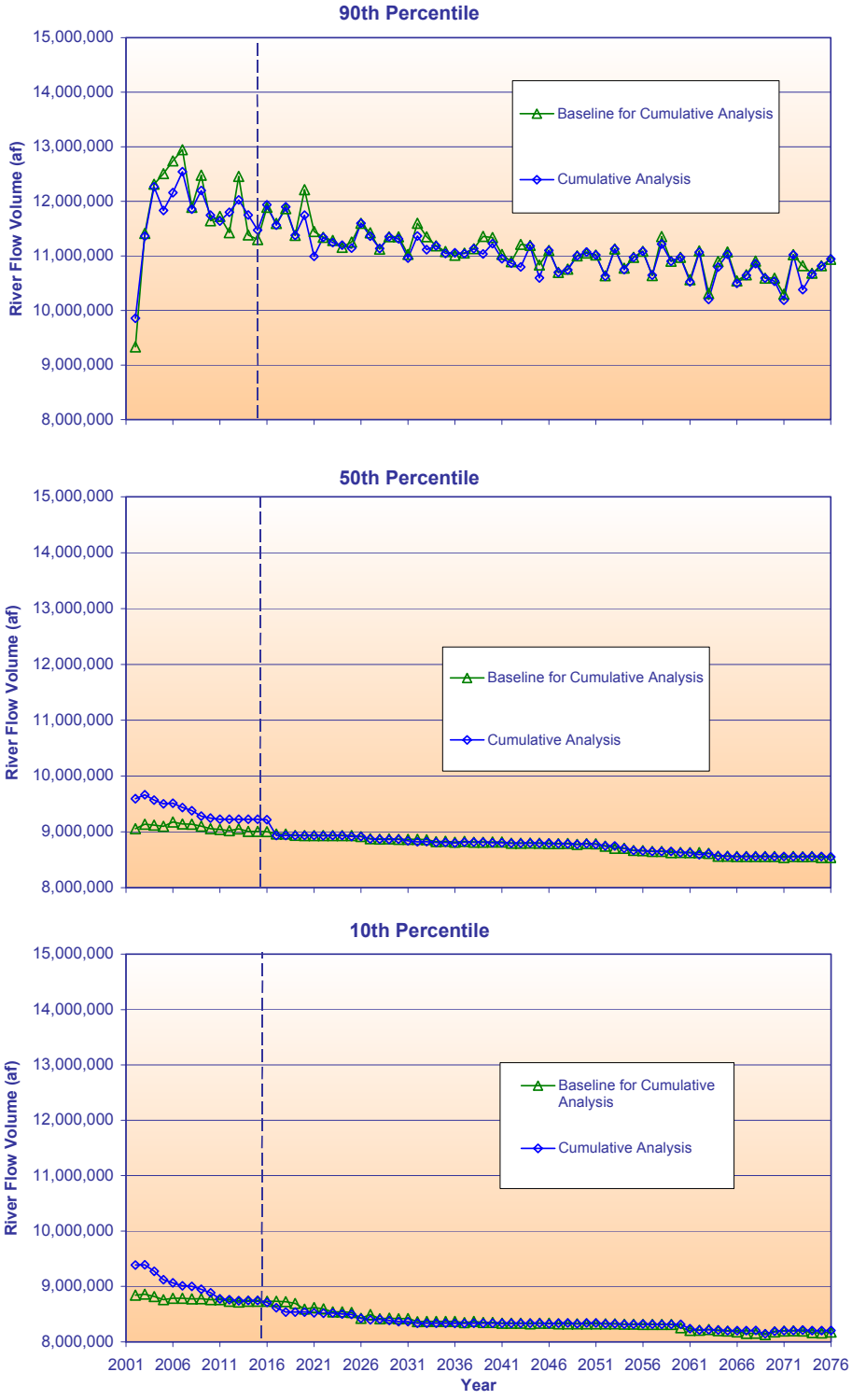


Figure 3.3-8
Colorado River Annual Flow Volume Downstream of Havasu NWR
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

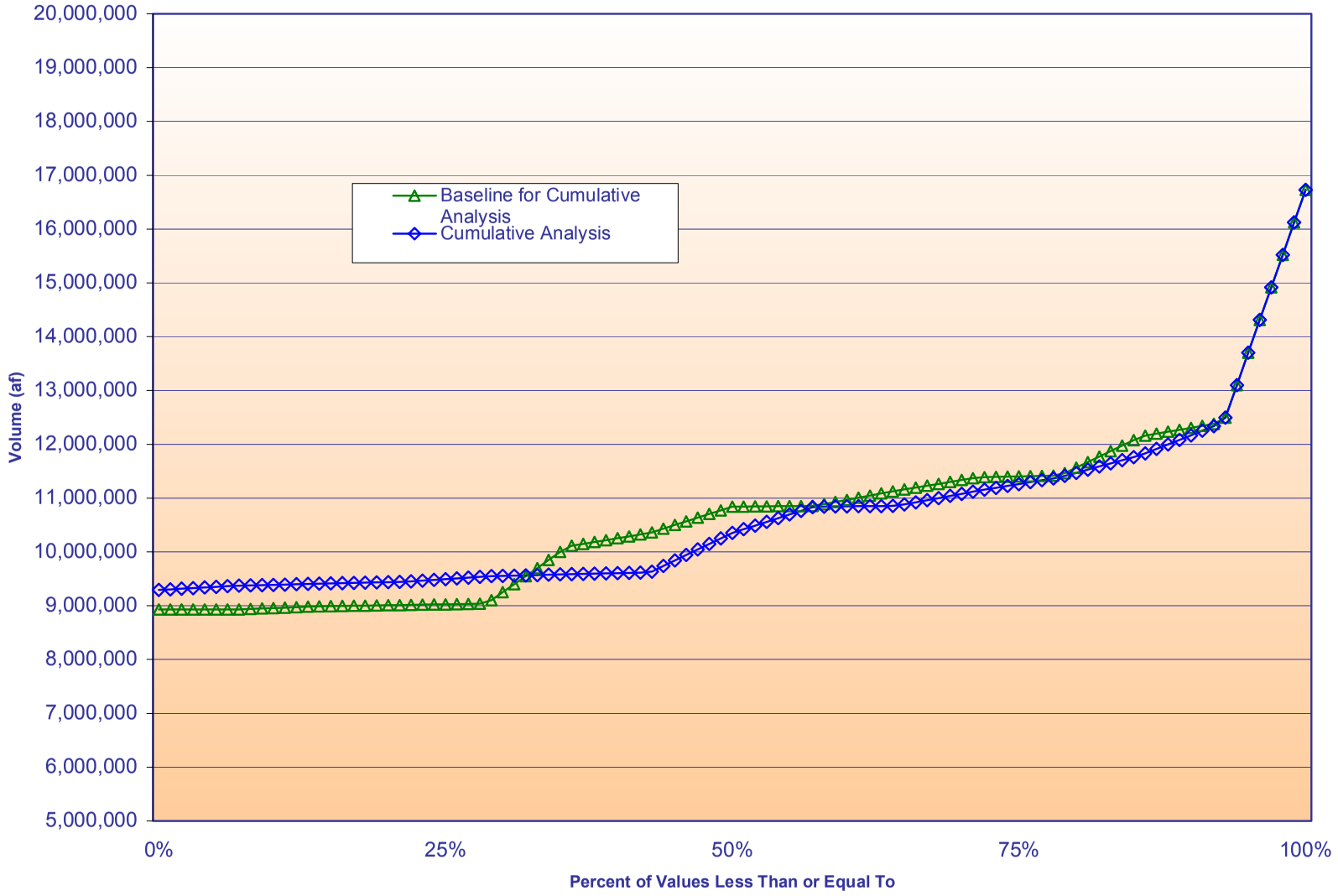


Figure 3.3-9a
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

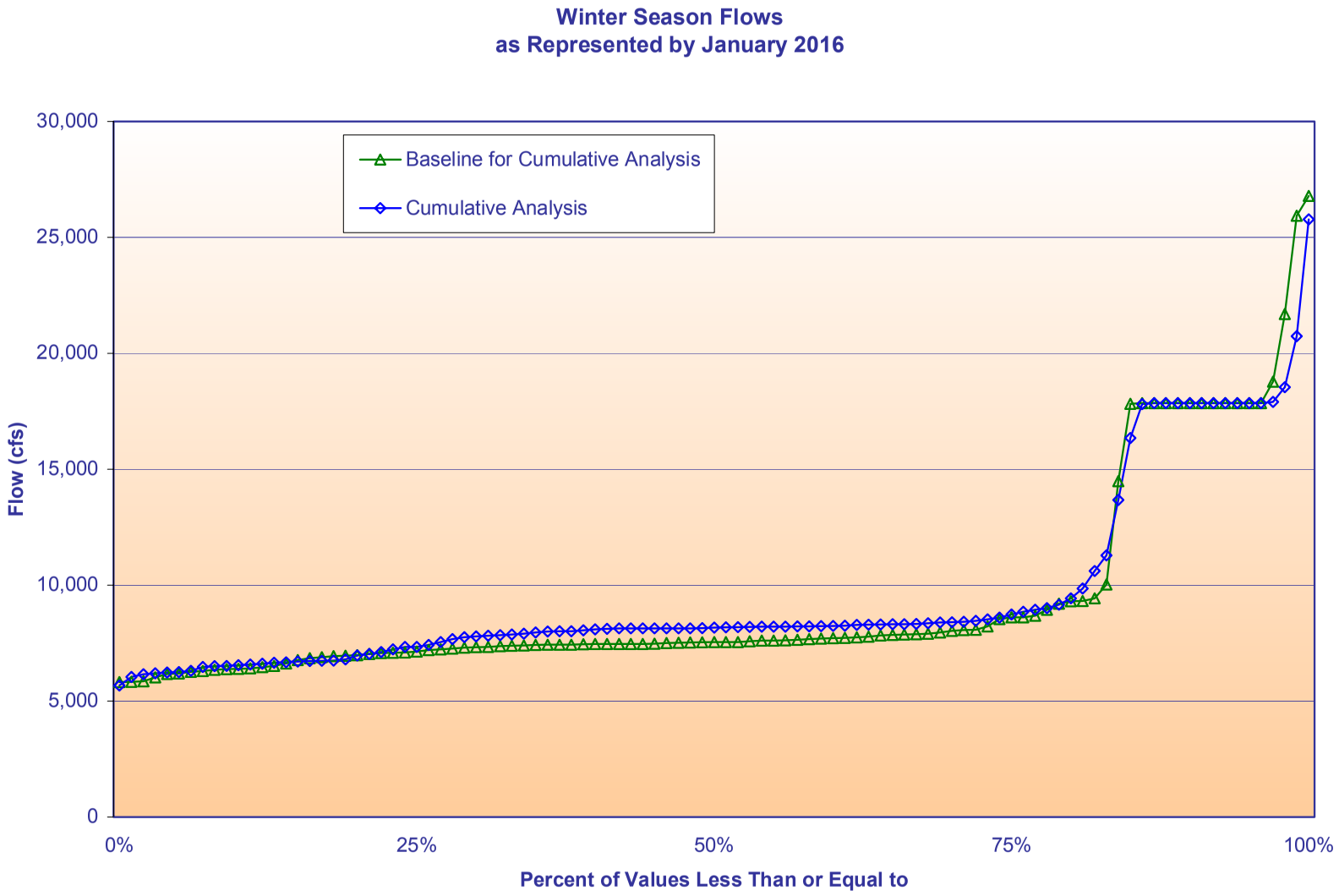


Figure 3.3-9b
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

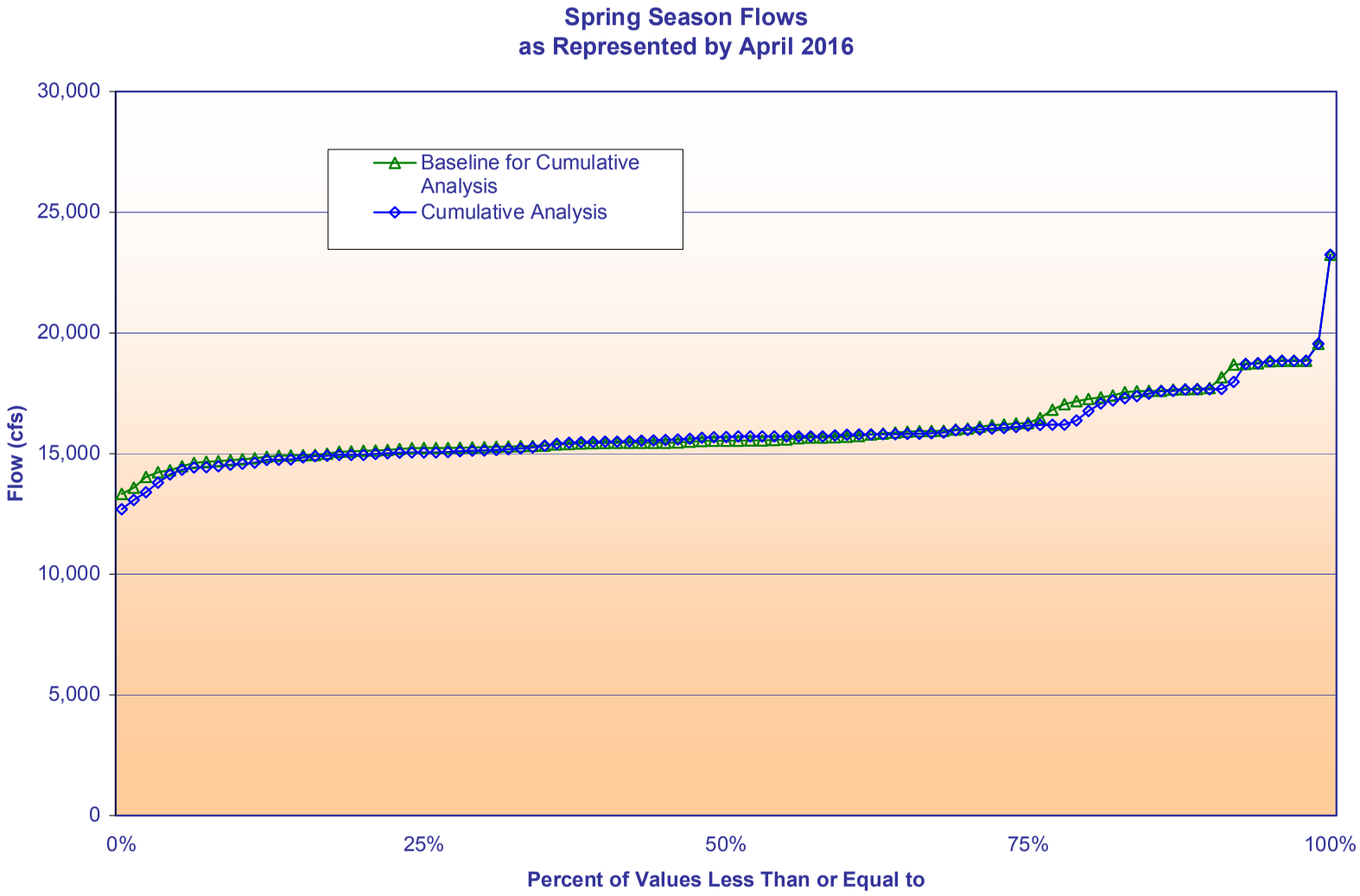


Figure 3.3-9c
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

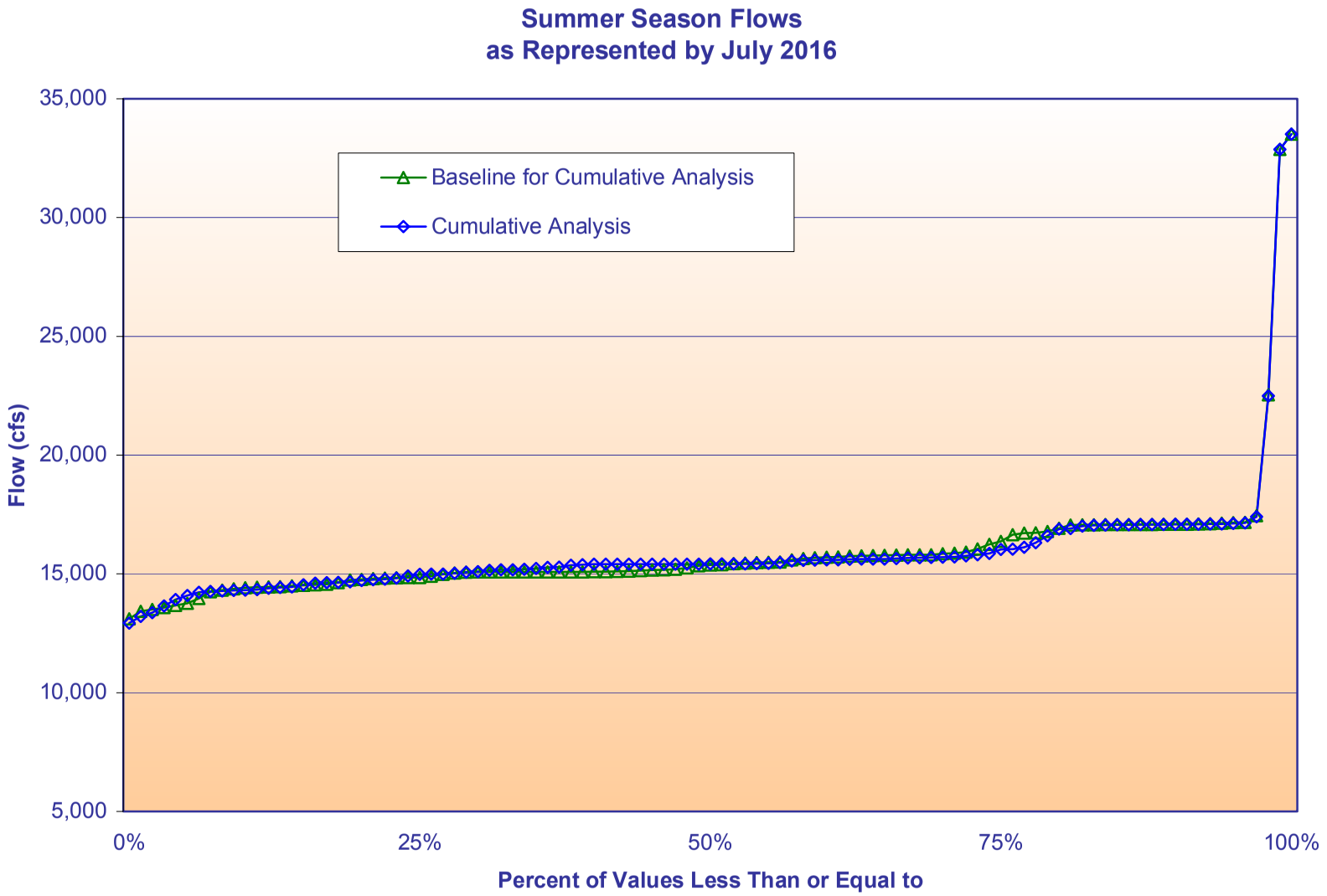
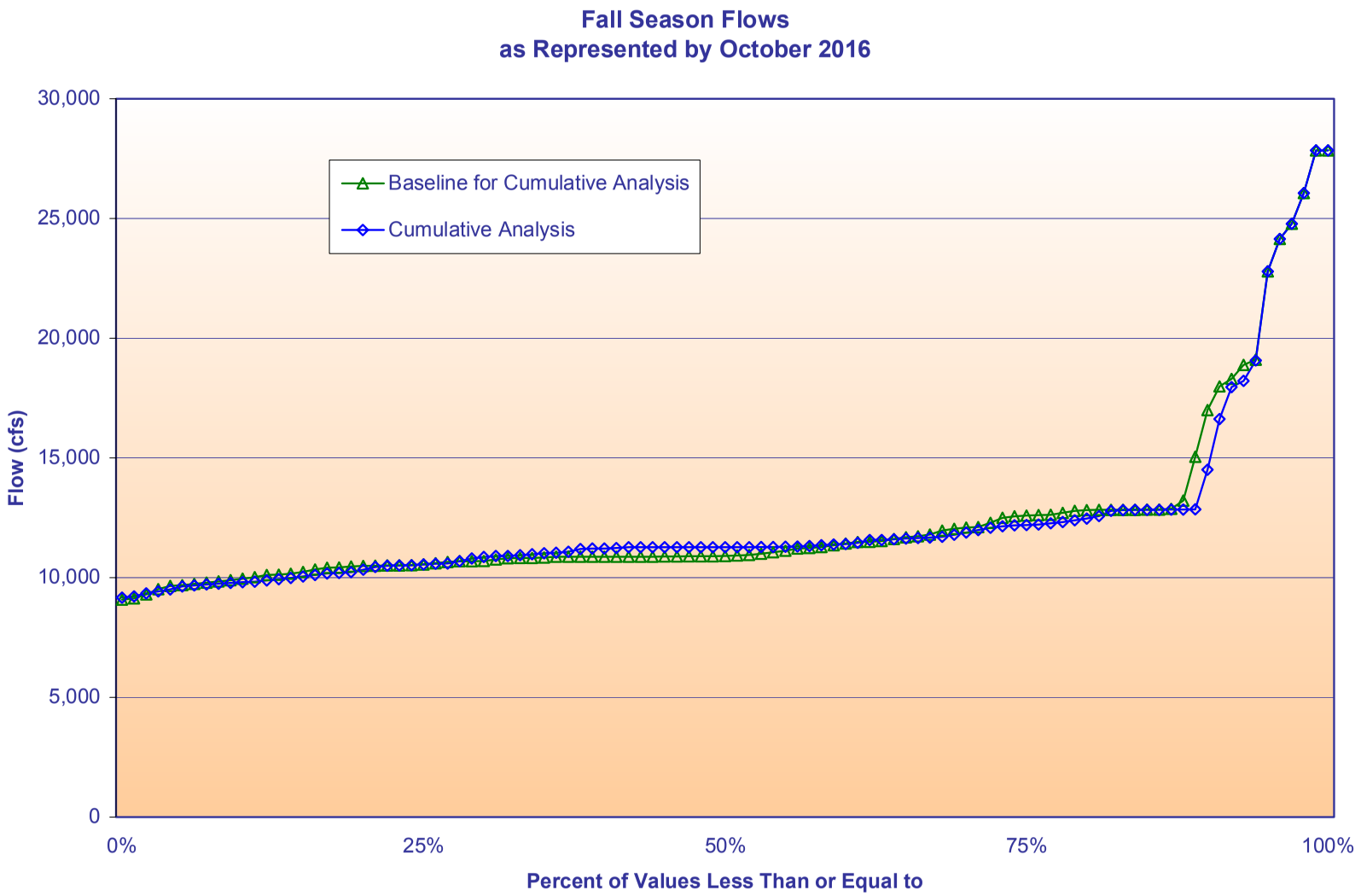


Figure 3.3-9d
Colorado River Seasonal Flows Downstream of Havasu NWR
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016



3.3.2.2 RIVER FLOWS BETWEEN PARKER DAM AND PALO VERDE DIVERSION DAM

The point on the Colorado used to evaluate the river flows in the reach of the river located between Parker Dam and the Palo Verde Diversion Dam is located immediately upstream of the Colorado River Indian Reservation (CRIR) diversion. The CRIR diversion is located at Headgate Rock Dam, approximately 14 miles below Parker Dam. Flows in this reach of the river result primarily from releases from Parker Dam (Lake Havasu).

Future flows in this reach would be affected by the Cumulative Analysis because the proposed water transfers and exchanges between the California agricultural water agencies and MWD would change the point of diversion from the river. For example, under a potential transfer between IID and MWD (or SDCWA), the water that would normally be diverted at Imperial Dam would now be diverted above Parker Dam.

The 90th, 50th, and 10th percentile annual flow volumes for this reach are shown in Figure 3.3-10. As shown by the 50th percentile values, the modeled annual flow volumes in this reach under the Cumulative Analysis decline gradually between 2002 and 2016, as the water transfers take effect and certain amounts of California's water are diverted from Lake Havasu rather than at Imperial Dam. The difference results primarily from the proposed Implementation Agreement (See Section 3.2.2.2), augmented to a minor degree by the effect of the additional proposed water transfer in the cumulative analysis. The interim surplus guidelines do not affect this section of river significantly [Ref. ISC FEIS, Page 3.3-55]. After 2016 the volumes under Cumulative Analysis conditions continue to be less than for the Baseline.

At the 10th percentile level, the same comparative annual flow patterns occur. The 90th percentile flows under the Cumulative Analysis conditions vary higher or lower than the flows under the Baseline for Cumulative Analysis during the fall and winter seasons. However, the plots do not exhibit a significant difference between the Cumulative Analysis conditions and the Baseline for Cumulative Analysis conditions. At the 90th percentile level flows are dominated by surplus water deliveries and flood flows.

Figure 3.3-11, shows the cumulative distribution of annual flow volumes for year 2016.

Figures 3.3-12 (a-d) present comparisons of the representative seasonal flows under Baseline for Cumulative Analysis conditions and the Cumulative Analysis for 2016. As expected, the largest flows occur in the spring and summer seasons under the Baseline for Cumulative Analysis and Cumulative Analysis conditions due to downstream irrigation demands. The seasonal flows of the Cumulative Analysis conditions are slightly lower than those of the Baseline for Cumulative Analysis conditions. For flows that are due primarily to flood control releases from Lake Mead (flows in the 80th - 100th percentile range), the seasonal flows under the Cumulative Analysis conditions vary higher or lower than the flows under the Baseline for Cumulative Analysis during

the fall and winter seasons. However, the range of the seasonal flows is not affected by the Cumulative Analysis.

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.3-8. The values tabulated are the mean monthly flows in January, April, July and October.

Table 3.3-8
Comparison of Mean Monthly Flow Data –
Baseline for Cumulative Analysis and Cumulative Analysis
Colorado River Upstream of CRIR Diversion (River Mile = 180.8)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	Baseline for Cumulative Analysis	Cumulative Analysis
Winter (January)	4,090	3,835
Spring (April)	12,009	11,455
Summer (July)	13,307	12,841
Fall (October)	8,119	7,825

Figure 3.3-10
Colorado River Upstream of CRIR Diversion Annual Flow Volume (af)
Comparison of Implementation Agreement to Baseline for Cumulative Analysis Conditions
90th, 50th and 10th Percentile Values

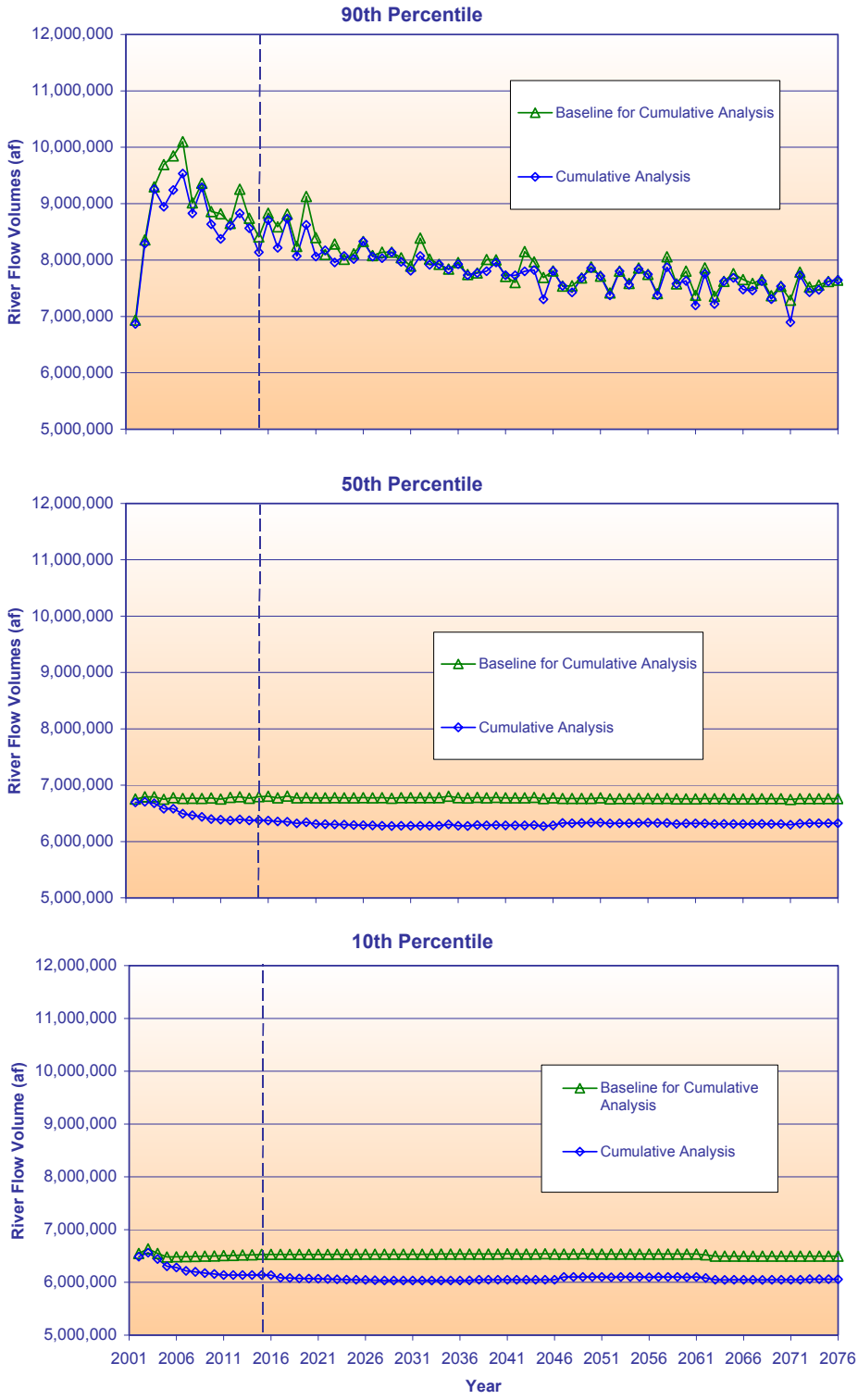


Figure 3.3-11
Colorado River Annual Flow Volumes Upstream of Colorado River Indian Reservation
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

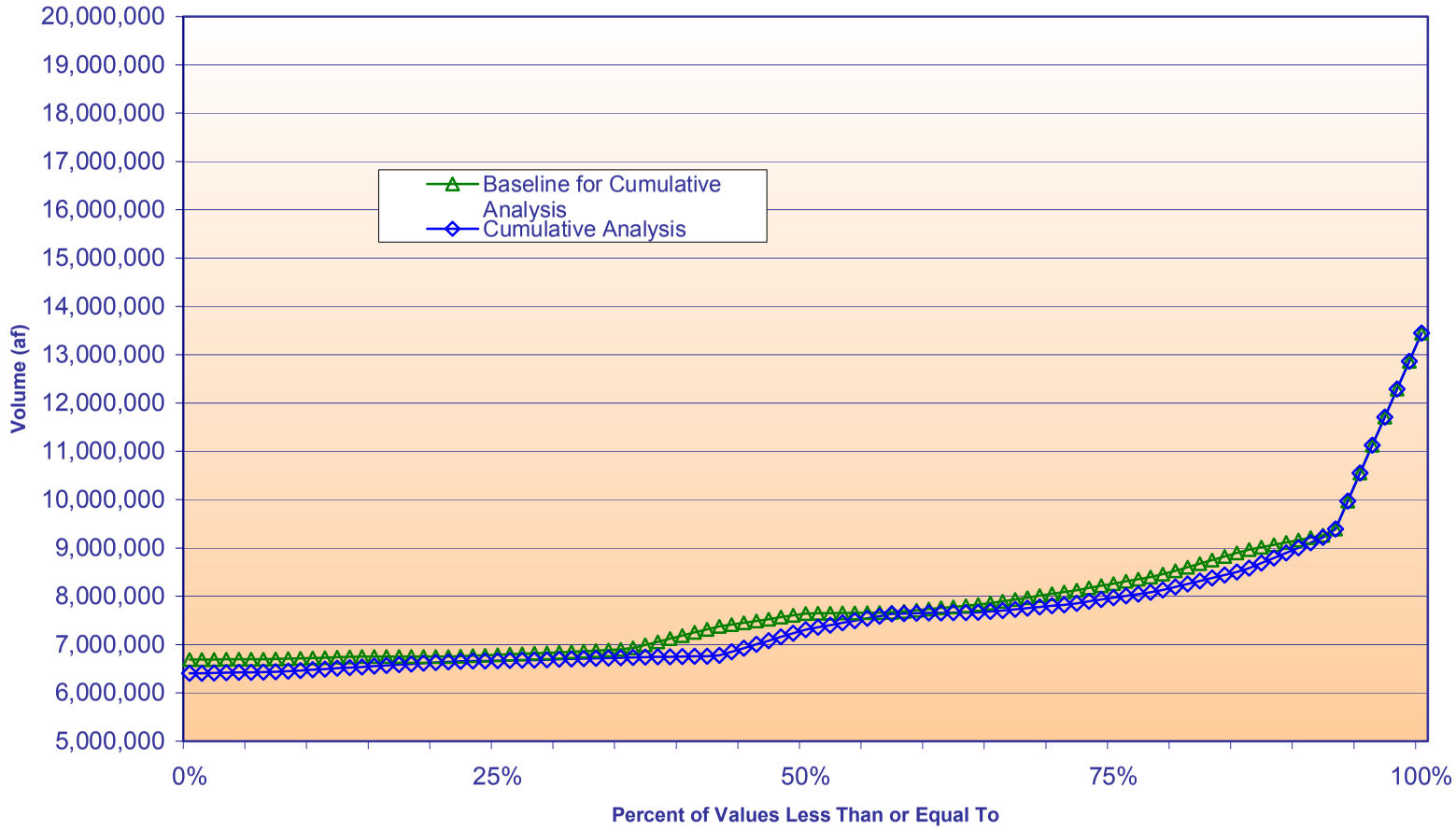


Figure 3.3-12a
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

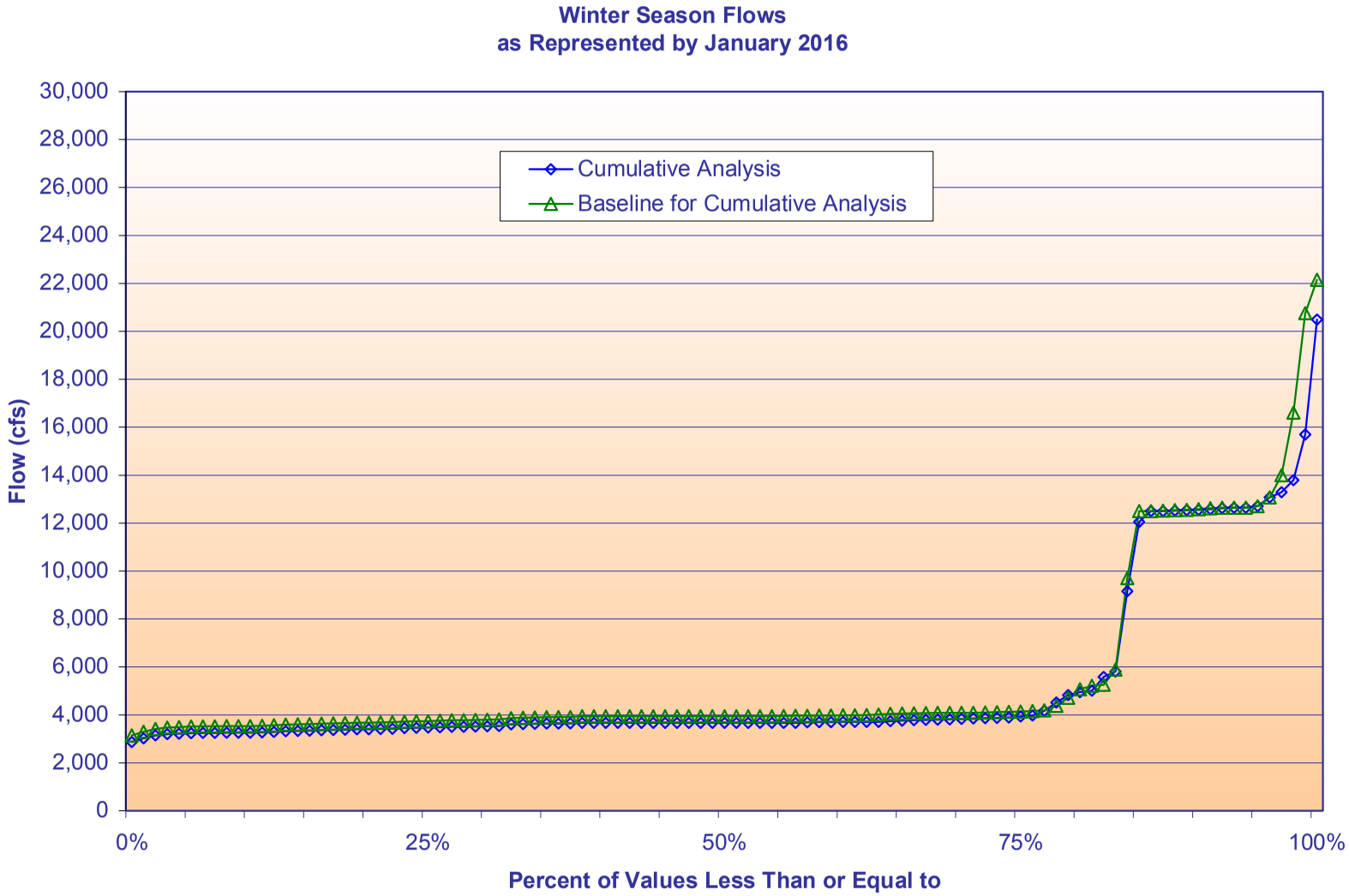


Figure 3.3-12b
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

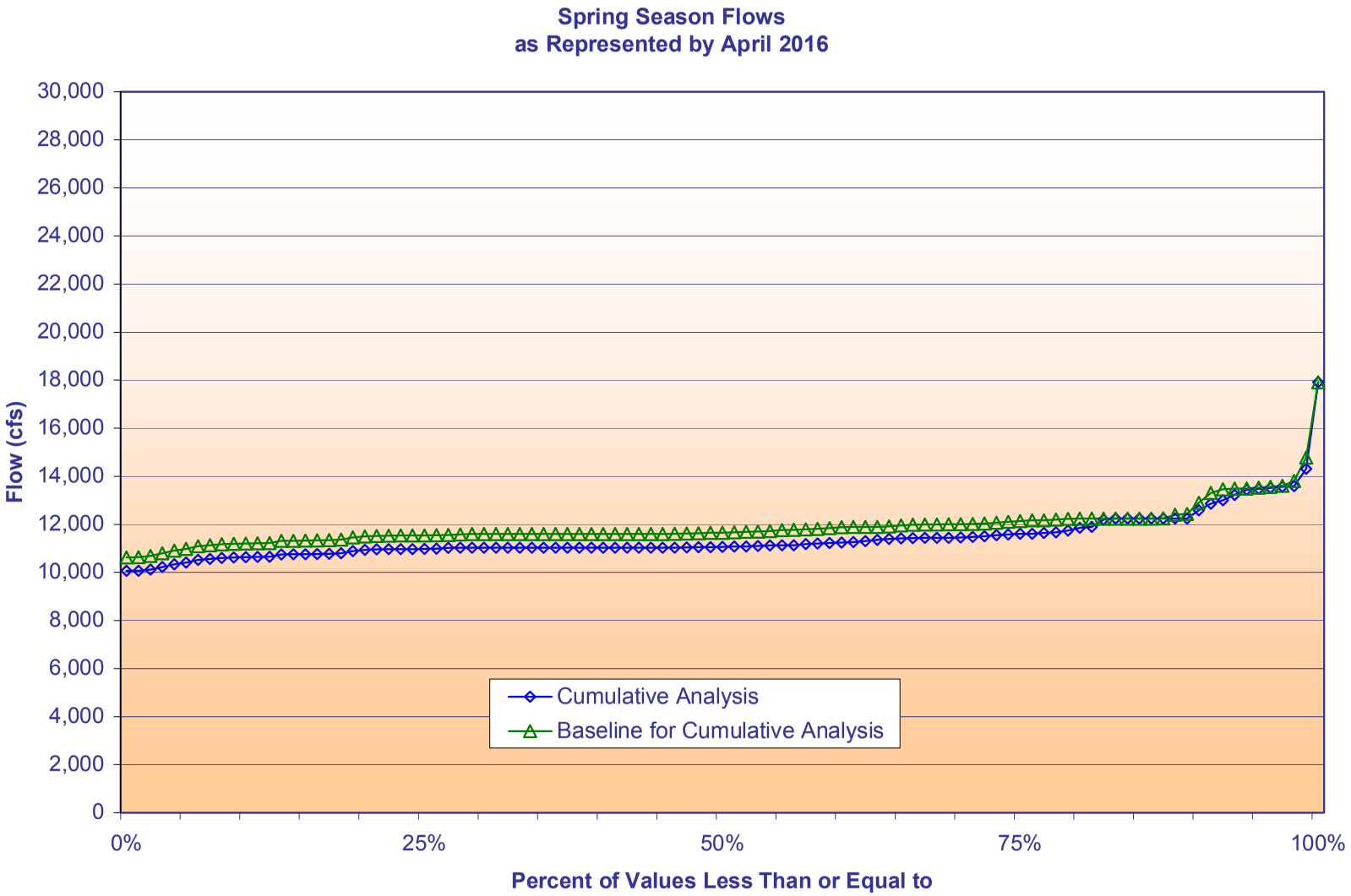


Figure 3.3-12c
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

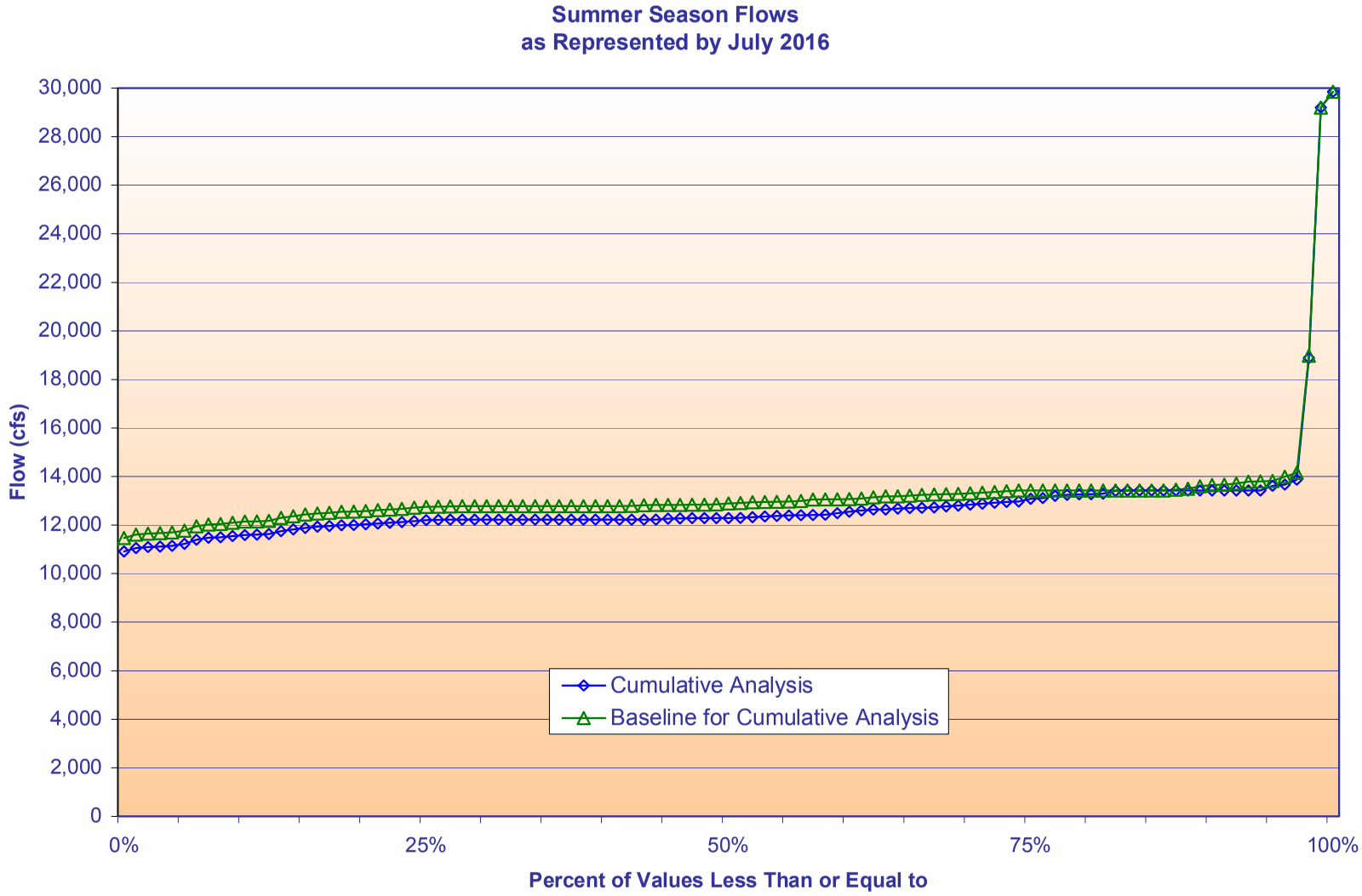
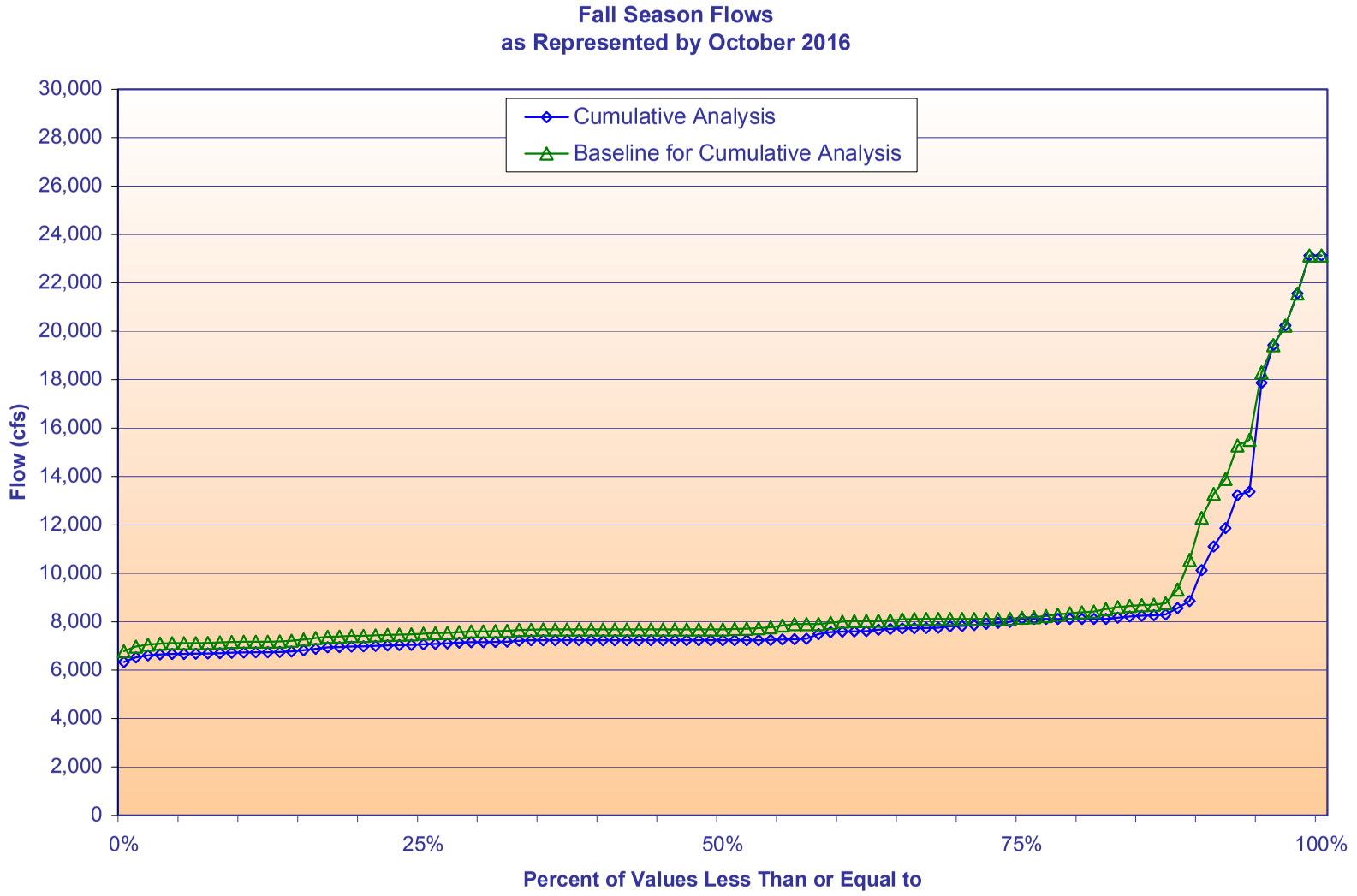


Figure 3.3-12d
Colorado River Seasonal Flows Upstream of Colorado River Indian Reservation
Comparison of Implementation Agreement to Baseline for Cumulative Analysis Conditions for Modeled Year 2016



3.3.2.3 RIVER FLOWS BETWEEN PALO VERDE DIVERSION DAM AND IMPERIAL DAM

The flow of the Colorado River between Palo Verde Diversion Dam and Imperial Dam is normally set at the amount needed to meet the United States diversion requirements downstream of the Palo Verde Diversion plus deliveries to Mexico. The river location that was modeled for this reach of the river is located immediately downstream of the Palo Verde Diversion Dam.

Future flows in this reach would be affected by the Cumulative Analysis because the proposed water transfers and exchanges between the California agricultural water agencies and MWD would change the point of diversion from the river. For example, under a potential transfer between IID and MWD (or SDCWA), the water that would normally be diverted at Imperial Dam would now be diverted above Parker Dam.

The 90th, 50th, and 10th percentile annual flow volumes for this reach are shown in Figure 3.3-13. As shown by the 50th percentile values, the modeled annual flow volumes in this reach under the Cumulative Analysis decline gradually between 2002 and 2016, as the water transfers take effect and certain amounts of California's water are diverted from Lake Havasu rather than at Imperial Dam. After 2016 the annual flow conditions would remain lower than under the baseline. The difference results primarily from the proposed Implementation Agreement (See Section 3.2.4.3), augmented to a minor degree by the effect of the additional proposed water transfer in the cumulative analysis. The interim surplus guidelines do not affect this section of river significantly

At the 10th percentile level, the same comparative annual flow patterns occur. The 90^{th} percentile flows under the Cumulative Analysis conditions vary higher or lower than the flows under the Baseline for Cumulative Analysis during the fall and winter seasons. However, the plots do not exhibit a significant difference between the Cumulative Analysis conditions and the Baseline for Cumulative Analysis conditions. At the 90^{th} percentile level, flows are dominated by surplus water deliveries and flood flows.

Figure 3.3-14, shows the cumulative distribution of annual flow volumes for year 2016.

Figures 3.3-15 (a-d) present comparisons of the representative seasonal flows under Baseline for Cumulative Analysis conditions and the Cumulative Analysis for 2016. As expected, the largest flows occur in the spring and summer seasons under the Baseline for Cumulative Analysis and Cumulative Analysis conditions due to downstream irrigation demands. The seasonal flows under the Cumulative Analysis are slightly lower than those under Baseline for Cumulative Analysis conditions. For flows that are due primarily to flood control releases from Lake Mead (flows in the 80^{th} - 100^{th} percentile range), the range of mean monthly flows is not affected by the Cumulative Analysis, since these magnitudes are dictated by the flood control regulations. In the lower percentiles, the seasonal flows with the Cumulative Analysis are slightly lower

than the flows under Baseline for Cumulative Analysis conditions (from six to 11 percent lower in various seasons in 2016).

A numerical comparison of the 70th percentile seasonal flow values is shown on Table 3.3-9. The values tabulated are the mean monthly flows in January, April, July and October.

Table 3.3-9
Comparison of Mean Monthly Flow Data –
Baseline for Cumulative Analysis and Cumulative Analysis
Colorado River Downstream of Palo Verde Diversion Dam (River Mile = 133.8)
70th Percentile Values for Year 2016

Season (Representative Month)	Mean Monthly Flows (cfs) for Year 2016 at the 70th Percentile	
	Baseline for Cumulative Analysis	Cumulative Analysis
Winter (January)	3,695	3,420
Spring (April)	10,202	9,633
Summer (July)	11,008	10,458
Fall (October)	7,444	7,003

Figure 3.3-13
Colorado River Downstream of Palo Verde Diversion Dam Annual Flow Volume (af)
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions
90th, 50th and 10th Percentile Values

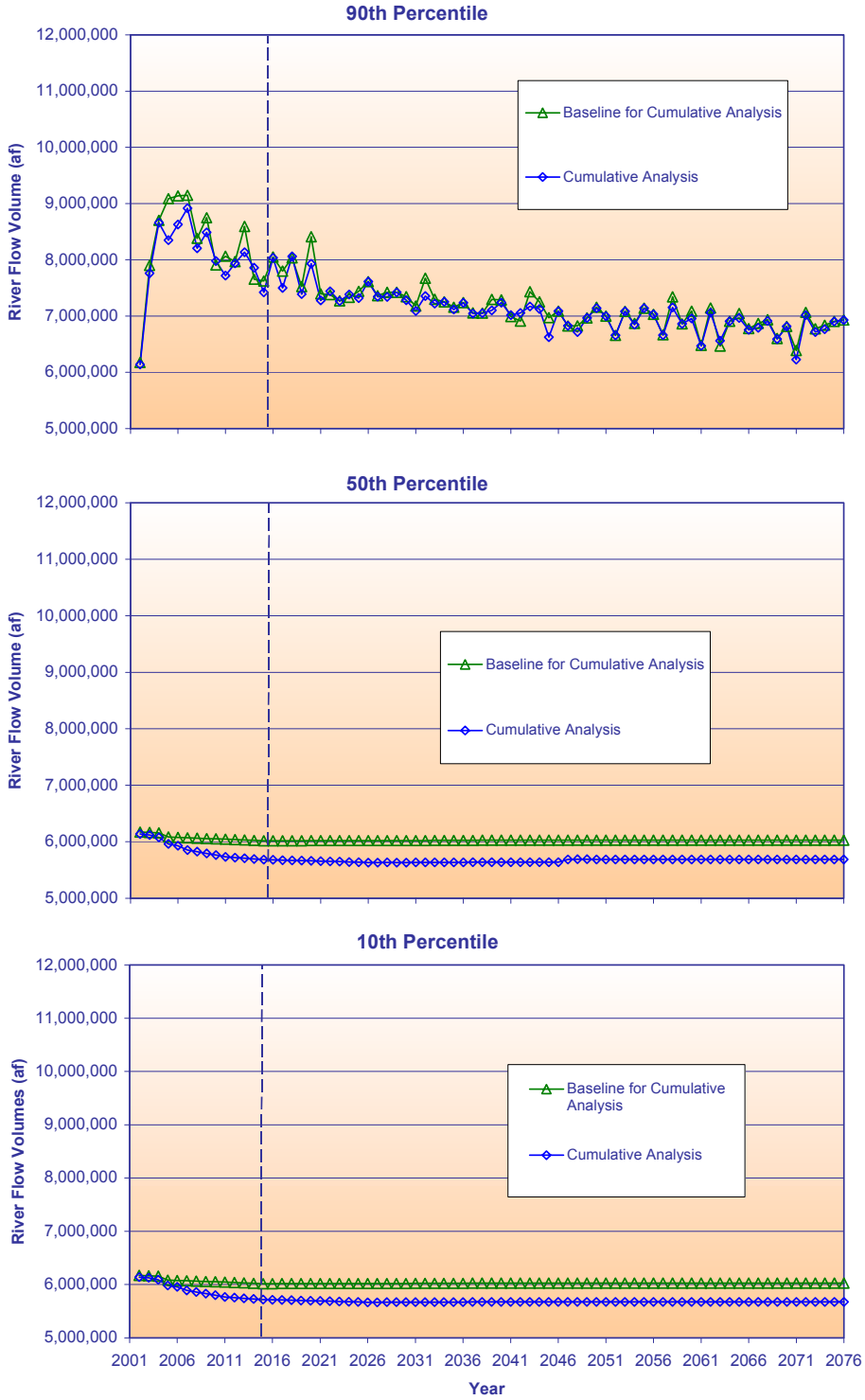


Figure 3.3-14
Colorado River Annual Flow Volumes Downstream of Palo Verde Irrigation Diversion
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

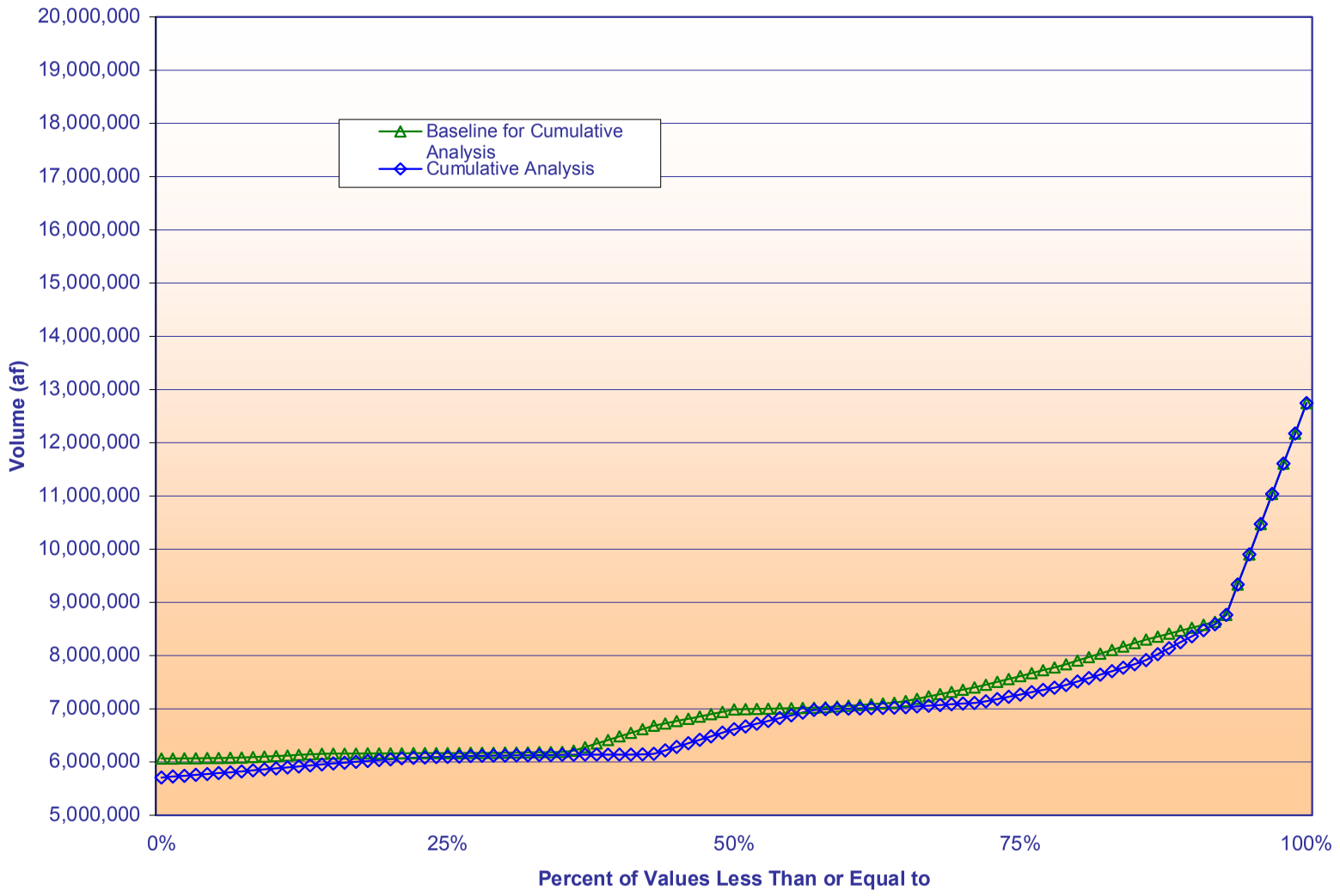


Figure 3.3-15a
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

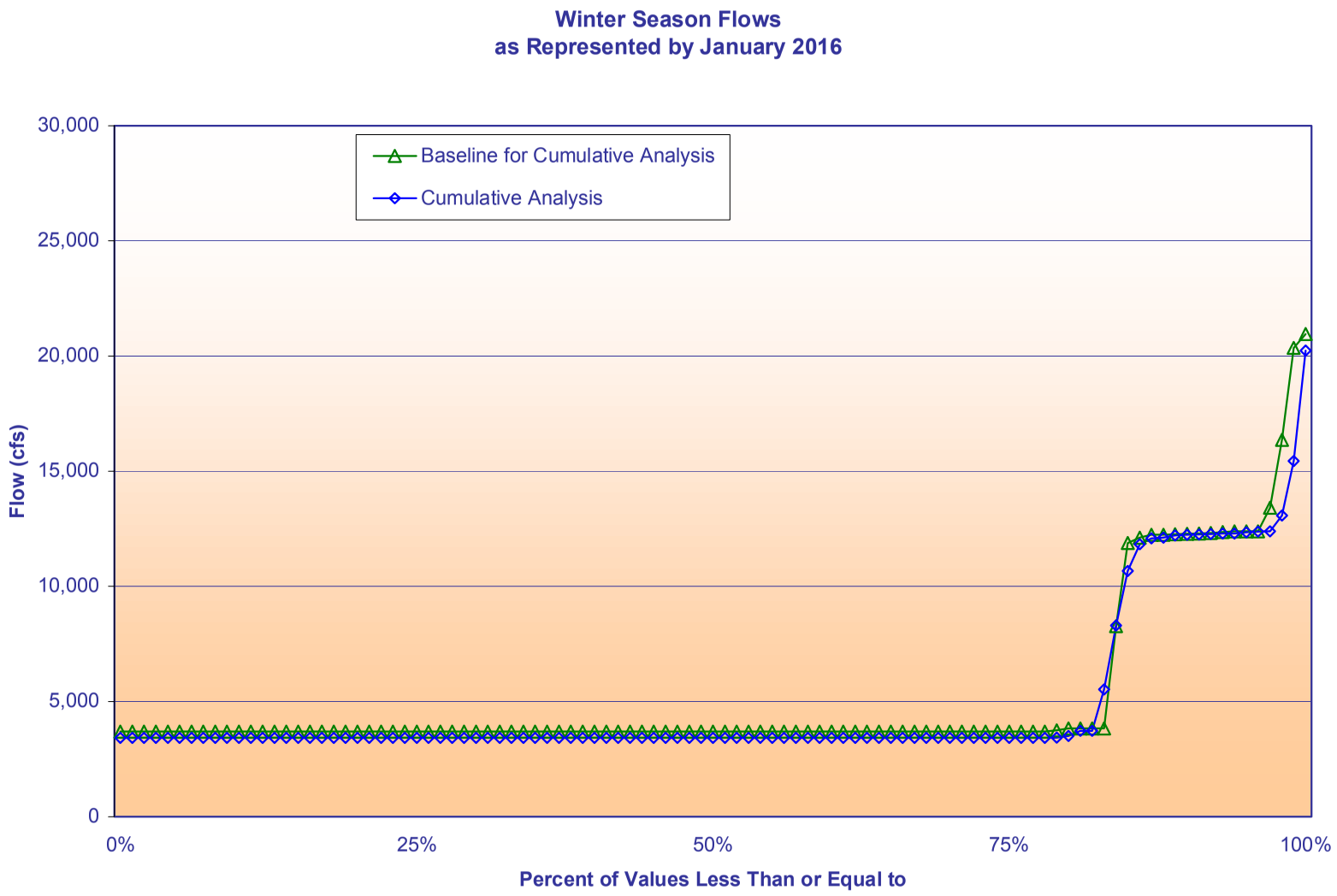


Figure 3.3-15b
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

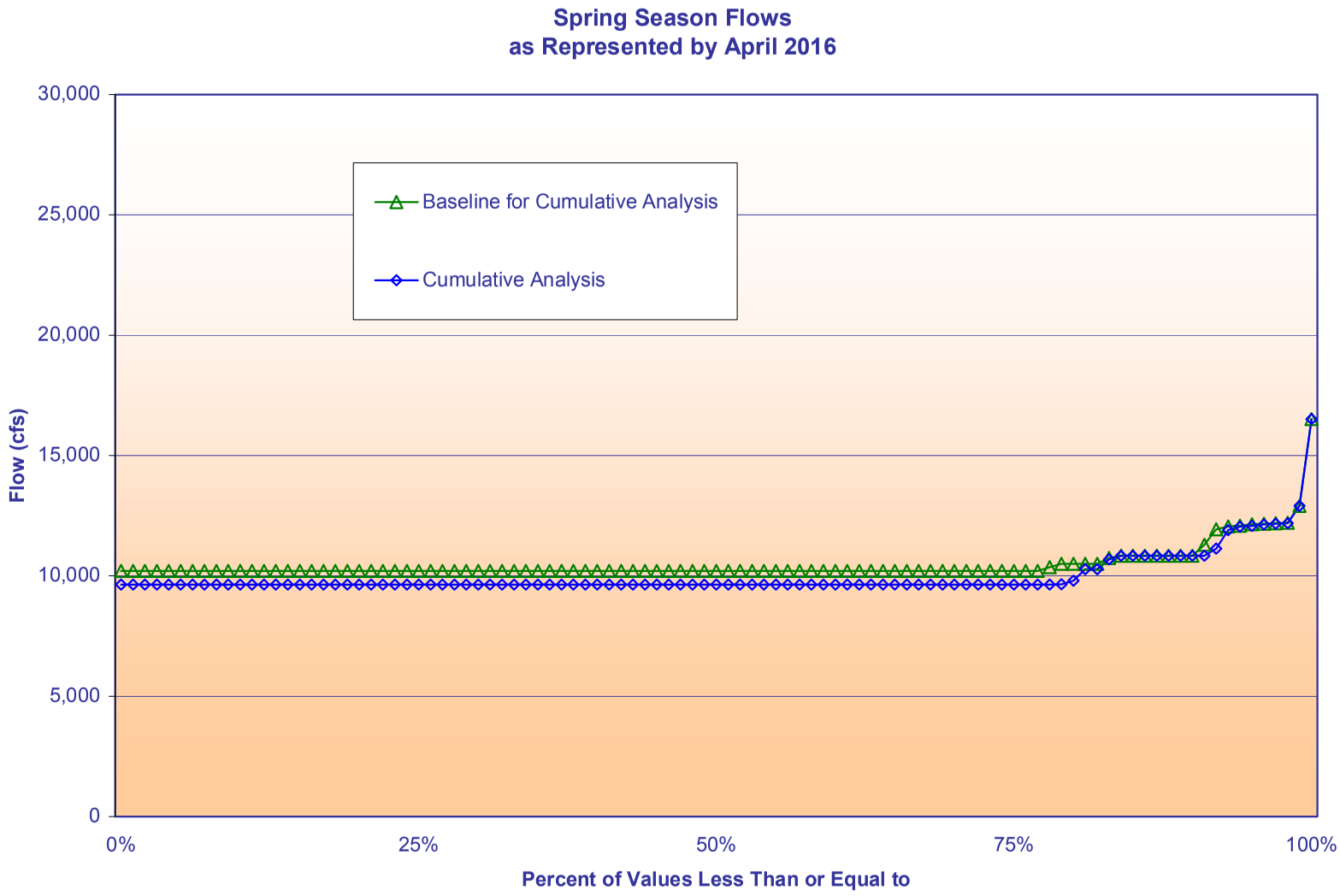


Figure 3.3-15c
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016

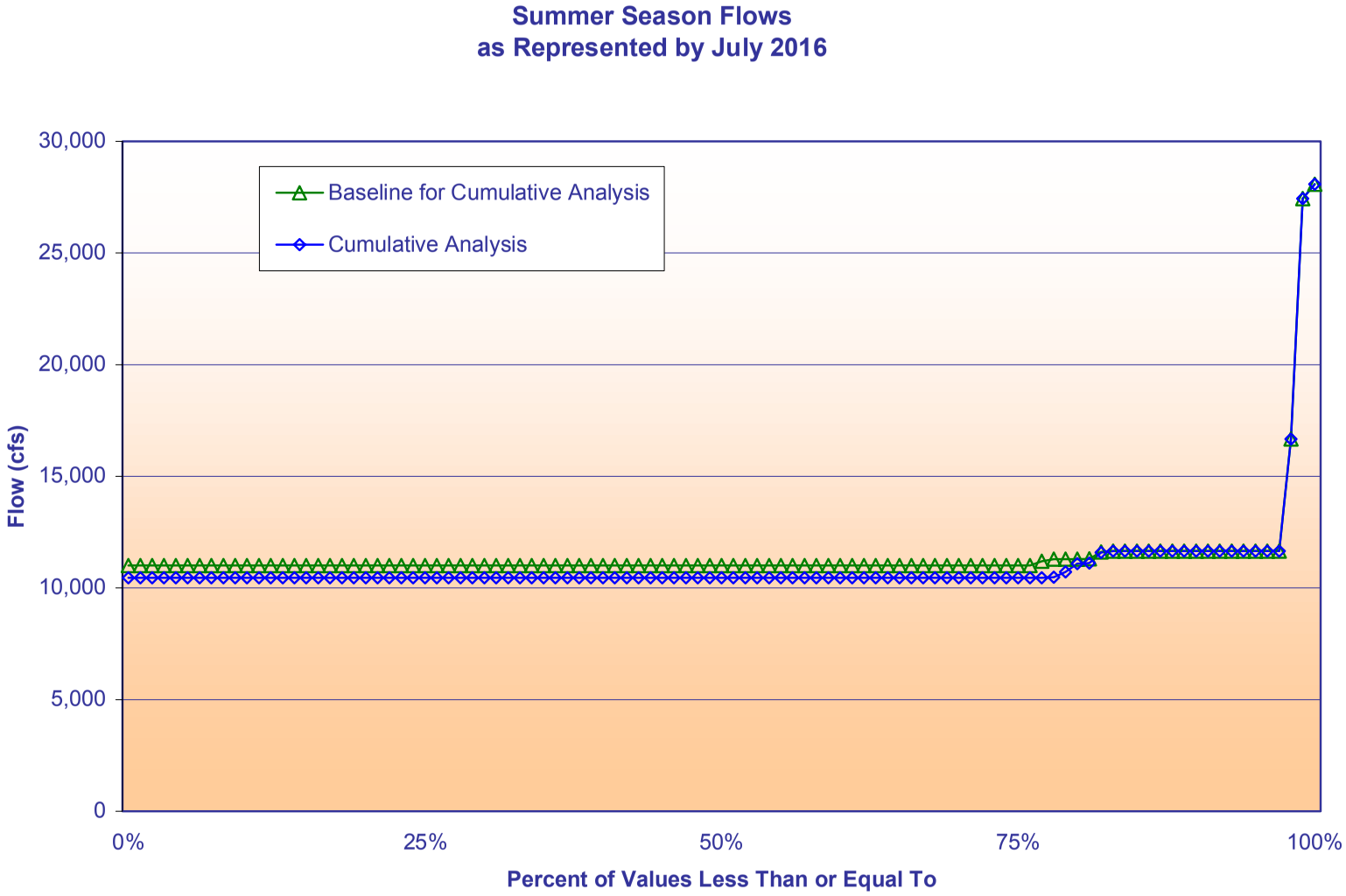
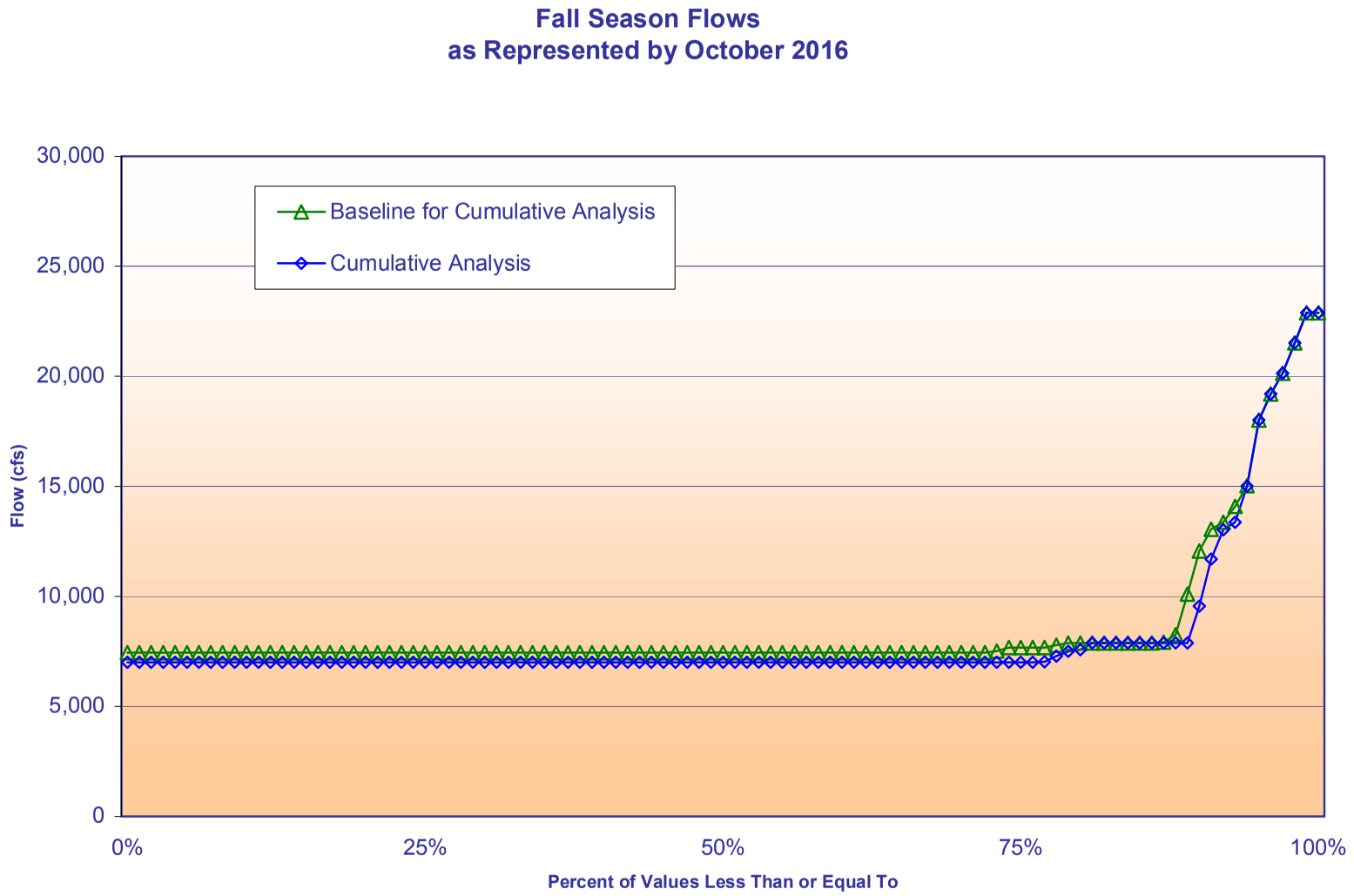


Figure 3.3-15d
Colorado River Seasonal Flows Downstream of Palo Verde Diversion Division
Comparison of Cumulative Analysis to Baseline for Cumulative Analysis Conditions for Modeled Year 2016



4.0 WATER SUPPLY

4.1 INTRODUCTION

This section discusses the water supply available to the Lower Division states and Mexico under the four operational scenarios modeled. It provides an evaluation of the effectiveness of meeting the water delivery objectives previously articulated by the Lower Division states and notes the states' contingency plans in the event of shortages. Water supply deliveries are the deliveries of Colorado River water by Reclamation to entities in the seven Basin States and Mexico, consistent with the *Law of the River*, as discussed in Section 1.1.

As with the previous river operations analysis, the water supply is also presented in the form of two different analyses. Section 4.5 provides a summary of the analysis that evaluates the potential effects of water transfers on water supply. Section 4.6 provides a summary of the cumulative analysis that evaluates the potential effects of the various proposed water management programs on water supply.

4.2 METHODOLOGY

The model was used to produce estimates of future water supply deliveries for the Lower Division states and Mexico under the four modeled operational scenarios. The modeled water demands of the Lower Division states reflect demand projections provided by the water users. The demand schedules used to model the Lower Division States' normal depletions are included in Attachment A of this Technical Memorandum. The demand schedule used to model the Upper Division states' depletions is included in Attachment B of this Technical Memorandum.

The output from each model run included monthly and annual diversions, return flows and depletions for the Colorado River water users in acre-feet (af). The water supply data was analyzed using statistical methods as discussed in Section 2.6. The analysis of water transfers (Section 4.5) focused upon the comparison of the model results of the No Action to those of the Implementation Agreement conditions. The analysis of cumulative effects (Section 4.6) focused upon the comparison of the model results of the Baseline for Cumulative Analysis to those of the Cumulative Analsysis conditions. See Section 2.0 for a further explanation of the modeling process and assumptions.

The data evaluated consisted principally of data relating to the amount of water available for consumptive use in the Lower Division states under the four modeled scenarios during the 75-year period of analysis. Because differences between the modeled scenarios are at times small in relation to the quantities and time periods, it was necessary to compare the data in precise terms. However, it should be noted results described below represent approximations of probable future conditions that become increasingly uncertain over time.

The time period for the analysis is 2002 through 2076. The analysis is based on depletion schedules for those years provided by the states and Tribes.

Protection was provided for the water level of Lake Mead at elevation 1083 feet msl and elevation 1000 feet msl by imposing shortages. As discussed earlier in Section 2.4, the elevation of 1083 feet msl is assumed to be the lowest elevation at which the Hoover Powerplant can produce power efficiently and the elevation of 1000 feet msl is assumed to be the lowest that the secondary SNWA intake can operate.

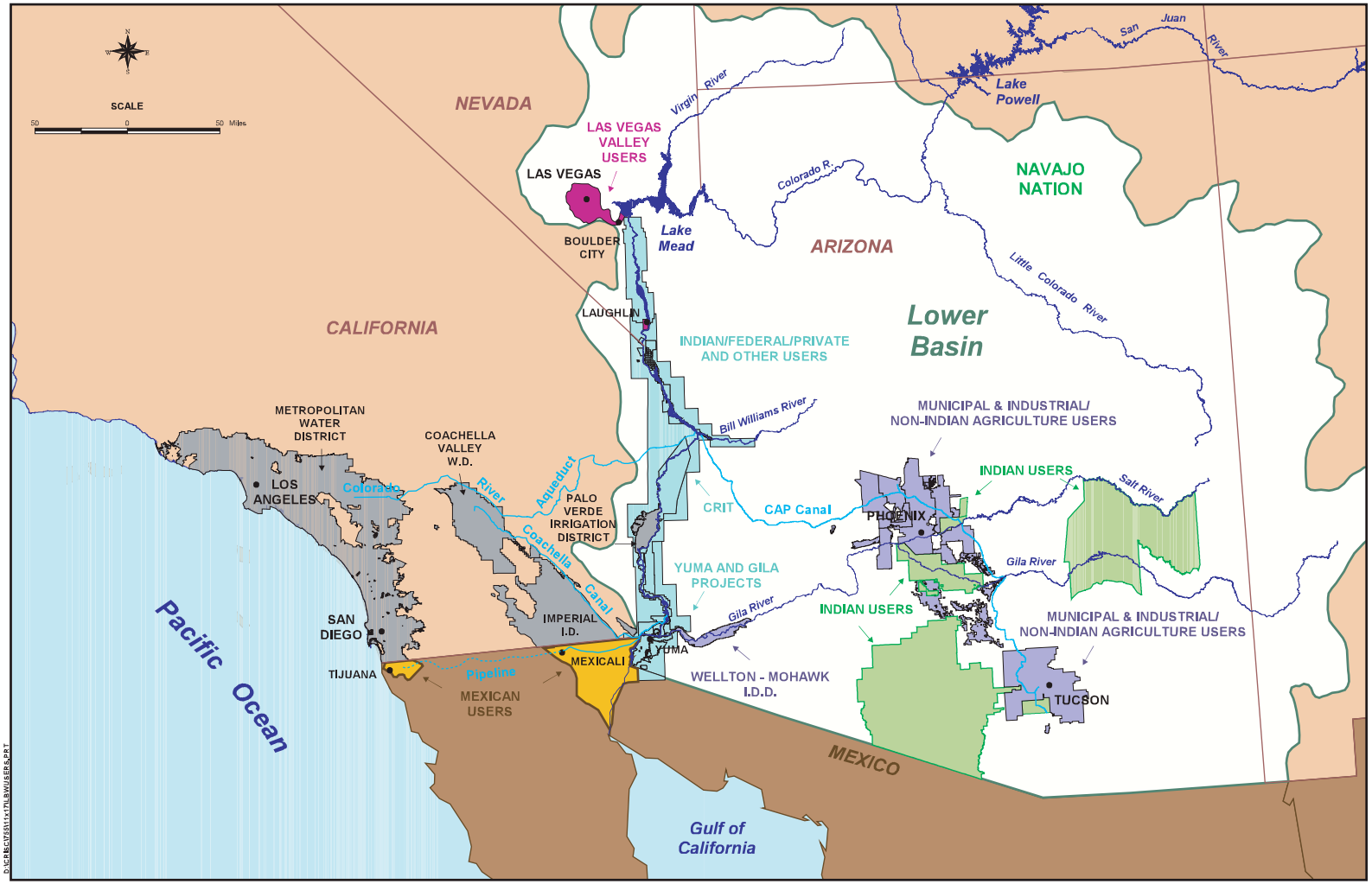
The results are portrayed graphically in two ways. As discussed in section 2.5, the modeling process involved making 85 separate runs (traces) which were then examined for the range of water supply available in a given year under each of the four modeled scenarios. One way that these results can be portrayed graphically is to plot the 90th percentile values (meaning that 90 percent of the values produced by the model were less than that value), the 50th percentile values (the median value) and the 10th percentile values (meaning that 10 percent of the values produced by the model were less than that value). Plots of the maximum and minimum depletion values produced by the model for any given year were added to this "90-50-10" array. Plots for the Lower Division states and Mexico under the four modeled scenarios are presented in this section.

A second way that the results are portrayed is derived by first ranking all the annual values for a desired period, e.g., the 15-year interim surplus guidelines period (2002 through 2016), the subsequent 60-year period (2017 through 2076) and the entire 75-year period of analysis (2002 through 2076). The annual depletion values can then be plotted versus the percent of values that are greater than or equal to. This type of plot provides a distribution of the respective state's depletion and allows for a generalized comparison of the water supply available under each respective modeled scenario, for each period of time.

4.3 WATER SERVICE AREAS

Colorado River water diverted at or below Lake Mead is used in the states of Arizona, California, and Nevada, and in Mexico. Map 4.3-1 presents the water service areas in the Lower Basin.

Map 4.3-1
Colorado River Water Service Areas in the Lower Basin



4.4 WATER USE PROJECTION PROCESS

For the Upper Division States, estimates of future projected use to 2050 were taken from the ISC FEIS (USBR, 2000). Beyond 2050, the same value used for 2050 was used for years 2051 through 2076 (i.e., the Upper Division Water use was at "full development" by 2050). The schedules are presented in Attachment B.

For the Lower Division States, estimates of future projected use under normal conditions were also taken from the ISC FEIS. For the operational scenarios that include the QSA, these schedules were modified to reflect the assumed water transfers and extended appropriately. These schedules are detailed in Attachment A and reflect each state's annual water apportionment from the Colorado River.

Similarly, Lower Division States' surplus schedules for the Interim Surplus Guidelines (referred to as the "Basin States Plan" in the ISC FEIS) and the 70R strategy were taken from the ISC FEIS. These schedules are shown in Attachment C.

Finally, Lower Division Entities' Shortage amounts are computed within the model as described in Section 2.4.

The states' water delivery requests are distributed among the major diversion points along the river system (approximately 120 such points are modeled for all seven Basin States).

4.4.1 STATE OF ARIZONA

The portions of Arizona in the Lower Basin that depend on Colorado River mainstream water consist of the following areas:

- The lower Colorado River from Lake Mead to the SIB;
- The Gila River Valley upstream from Yuma, Arizona; and
- A large area in the central part of the state served by facilities of the CAP.

Under the Boulder Canyon Project Act of 1928 (BCPA) and the Supreme Court Decree, Arizona v. California, 1964 (Decree), Arizona receives on annual apportionment of 2.8 maf from the Lower Division states' total of 7.5 maf.

In addition, Arizona can also use up to 50,000 afy of water pumped from Lake Powell under the State's Upper Basin apportionment. Numerous districts and other entities that divert and distribute the water administer the contractual arrangements for the use of Colorado River water in Arizona. The Central Arizona Water Conservation District (CAWCD) administers the CAP water diversions. The Director of the Arizona Department of Water Resources has state statutory authority to represent the state in Colorado River water supply matters.

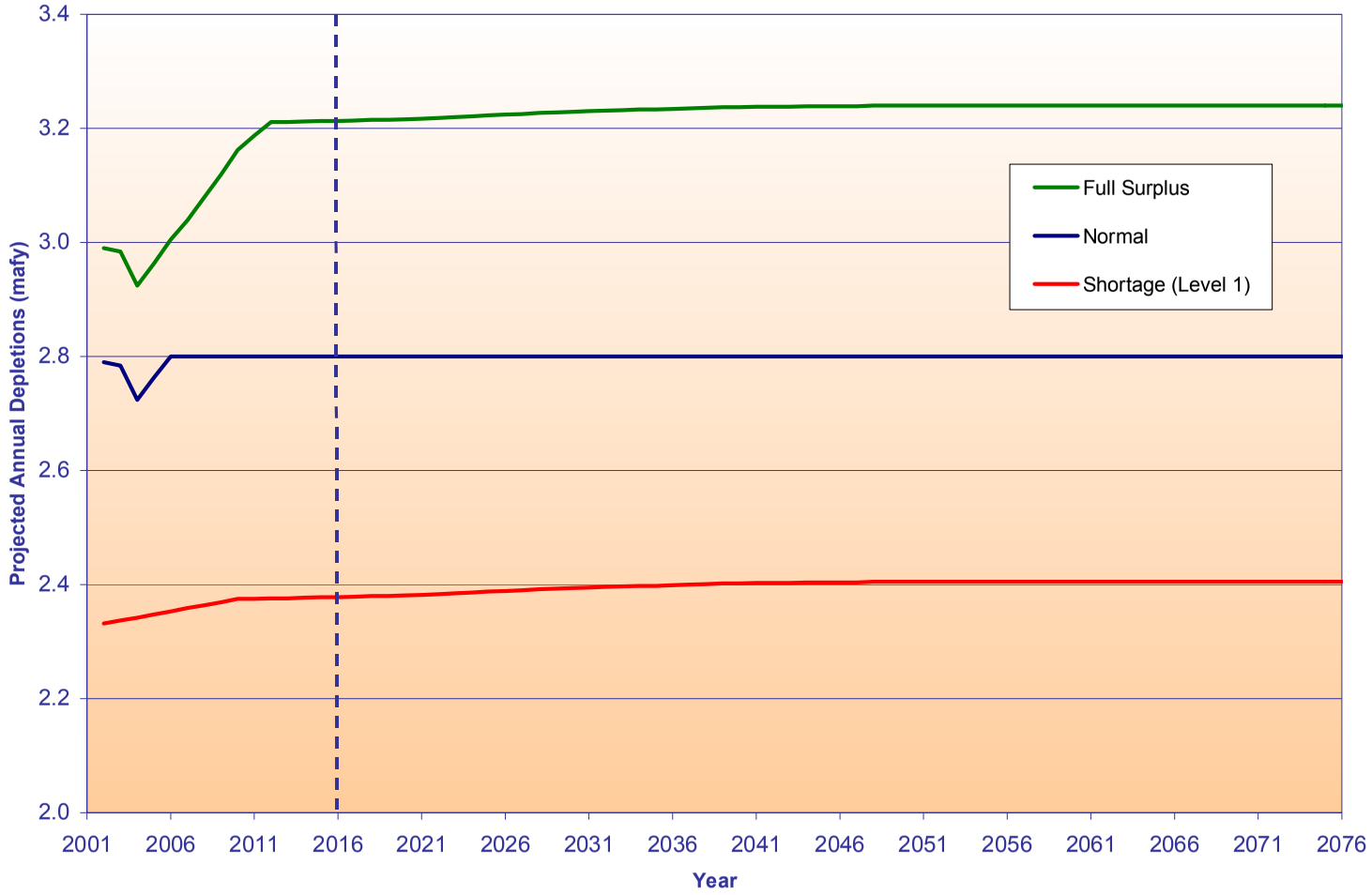
Arizona established the Arizona Water Banking Authority (AWBA) in 1996. The state legislation that authorized the AWBA states that it was created: 1) to increase Arizona's use of Colorado River water by delivering through the CAP system and storing water that otherwise would be unused by Arizona; 2) to ensure an adequate water supply to CAP municipal and industrial (M&I) users in times of shortages or disruptions of the CAP system; 3) to meet water management plan objectives of the Arizona state groundwater code; 4) to assist in settling Indian water rights claims; and 5) to provide an opportunity for authorized agencies in California and Nevada to store unused Colorado River water in Arizona for future use.

Arizona has numerous users of Colorado River water. The largest diversion of water is the CAP that delivers water to contractors in the central part of the state. CAP's diversion is located at Lake Havasu. The next three largest diversions are those of the Colorado River Indian Reservation at Headgate Rock Dam and the Gila and Yuma Projects, whose diversions are located at Imperial Dam. The remaining diversions serve irrigated areas and community development along the river corridor, including lands of the Fort Mojave Indian Reservation, water used by federal agencies in Arizona, the cities of Bullhead, Lake Havasu and Parker, Mojave Valley Irrigation District and Cibola Irrigation District. A portion of the water from the river corridor is also diverted by wells located along the river.

The CAP and other fourth priority Arizona users that contracted for Colorado River water after September 30, 1968, have the lowest priority. The exceptions are lower priority contractors that contracted for unused normal year entitlement and surplus year supplies when available. Included in the CAP category are Bullhead City, Lake Havasu City, Mojave Valley Irrigation District and others. For the most part, the non-CAP contracts total 164,652 afy. The non-CAP users include present perfected rights or other rights that predate the BCPA and users that contracted before September 30, 1968.

Under shortage conditions, initial shortages in the United States would be shared between Nevada and Arizona on a four and 96 percent basis, respectively. Within Arizona, if any use of water was occurring under contracts for unused entitlement, that use would be the first eliminated under shortage conditions. Any remaining reduction in Arizona would be shared pro rata between the CAP and the non-CAP holders of fourth priority entitlements. More severe shortages would result in holders of higher priority entitlements having to incur reduction in their water use. For this report, all Arizona shortages are assigned to the CAP. Furthermore, the analysis of Arizona's water supply has been limited to an analysis of the effects of water availability on total Arizona diversions. Figure 4.4-1 presents a graphical illustration of Arizona's normal, full surplus and first level shortage condition depletion schedules that were used as input for the model. These data are presented in tabular format in Attachment A.

Figure 4.4-1
Arizona Projected Colorado River Water Demand Schedules
(Full Surplus, Normal and Shortage Water Supply Conditions)



Arizona's consumptive use of Colorado River water, including that used for groundwater banking, reached its normal year entitlement of 2.8 maf in 1997. However, its consumptive use since then has been somewhat less than this amount.

As shown on Figure 4.4-1, Arizona's normal year depletion schedule is projected to reach 2.8 maf in 2006, and remains at that level thereafter. For modeling purposes, Arizona's unused apportionment in 2002 through 2005 was distributed to MWD (73 percent) and SNWA (27 percent). The CAP's projected normal year depletions are approximately 1.458 maf in 2002 and gradually decrease to 1.395 maf by 2048, which represent approximately one-half of the state's total normal demand. The demands of Arizona's non-CAP users meanwhile increase towards their full apportionment amount as time progresses, making up the balance of Arizona's normal 2.8 maf apportionment.

The state's projected full surplus depletions increase from 2.99 maf in 2002 to approximately 3.24 maf in 2037. The projected CAP surplus condition demand rises steadily from 1.658 maf in 2002 to approximately 1.835 maf in 2012. Thereafter, the CAP surplus condition depletion schedule remains flat at approximately 1.835 maf. First level shortage condition depletions for Arizona increases from 2.332 maf in 2002 to 2.405 maf by 2048 and remain at that level thereafter, reflecting the modeling assumption discussed in Section 2.4 of limiting CAP to 1.0 maf.

The modeled Colorado River water deliveries under the four modeled operational scenarios assumed that all Arizona shortages would be assigned to the CAP, as discussed in Section 2.4. Although it is recognized that under the current Arizona priority framework there would be some sharing of Arizona shortages between the CAP and users at the same priority, modeling at this level of detail was not necessary to analyze deliveries on a statewide basis.

Arizona's basic strategy for meeting short-term shortages in CAP M&I supply centers on reduced uses for recharge, reduced agricultural deliveries and an increased use of groundwater. In addition to naturally occurring groundwater, Arizona has established a groundwater bank and is currently actively storing CAP water that is in excess of its current needs for future withdrawal. As discussed above, the AWBA administers the groundwater bank. Groundwater banking is occurring with the intent of providing a source for withdrawal during periods when the amount of Colorado River water available for diversion under the CAP priority is curtailed by shortage conditions. Additionally, CAWCD has stored a substantial amount of CAP water in central Arizona.

It is projected that CAP water will be used for groundwater recharge until about 2040 under normal and surplus conditions. This use will be terminated first in case of shortage. For other interim and long term contract users, agriculture has the lowest priority. Therefore, irrigation users will be reduced before CAP M&I or Indian users in case of shortage conditions. Most irrigation users have rights to pump groundwater as a replacement supply. The increased use of the groundwater supplies and the management

of the groundwater basins are expected to be consistent with the state's groundwater management goals.

When CAP diversions are limited to 1.0 maf during first-level shortage conditions, the impact before year 2020 would be to both groundwater recharge and agricultural users. After 2020, CAP M&I users would also be impacted by shortage conditions.

4.4.2 STATE OF CALIFORNIA

The Colorado River supplies about 14 percent of the water used in California by agriculture, industry, commercial businesses and residential customers. All of the Colorado River water used by California is used in the southern California region. Colorado River water is by far the most important source of water for southern California, accounting for over 60 percent of its water supply. During the last several years, the Colorado River has supplied up to 5.2 maf of the 8.4 maf of water used annually in southern California.

Under the BCPA and the Decree, 7.5 maf of Colorado River water is apportioned for consumptive use in the Lower Division states (California, Nevada and Arizona). In 1964, the Decree established California's normal apportionment of 4.4 maf from within the Lower Division states' 7.5 maf apportionment. The 1979 and 1984 Supplemental Decrees also awarded present perfected water rights to Indian reservations along the Colorado River. The 1964 Decree granted California, Arizona and Nevada respectively 50 percent, 46 percent, and four percent shares of any surplus water the Secretary determines to be available for use by the Lower Division states.

In California, a priority system for the principal parties that claimed rights to Colorado River water was established by the California Seven-Party Agreement of August 31, 1931, the provisions of which are included in water delivery contracts between the Secretary and California Parties. The priority system allows water apportioned but unused by a senior priority holder to cascade down to the next lower priority. The Seven-Party Agreement limits a priority holder's use of this water to beneficial use exclusively on lands within the priority holder's service area. Water transfers that are proposed in California's Draft Colorado River Water Use Plan (CRBC, 2000) will work within the framework of the Seven-Party Agreement and within the framework of the agreements that are executed to carry out those transfers.

Agriculture and present perfected rights have highest priority to about 90 percent of California's entitlement. The balance goes to the MWD, which provides wholesale water service to most of the communities within the southern California coastal plain. California's largest agricultural water agencies that rely on Colorado River water include the IID, Palo Verde Irrigation District (PVID) and the Coachella Valley Water District (CVWD).

Three major structures divert water from the Colorado River to California. Parker Dam forms Lake Havasu, which supplies water for MWD's Colorado River Aqueduct on the

California side of the state line and for the Central Arizona Project on the Arizona side of the state line. Palo Verde Diversion Dam supplies water to PVID's canal system. Imperial Dam diverts water to the All American Canal on the California side of the state line and to the Gila Gravity Main Canal on the Arizona side of the state line. The AAC is used to deliver water to the Yuma Project, IID and the CVWD.

California has relied on the Secretary's release of unused Nevada and Arizona Colorado River apportionments in accordance with Article II(B)(6) of the Decree for more than three decades. In recent years, Nevada and Arizona depletions have approached their apportionment amounts as a result of the completion of the CAP and rapid population growth in these states. Additionally, Arizona has started to bank its water (such as by groundwater storage) to protect against future shortages. As a result, there is currently not enough Nevada and Arizona unused apportionment to meet California's demand. Since 1996, California has received as much as 800,000 af above its annual 4.4 maf normal apportionment due to determinations by the Secretary of surplus conditions on the Colorado River through the AOP process.

The California Department of Water Resources (Department) projects that over the next several decades, California's overall demand for water will continue to increase. Urban demand is expected to outweigh projected declines in agricultural demand. For example, the Department's 1993 California Water Plan projected that urban water demand will increase by 60 percent from 1990 to 2020. However, California's ability to access Colorado River water beyond its normal apportionment may be limited for the following two reasons:

- Since Arizona and Nevada will be using their normal apportionments, California's access to any substantial amount of water above its normal apportionment will depend on surplus determinations by the Secretary on a year-by-year basis. Under pre-Interim Surplus Guidelines conditions Colorado River system management practices, such determinations were not certain, as they depended on conditions which change each year—namely snowpack runoff and reservoir storage.

- Even with a surplus determination, California's access is limited by the capacity of its delivery systems. Currently, the existing delivery system to urban users—the Colorado River Aqueduct—is operating at near capacity (approximately 1.3 maf per year).

If the amount of Colorado River water available for use in California was limited to the 4.4 maf normal apportionment, the immediate impact would fall mainly on the MWD because much of the allocation to California above normal apportionment now is used by urban users serviced by MWD. MWD (or its customers) would have to look to: 1) other California users of Colorado River water, namely the agriculture agencies, or 2) other sources—such as northern California water supplies—for about 700,000 af of

the approximately 2 maf of MWD's normal annual water deliveries, which ranged between 1.5 maf and 2.6 maf during the 1990s.

California faces other issues that may impact the quantity or quality of the supply of Colorado River water to certain users. In particular, listing of additional endangered bird and fish species could reduce the amount of water available for non-environmental purposes. Also, Colorado River salinity control projects could impact the quantity and quality of future Colorado River water. Both the type of crops produced (high market value crops generally require water that is low in salinity) and the quality of southern California drinking water could change.

The Colorado River Board of California (Board) developed a plan for California to live within its normal apportionment of 4.4 maf. The Board's draft plan was previously referred to as the California 4.4 Plan (dated August 11, 1997) and addressed various water supply management issues that are focused on changes in the use, supply or transfer of Colorado River water. The draft plan was updated, renamed and re-released in May 2000 as the *California Colorado River Water Use Plan* (CA Plan). The CA Plan relies first on a variety of intrastate measures that either conserve water or increase water supplies. The plan also relies on measures that would make extra water available to California. (CRBC, 2000)

California's use of Colorado River water reached a high of 5.4 maf in 1974 and has varied from 4.5 to 5.2 maf per year over the past 10 years. Limiting California to 4.4 maf per year would reduce California's annual water supply by approximately 800,000 afy. All or most of this reduction would be borne by MWD unless arrangements with agricultural agencies are implemented. While the water supply analysis for this report is focused on the total California depletions, the assumption is made that the surplus deliveries that may become available would be managed and distributed by and between the California users in accordance with the proposed provisions of the CA Plan, the corresponding Quantification Settlement Agreement (QSA) and associated cooperative programs. Most of these cooperative programs are between MWD or one of its member agencies and the agricultural water agencies. Under these programs, MWD will be able to use its basic Colorado River water apportionment plus water made available from water conservation by other California agencies and from groundwater storage programs. These programs include the following:

- **Coachella Groundwater Storage Program** - Cooperative program with the Desert Water Agency and the CVWD that exchanges their State Water Project (SWP) entitlements for MWD's Colorado River water and provides storage of Colorado River water for future extraction by these two agencies.

- **Water Conservation Program with Imperial Irrigation District** - MWD and the IID entered into a water conservation agreement in December 1988. The agreement called for IID to implement various projects to conserve water

including improving its water distribution system and on-farm management of water.

- **Demonstration Project on Underground Storage of Colorado River Water in Central Arizona** - Under a cooperative program with the CAP, MWD has placed 89,000 af and the SNWA has placed 50,000 af of unused Colorado River water in underground storage (groundwater banking) in central Arizona.

- **Agricultural-to-Urban Intrastate Water Transfers –** The SDCWA and IID have negotiated an agreement by which IID will transfer agricultural water conserved through various conservation and efficiency programs to SDCWA for urban use – where demand is growing. The agreement contemplates transfer of up to 200,000 afy. A number of bills have been introduced in the California Senate that attempt to address this and other similar intrastate water transfers, including SB 1011 (Costa), SB 1082 (Kelley), SB 1335 (Polanco) and AB 554 (Papan). To date, the legislature has enacted only SB 1082 which would facilitate a transfer of water between the IID and the SDCWA.

- **Palo Verde Irrigation District Land Management, Crop Rotation and Water Supply Program –** MWD and Palo Verde Irrigation District are developing a land management, crop rotation and water supply program in the Palo Verde Valley. The program's objective is to develop a flexible and reliable water supply for MWD of approximately 100,000 AFY for 35 years to assist in stabilizing the farm economy within the Palo Verde Valley through sign-up payments and annual payments for participating farmers and through implementation of specific community improvement programs. Participation in the program would be voluntary. Participating farmers would, at MWD's request and with specific notice periods, not irrigate a portion of their farmland. The same land would not be irrigated for a minimum one-year term and a maximum three-year term, at the farmer's option. A base load area of 6,000 acres would not be irrigated each year of the program's 35-year period. MWD would have the option to increase the non-irrigated area from 6,000 acres up to a maximum of 26,500 acres. However, a maximum of 24,000 acres in any 25-year period or 26,500 acres in any 10-year period during the 35-year program would be dedicated to the program. MWD would provide financial compensation to the participating farmers. Not irrigating a portion of the Palo Verde Valley's farmland would result in less Colorado River water being used by PVID. The amount of water conserved by the program would be determined on an annual basis by a verification committee composed of MWD, PVID and Reclamation and would be made available for diversion by MWD at Lake Havasu through its CRA facilities.

Table 4.4-1
Cooperative Water Conservation/Transfer and Exchange Projects

Cooperative Water Conservation/ Transfer Project	*Annual Yield (AF)*	*Estimated Start Date*
IID/MWD 1988 Agreement	100,000 – 110,000[1]	On-going
IID/SDCWA Water Conservation and Transfer Agreement	130,000 – 200,000[2]	2002
CVWD/MWD SWP Water Transfer/Colorado River Water Exchange	35,000	2002
Coachella Canal Lining – MWD/SLR[3]	26,000[3]	2005[4]
All American Canal Lining – MWD/SLR[3]	67,700[3]	2006[4]
CVWD/IID/MWD Water Conservation and Transfer (First 50 KAFY and Second 50 KAFY)[5]	100,000[5]	2007
TOTAL	**458,700 – 538,700**	**—**

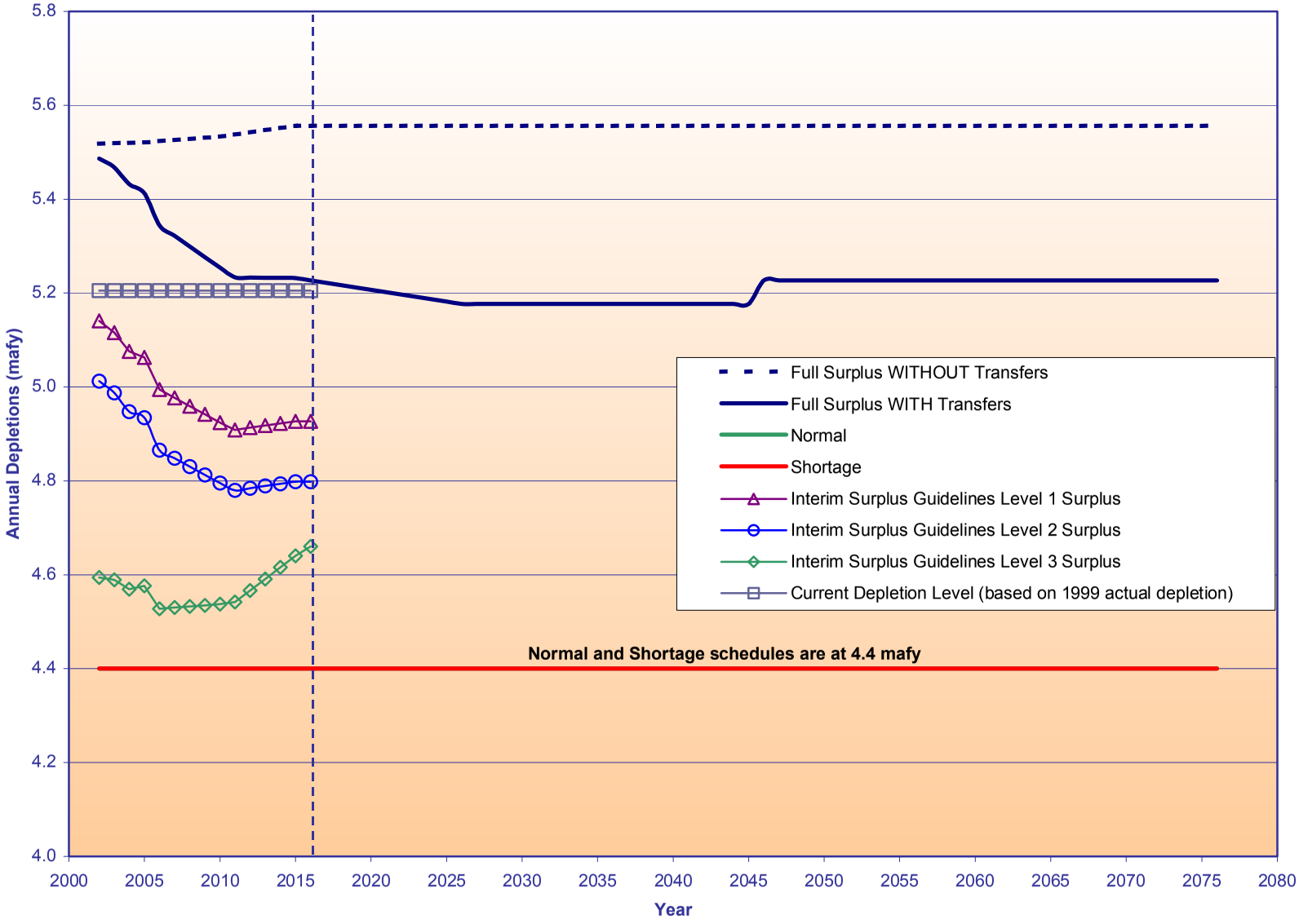
***Notes*:**
(1) Yield to MWD, except for 20 KAFY to be made available to CVWD under the IA and QSA.
(2) Yield to SDCWA; will ramp up at 20 KAFY during project implementation.
(3) Yield to MWD of 21.5 and 56.2 KAFY from Coachella Canal and All American Canal lining projects, respectively; and to the San Luis Rey Indian Water Rights Settlement Parties of 4.5 and 11.5 KAFY from the Coachella Canal and All American Canal lining project, respectively.
(4) Date by which full conservation benefits will be achieved.
(5) Yield to CVWD; will ramp up at 5 KAFY during project implementation. MWD has option to utilize part or all water not utilized by CVWD.

Figure 4.4-2 presents a graphical illustration of California's full surplus, normal and first level shortage demand schedules that were used as input to the model. Two full surplus depletion schedules are shown (with and without transfers). These two surplus schedules consider the fact that California anticipates a continued need for surplus water, when available, in order to implement the conjunctive use programs (e.g., groundwater banking) that will assist California in reducing its projected Colorado River depletion toward its normal apportionment of 4.4 mafy.

However, California's full surplus schedule that considers the proposed intrastate water transfers is substantially less than the full surplus schedule without the transfers over time. This reflects the additional cooperative programs that would increase the amount of water transferred from agricultural agencies to MWD. Therefore, as a result of the Quantification Settlement Agreement (QSA), the cooperative programs, and the proposed increased intrastate transfers, the full surplus depletion schedules for California are reduced while at the same time allowing MWD to continue to meet its users' needs.

As illustrated by the graph, the interim surplus guidelines provide an opportunity to manage the surplus deliveries coincident with the management of Lake Mead water levels while at the same time, providing a structure whereby total deliveries to California are reduced. These reductions are significant when compared to California's current depletion level of 5.2 mafy, also shown on Figure 4.4-2. Both California's normal and Level 1 shortage condition water depletion schedules are at 4.4 maf throughout the period of analysis.

Figure 4.4-2
California Projected Colorado River Water Demand Schedules
(Full Surplus, Normal and Shortage Water Supply Conditions)



4.4.3 STATE OF NEVADA

The portion of Nevada that depends on Colorado River water is limited to southern Nevada, primarily the Las Vegas Valley and the Laughlin area further south. The Colorado River Commission and SNWA manage Nevada's Colorado River water supply. The SNWA coordinates the distribution and use of the water by its member agencies whose systems provide retail distribution.

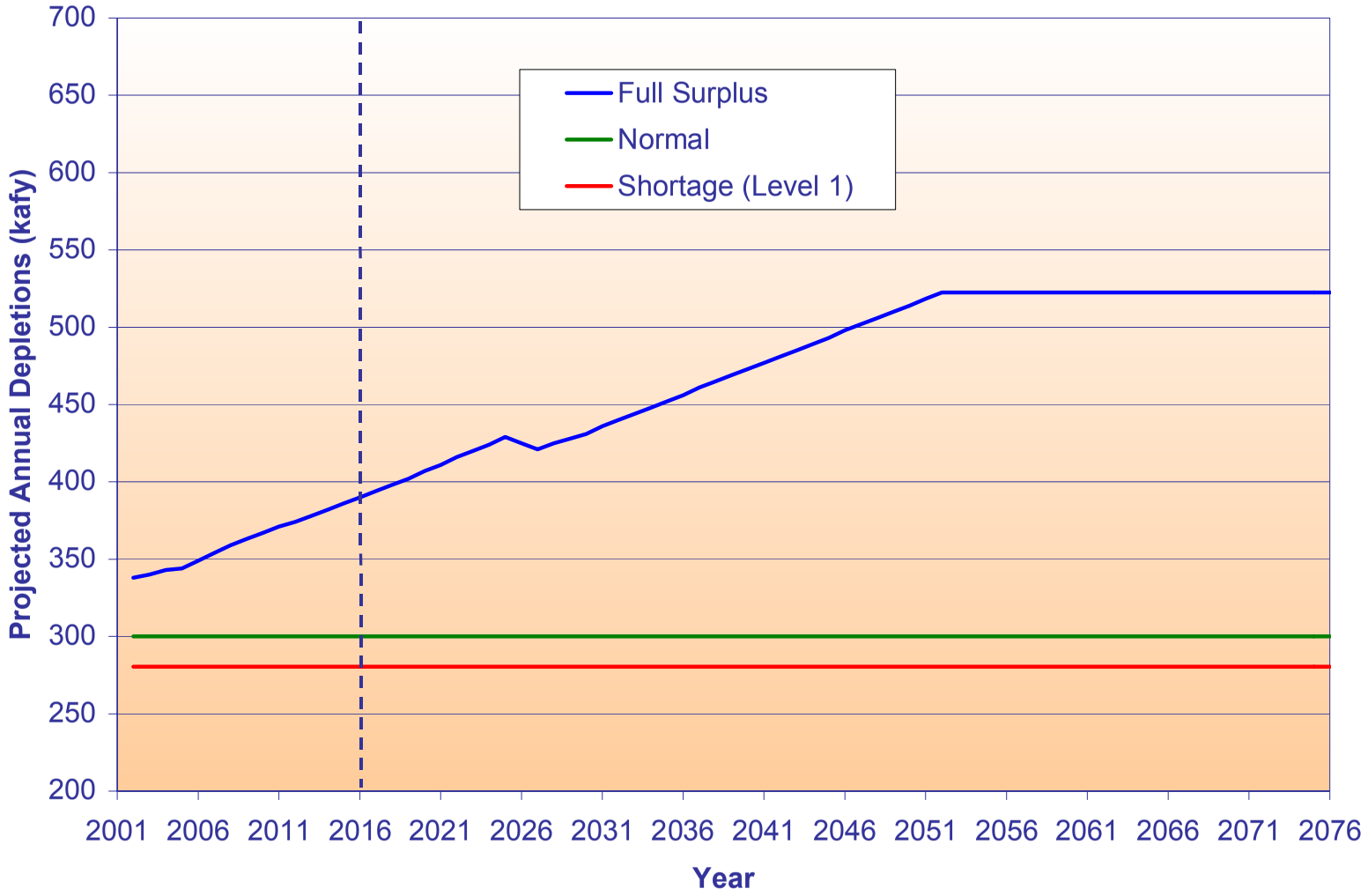
Nevada has five principal points of diversion for Colorado River water. The largest of these is the Las Vegas Valley that pumps water from Lake Mead at Saddle Island (on the west shore of the lake's Boulder Basin) through facilities of SNWA. The water is pumped at two adjacent pumping plants. The Lake Mead minimum water surface elevations for each intake are 1050 feet msl and 1000 feet msl, respectively. The pumped water is treated before being distributed to the Las Vegas Valley and to Boulder City water distribution systems. Three other diversion points are downstream of Davis Dam. They serve the community of Laughlin, Southern California Edison's coal fired Mohave Generating Station and uses on that portion of the Fort Mojave Indian Reservation lying in Nevada. The fifth diversion consists of water used by federal agencies in Nevada, primarily the National Park Service and its concessionaires at various points on lakes Mead and Mohave.

Nevada's current Colorado River water demand is currently at or slightly above its Colorado River normal water apportionment under the BCPA and the Decree of 300,000 afy. SNWA depletions represent approximately 90 percent of this amount. Figure 4.4-3 presents a graphical illustration of the full surplus, normal and first level shortage demand schedules for Nevada that were used as input to the model.

Nevada's water demand projections for full surplus years rise steadily from a current value of approximately 338,000 af to approximately 514,000 af in approximately 50 years and remains at that level thereafter. Projected depletions under Level 1 Shortage Conditions are approximately 282,000 afy over the period of analysis, reflecting the fact that Nevada's reduction in consumptive use of Colorado River water is four percent of the total shortage during shortage years.

SNWA's Integrated Resource Plan calls for optimizing both the use of Colorado River water and the use of the Las Vegas Valley shallow aquifer before developing water from additional sources, including the lower Virgin River and Muddy River. The SNWA has been supporting groundwater recharge in the Las Vegas Valley through facilities of member agencies. The artificial recharge of Colorado River water into the Las Vegas Valley groundwater basin is intended to help meet summer peak demands, provide an interim future water supply, and stabilize declining groundwater tables. Water agencies in the valley will be able to withdraw water to meet temporary shortfalls in supply. However, such withdrawals would be coupled with the opportunity for replenishment of the aquifer.

Figure 4.4-3
Nevada Projected Colorado River Water Demand Schedules
(Full Surplus, Normal and Shortage Water Supply Conditions)

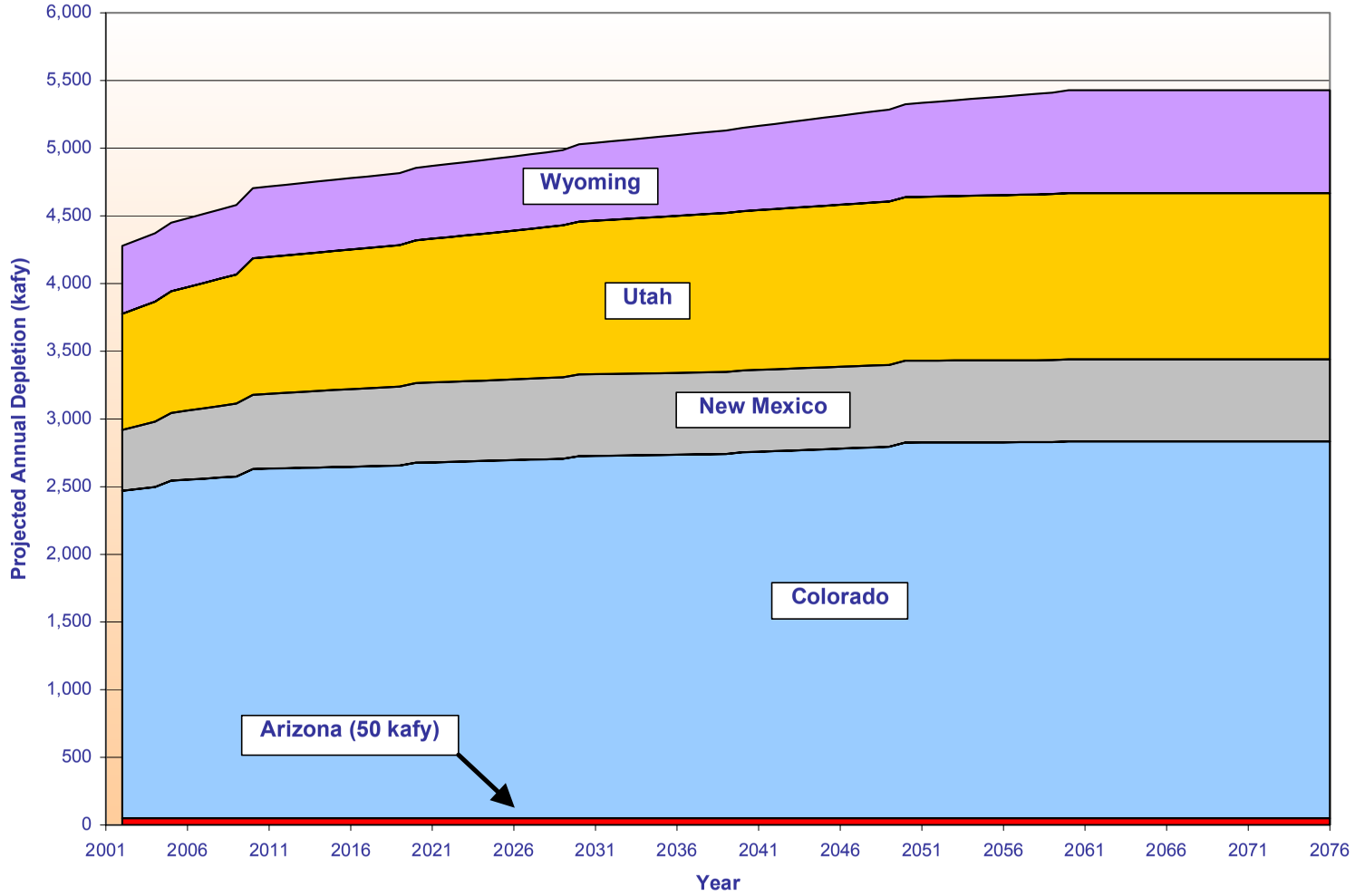


Nevada also proposes to bank water in Arizona through arrangements with the AWBA using available groundwater storage capacity as described above in the discussion of alternate supplies for Arizona.

4.4.4 UPPER BASIN STATES

The depletions for the Upper Basin states were developed and submitted by the Upper Colorado River Commission (Commission) to Reclamation in December 1999. These depletions were then modified in coordination with the Commission to include updated Indian Tribe depletions provided by Keller-Bliessner Engineering, acting on behalf of the Indian Tribes with Colorado River water rights, during the preparation of the Interim Surplus Guidelines FEIS. Figure 4.4-4 shows that the Upper Basin depletions are approximately at 4.278 maf in 2002, increase gradually to approximately 5.429 maf by 2060 and for modeling purposes, are assumed to remain at that level thereafter. These depletions do not include the evaporation losses that occur within the Upper Basin and that are estimated to be approximately 574,000 afy. The Upper Division depletion schedule that includes the estimated evaporation losses are presented in tabular form in Attachment B. The modeled depletions as shown on Figure 4.4-4 and presented in Attachment B are consistent with the Upper Division states' apportionment of Colorado River water.

Figure 4.4-4
Upper Basin Depletion Projections
(Based on 1999 Depletion Schedule)



4.5 ANALYSIS OF WATER TRANSFERS

The following discussion is based on the results of analysis of water supply data generated by the model. This section describes the results of the analysis that evaluated the effect of water transfers on the water deliveries to each of the Lower Basin states. The modeled operational scenarios that are used to evaluate the effects of water transfers in this section include the No Action and the Implementation Agreement conditions.

4.5.1 STATE OF ARIZONA

This section presents the simulated water deliveries to Arizona under the no action and implementation modeled scenarios. The analysis of Arizona's water supply concentrated on total Arizona water depletions.

4.5.1.1 MODELING RESULTS OF NO ACTION

The water deliveries to Arizona are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90th, 50th and 10th percentile ranking of modeled water deliveries to Arizona under the no action conditions are presented in Figure 4.5-1.

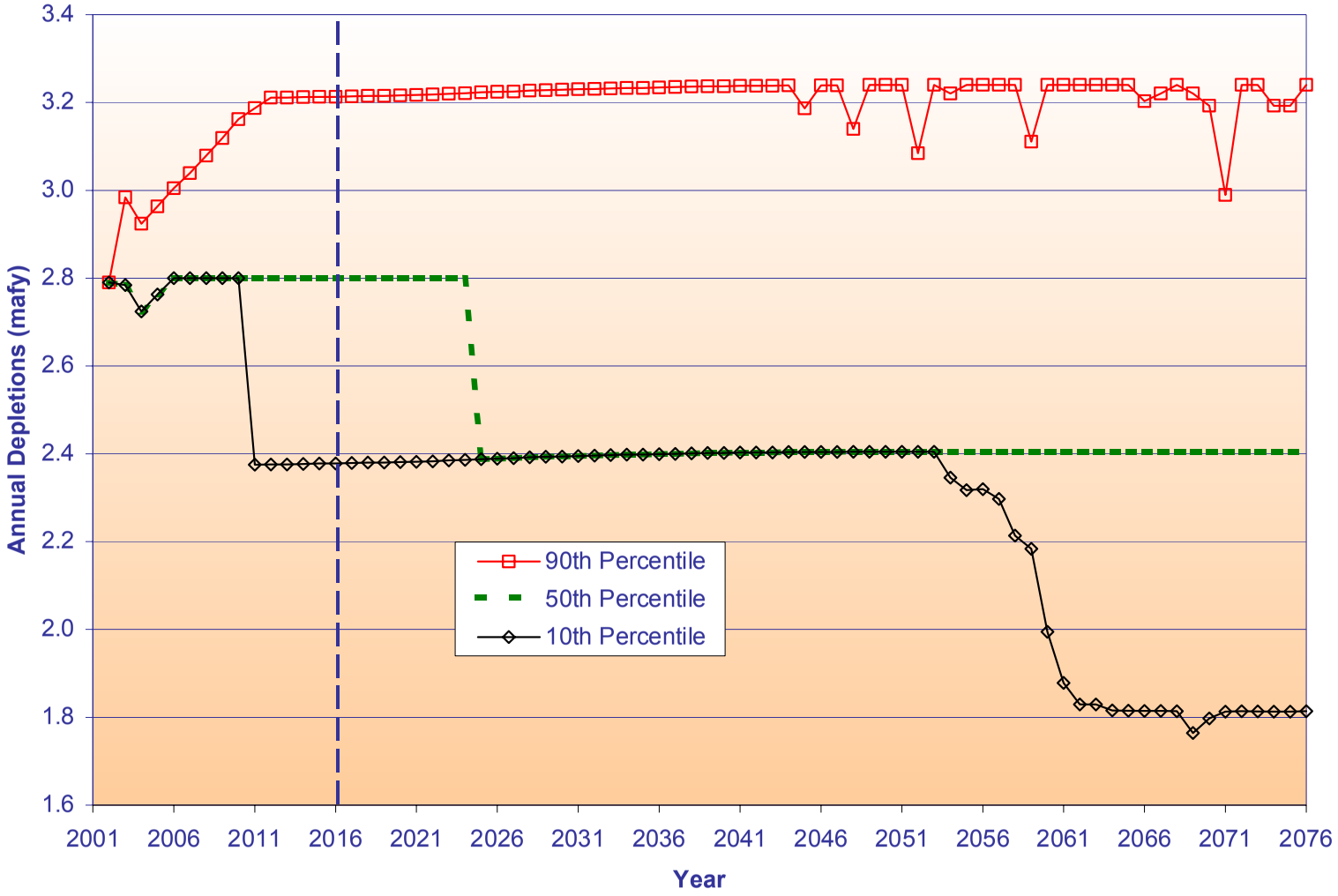
With the exception of the first year modeled (2002), the 90th percentile line coincides with Arizona's depletion schedule during full surplus water supply conditions through year 2045 (compare Figure 4.5-1 to Figure 4.4-1). As indicated by this 90th percentile line, the probability that the No Action Conditions would provide Arizona's full surplus depletion schedule is at least 10 percent during this period. After year 2045, the 90th percentile line occasionally falls below the full surplus schedule albeit still remains close to Arizona's depletion schedule during full surplus water supply conditions and generally well above 3.0 mafy.

The 50th percentile line represents the median annual depletion values. This 50th percentile line generally coincides with Arizona's projected depletion schedule under normal water supply conditions through year 2025 (see Figure 4.4-1). After 2025, the median values drop to approximately 2.4 maf and remain at approximately that level for the remainder of the 75-year period of analysis.

As noted in Section 4.4.1, under shortage conditions, Arizona would bear 96 percent of the reduction and Nevada would bear four percent. In Arizona, the reduction would be shared prorata among CAP and non-CAP holders of fourth priority entitlements. To simplify the modeling process, the model sets the CAP's shortage water supply condition deliveries at 1.0 maf when the Lake Mead water level is between elevation 1000 feet msl and the assumed shortage protection line as discussed in Section 2.4. This modeling assumption kept Arizona's annual deliveries above 2.4 maf until further cuts to the CAP were necessary to maintain the Lake Mead water level above the 1000

feet msl elevation (a Level 2 shortage condition). Under the No Action modeled scenario, Level 2 shortage condition deliveries to Arizona (below 2.3 mafy) were observed to occur only during years 2054 to 2075 and occurred less than eight percent of the time.

Figure 4.5-1
Arizona Modeled Annual Depletions Under No Action Conditions
90th, 50th and 10th Percentile Values



4.5.1.2 COMPARISON OF IMPLEMENTATION AGREEMENT TO NO ACTION

Figure 4.5-2 provides a comparison of the distribution of Arizona's depletions under the Implementation Agreement to those of the No Action conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016). This type of graph is used to represent the frequency that annual deliveries of different magnitudes occur in the respective period. The results presented in Figure 4.5-2 indicate a 70 percent probability that Arizona's depletions would meet or exceed its normal depletion schedule during this period under No Action conditions. The probability that Arizona would receive surplus condition deliveries during this period was approximately 23 percent. The maximum surplus condition depletions under the No Action Conditions were 3.213 maf during this period. The probability that Arizona would receive shortage condition deliveries was 30 percent. The minimum shortage condition depletion was 2.375 maf during this 15-year period.

Figure 4.5-3 provides a comparison of the distribution of the water deliveries to Arizona under the Implementation Agreement to those of the No Action conditions for the 60-year period (years 2017 to 2076) that would follow the Interim Surplus Guidelines period. The results presented in Figure 4.5-3 indicate a 37 percent probability that water deliveries to Arizona would meet its normal depletion schedule during this period under the No Action conditions. The probability that Arizona would receive surplus condition deliveries during this same period under the No Action conditions was approximately 18 percent. The maximum surplus condition depletions under the No Action Conditions were 3.24 maf during this period. The probability that Arizona would receive deliveries less than its normal schedule (Level 1 or Level 2 shortage condition deliveries) was 63 percent. Second level shortage conditions occurred less than 11 percent of the time during this 60-year period. The minimum shortage condition depletion was 1.405 maf.

Figure 4.5-4 provides a comparison of the distribution of the water deliveries to Arizona under the Implementation Agreement conditions to those of the No Action conditions for the entire 75-year period of analysis (years 2002 to 2076). The results presented in Figure 4.5-4 indicate a 44 percent probability that water deliveries to Arizona would meet its normal depletion schedule during this period under the No Action conditions. The probability that Arizona would receive surplus condition deliveries during this same period under the No Action conditions was approximately 19 percent. The maximum surplus condition depletions under the No Action Conditions were 3.24 maf during this period. The probability that Arizona would receive deliveries less than its normal schedule (Level 1 or Level 2 shortage condition deliveries) was 56 percent. Second level shortage conditions occurred less than nine percent of the time during this 75-year period. The minimum shortage condition depletion under the No Action conditions was 1.405 maf.

Figure 4.5-2
Arizona Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2016

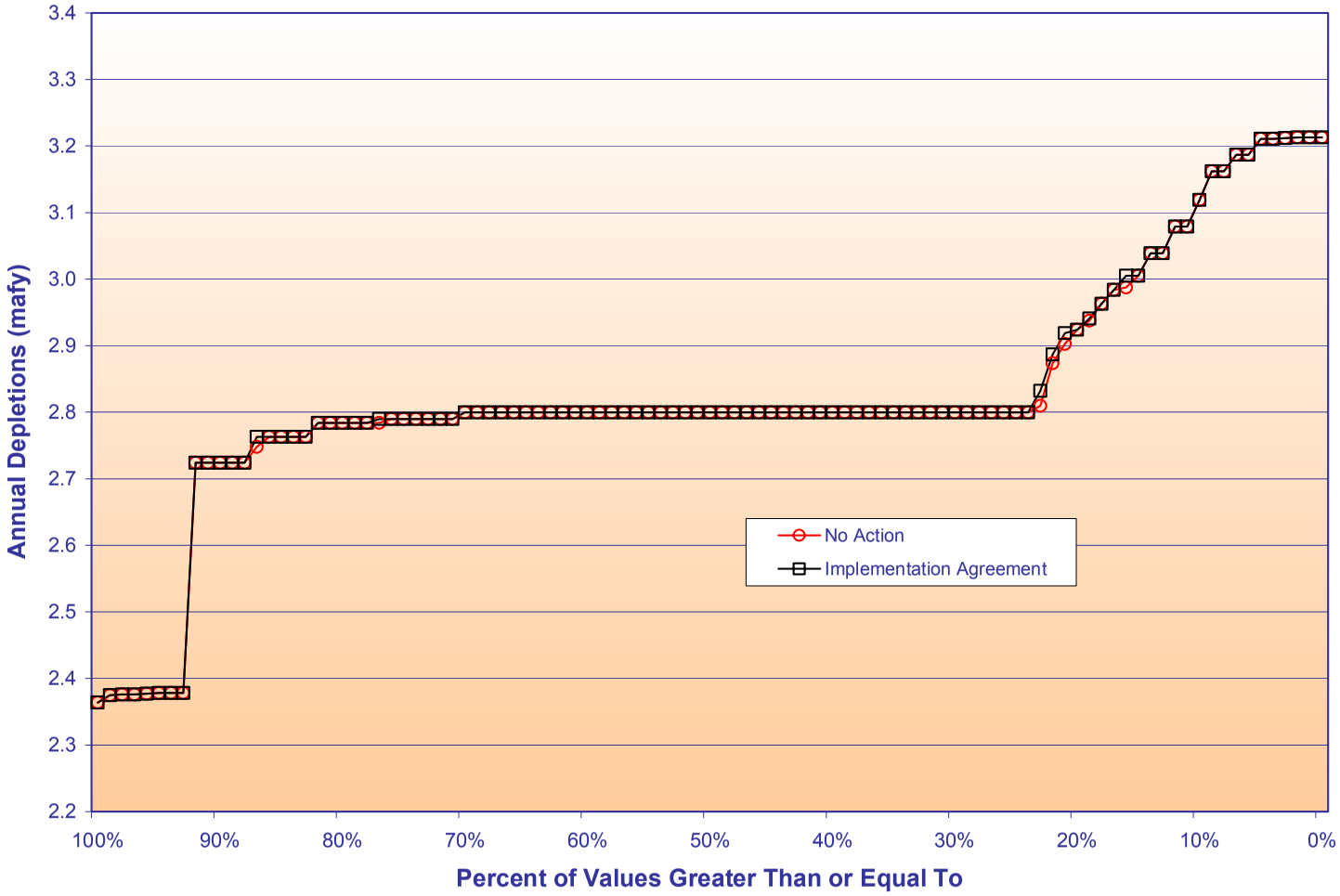


Figure 4.5-3
Arizona Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2017 to 2076

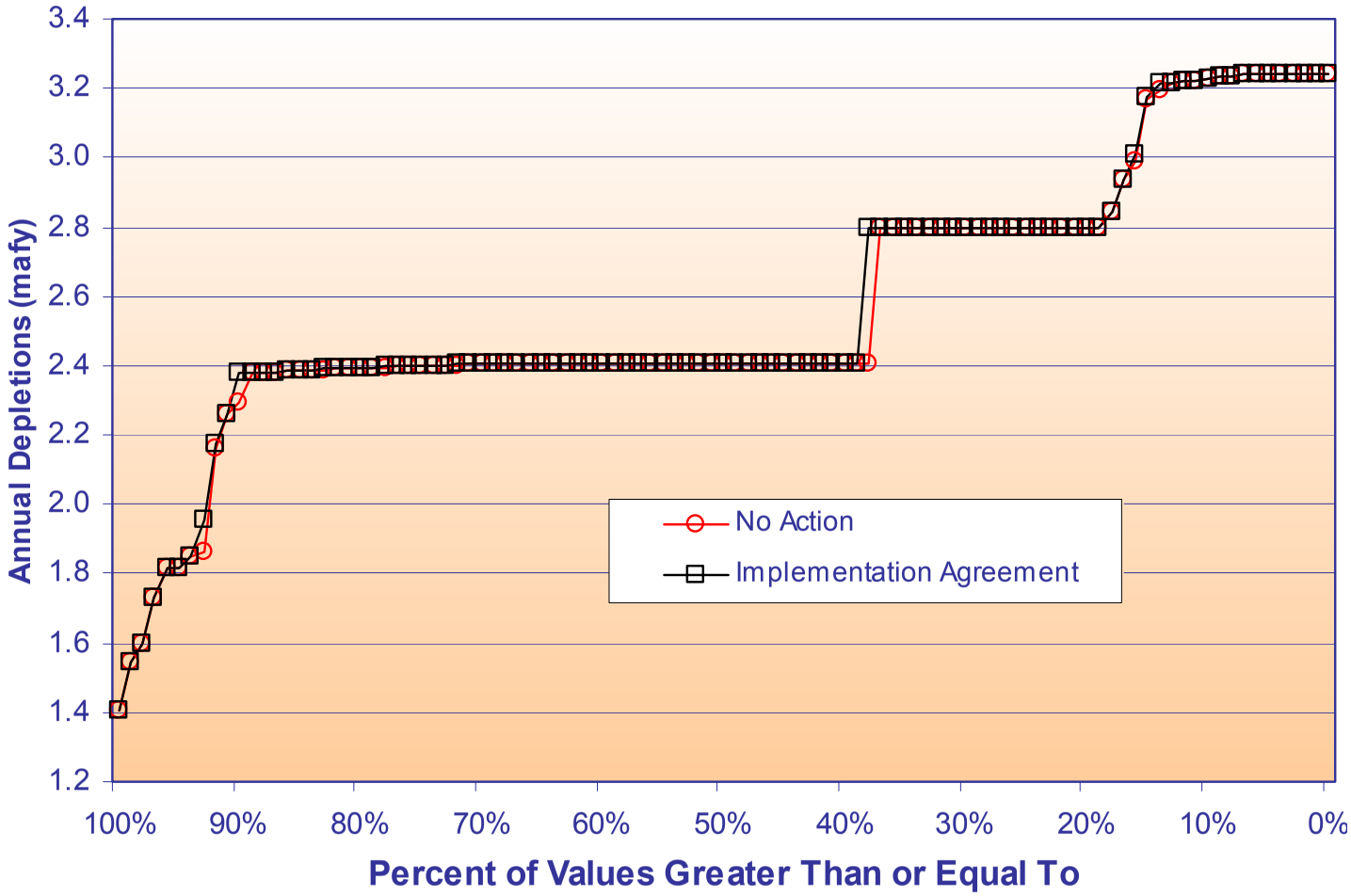


Figure 4.5-4
Arizona Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2076

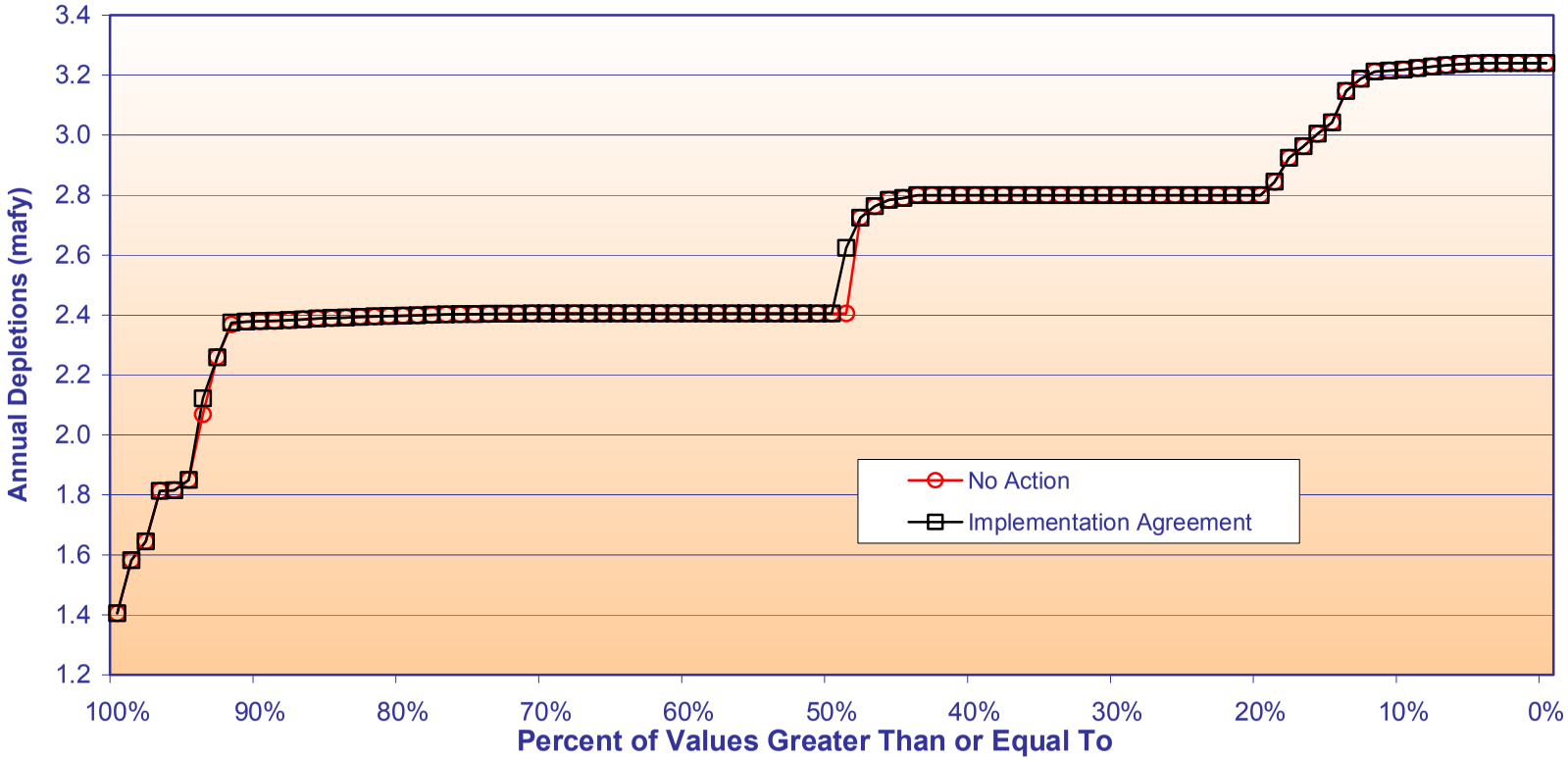


Figure 4.5-5 provides a comparison of the 90th, 50th and 10th percentile values for Arizona's modeled depletions under the No Action conditions to those of the Implementation Agreement conditions. As depicted in Figure 4.5-5, there is little difference in the 90th percentile lines resulting from the Implementation Agreement conditions as compared to those of the No Action conditions. The 90th percentile lines generally coincide with Arizona's full surplus depletion schedule.

The 50th percentile lines for the No Action and Implementation Agreement conditions are identical to each other through year 2024 and coincide with Arizona's surplus depletion schedule during this period. After year 2024, the 50th percentile values for the No Action conditions fall due to increasing probability of the Level 1 shortage condition deliveries. The 50th percentile line for the Implementation Agreement conditions continue to coincide with the normal depletion schedule through year 2026. After 2026, the 50th percentile lines for the Implementation Agreement conditions also falls due to increasing probability of the Level 1 shortages. The 50th percentile values for the No Action and Implementation Agreement conditions remain at approximately 2.4 mafy after year 2027.

The 10th percentile lines for the No Action and the Implementation Agreement conditions are essentially at or above Arizona's normal depletion schedule through year 2010. After 2010, the 10th percentile values of the No Action and the Implementation Agreement conditions begin to drop down to the Level 1 shortage condition delivery values (approximately 2.4 mafy) and remain at this level through 2053. After 2053, the 50th percentile lines for the No Action and the Implementation Agreement conditions decrease further due to increasing probability of the Level 2 shortage condition deliveries.

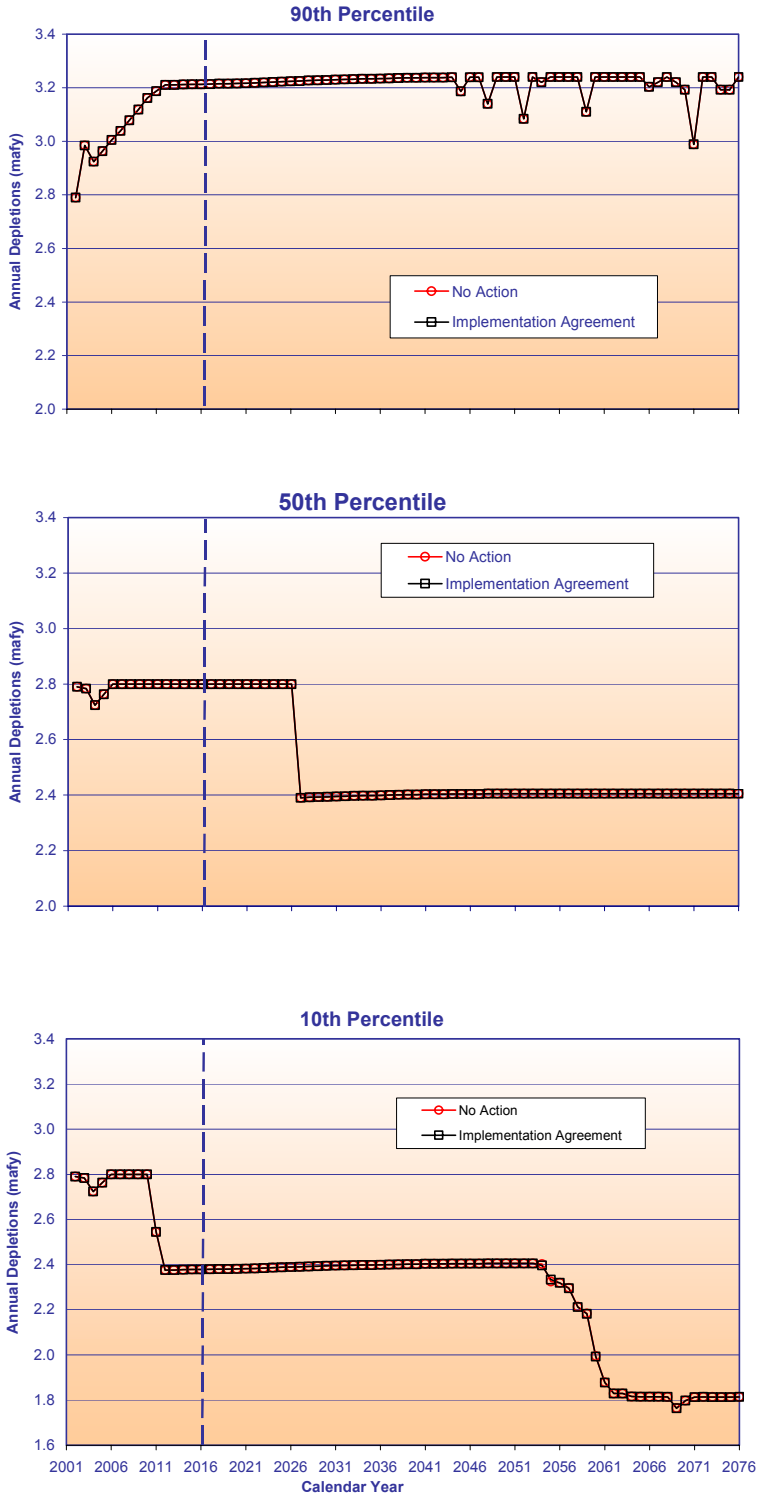
Figures 4.5-2, 4.5-3 and 4.5-4 presented comparisons of the distribution of Arizona's depletions under the No Action and the Implementation Agreement conditions during the15-year Interim Surplus Guidelines period (years 2002 to 2016), the 60-year period that follows the Interim Surplus Guidelines (years 2017 to 2076), and the entire period of analysis (years 2002 to 2076), respectively. These graphs best illustrate the frequency that different amounts of annual Arizona water deliveries occur over these time frames. Table 4.5-1 provides a summary of the comparison for these three time periods.

Table 4.5-1
Summary of Arizona Modeled Annual Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions

Alternative/Conditions	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
No Action	70%	23%	30%	37%	18%	63%	44%	19%	56%
Implementation Agreement	70%	23%	30%	38%	18%	62%	44%	19%	56%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

Figure 4.5-5
Arizona Modeled Annual Depletions
Comparison of No Action Conditions to Implementation Agreement Conditions
90th, 50th and 10th Percentile Values



The percentage values presented under the column heading labeled "Normal" in Table 4.5-1 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled "Surplus" represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled "Shortage" represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.5.2 STATE OF CALIFORNIA

This section presents the simulated water deliveries to California under the No Action and Implementation Agreement conditions. The analysis of California's water supply concentrated on total California water depletions.

4.5.2.1 MODELING RESULTS OF NO ACTION

The water deliveries to California are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90th, 50th and 10th percentile rankings of modeled water deliveries to California under the No Action Conditions are presented in Figure 4.5-6.

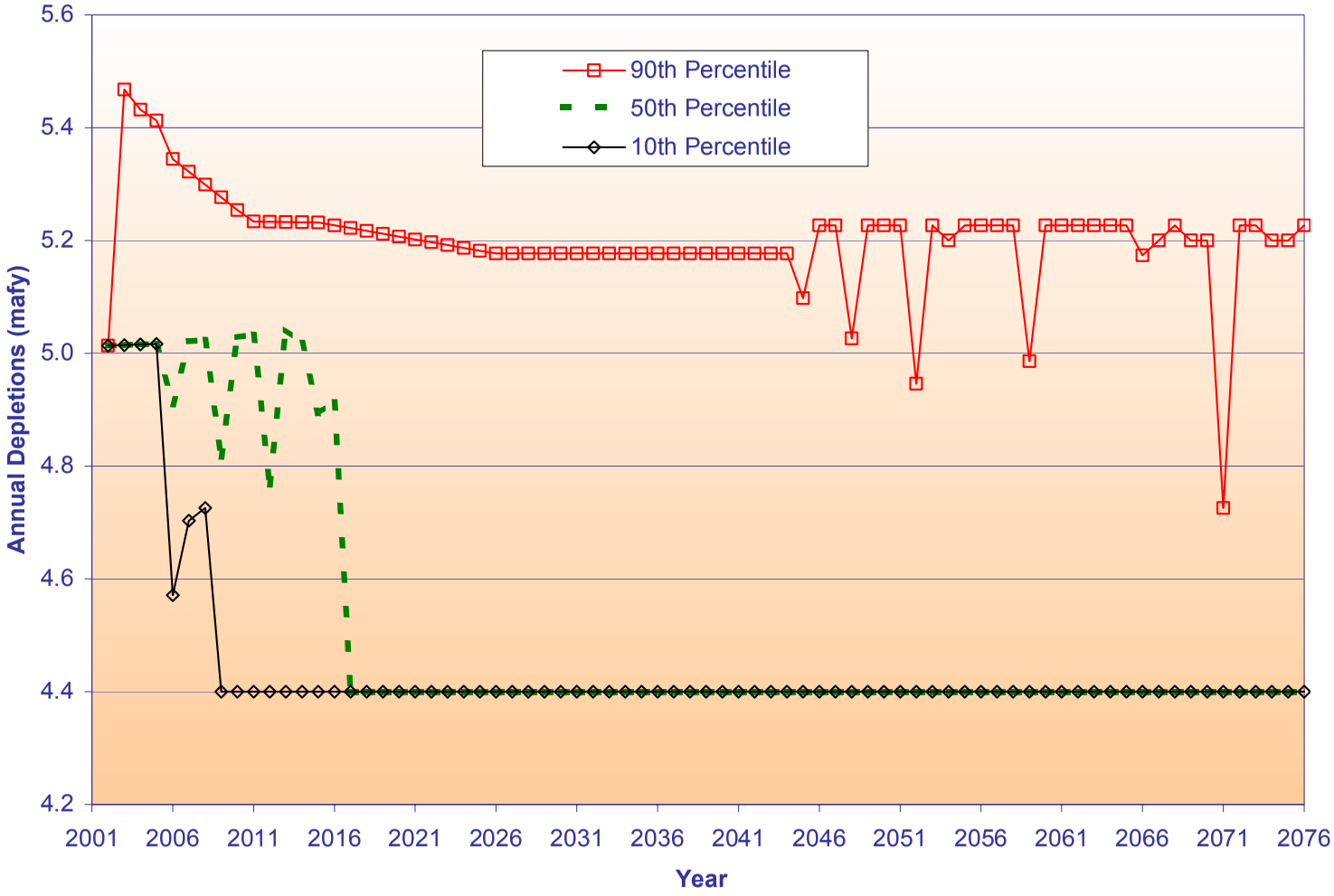
The 90th percentile values generally coincide with California's depletion schedule during full surplus water supply conditions through year 2044. The 90th percentile line represents the magnitude of surplus condition deliveries that would be available at least 10 percent of the time throughout the 75-year period of analysis. After year 2044, the 90th percentile line occasionally falls below the full surplus schedule, an indication of the occurrence of more frequent limited surplus conditions.

From 2002 through 2016, under No Action Conditions, the 50th percentile line for California is above the normal depletion schedule suggesting a better than average probability of surplus condition deliveries. After 2016, the 50th percentile line coincides with California's normal depletion schedule.

From 2002 through 2008, under No Action Conditions, the 10th percentile line for California is also above the normal depletion schedule suggesting at least a 90 percent probability of surplus condition deliveries during this period. After 2008, the 10th percentile line coincides with California's normal depletion schedule.

Annual water deliveries to California were observed to fall below California's normal apportionment of 4.4 maf (a Level 2 shortage condition) less than one percent of the time throughout the 75-year period of analysis. The minimum delivery observed under the No Action conditions was 3.847 maf.

Figure 4.5-6
California Modeled Annual Depletions Under No Action Conditions
90th, 50th and 10th Percentile Values



4.5.2.2 COMPARISON OF IMPLEMENTATION AGREEMENT TO NO ACTION

Figure 4.5-7 provides a comparison of the distribution of the observed California depletions under the Implementation Agreement Conditions to those of the No Action Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016). These graphs are best used to represent the frequency that different magnitude annual water deliveries to California occur in the respective period. The results presented in Figure 4.5-7 indicate a 100 percent probability that California's depletions would meet its normal depletion schedule during this period under the No Action Conditions. The probability that California would receive surplus condition deliveries (any amount greater than 4.4 mafy) during this period under No Action Conditions was approximately 85 percent. The maximum surplus condition depletions observed under the No Action Conditions were 5.468 maf during this 15-year period.

Figure 4.5-8 provides a comparison of the distribution of the water deliveries to California under the Implementation Agreement Conditions to those of the No Action Conditions for the 60-year period (years 2017 to 2076) that follows the Interim Surplus Guidelines period. The results presented in Figure 4.5-8 indicate an approximate 99 percent probability that water deliveries to California would meet its normal depletion schedule during this period under the No Action Conditions. Only one trace was observed to fall below the normal depletion schedule, an indication of a Level 2 shortage condition. The minimum delivery observed under this trace was 3.847 maf. The probability that California would receive surplus condition deliveries during this same period under the No Action Conditions was approximately 18 percent. The maximum surplus condition depletions under the No Action Conditions were 5.227 maf during this 60-year period.

Figure 4.5-9 provides a comparison of the distribution of the water deliveries to California under the Implementation Agreement Conditions to those of the No Action Conditions for the entire period of analysis (years 2002 to 2076). The results presented in Figure 4.5-9 also indicate an approximate 99 percent probability that water deliveries to California would meet its normal depletion schedule under the No Action Conditions. Again, only one trace was observed to fall below the normal depletion schedule, an indication of a Level 2 shortage condition. The minimum delivery observed under this trace was 3.847 maf. The probability that California would receive surplus condition deliveries during this same period under the No Action Conditions was approximately 32 percent. The maximum surplus condition depletions under the No Action Conditions were 5.468 maf during this 75-year period.

Figure 4.5-7
California Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2016

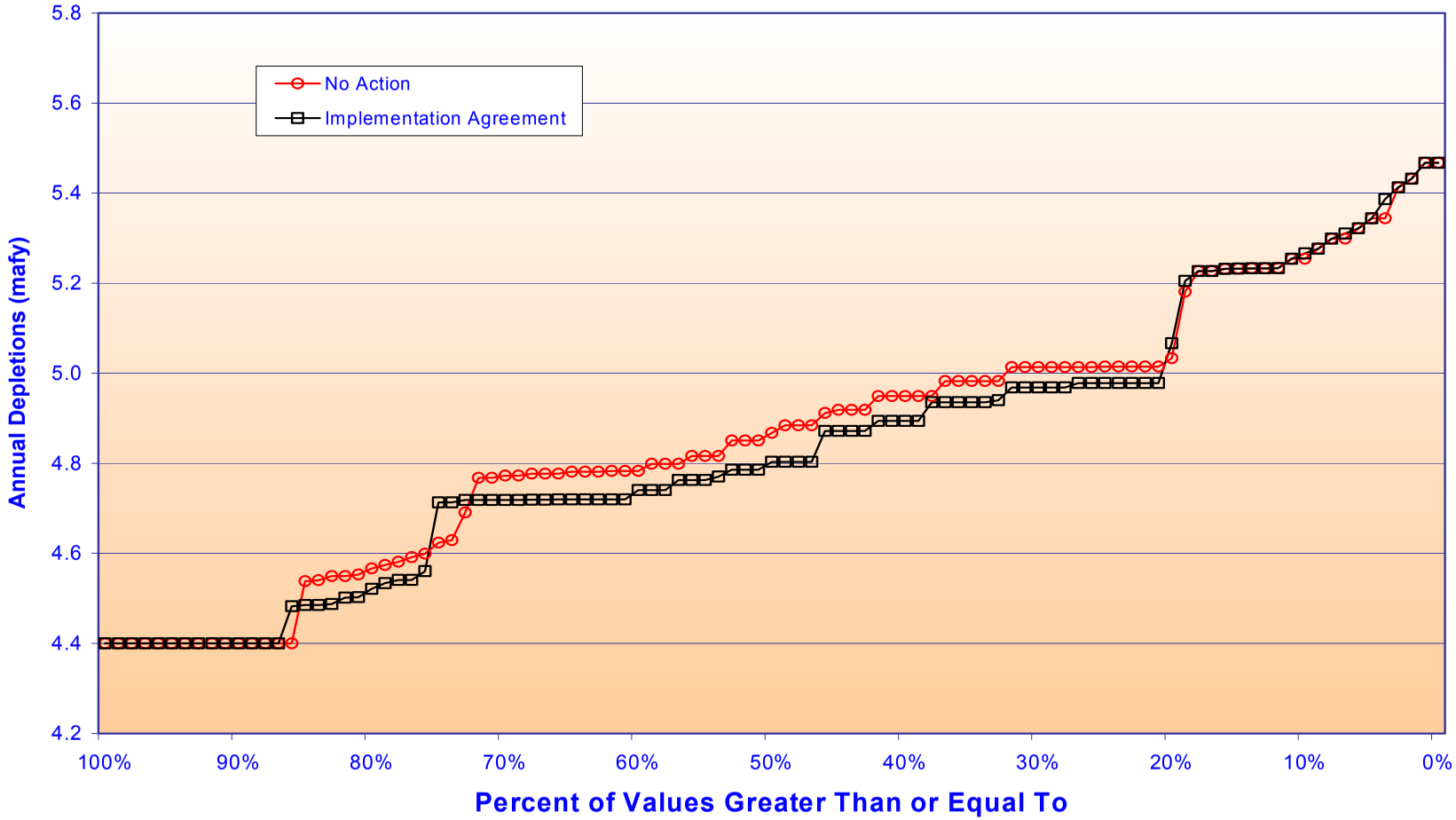


Figure 4.5-8
California Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2017 to 2076

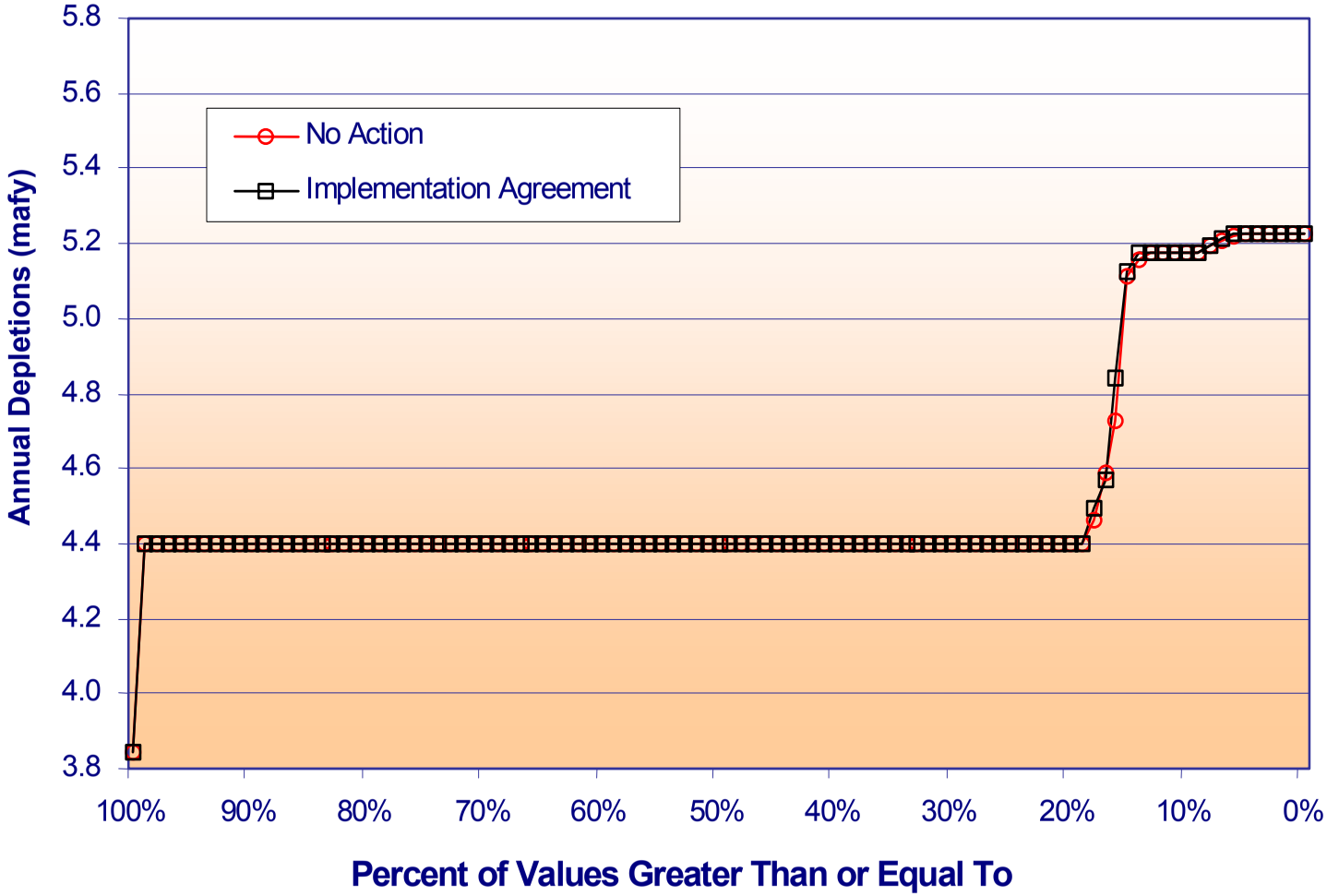


Figure 4.5-9
California Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2076

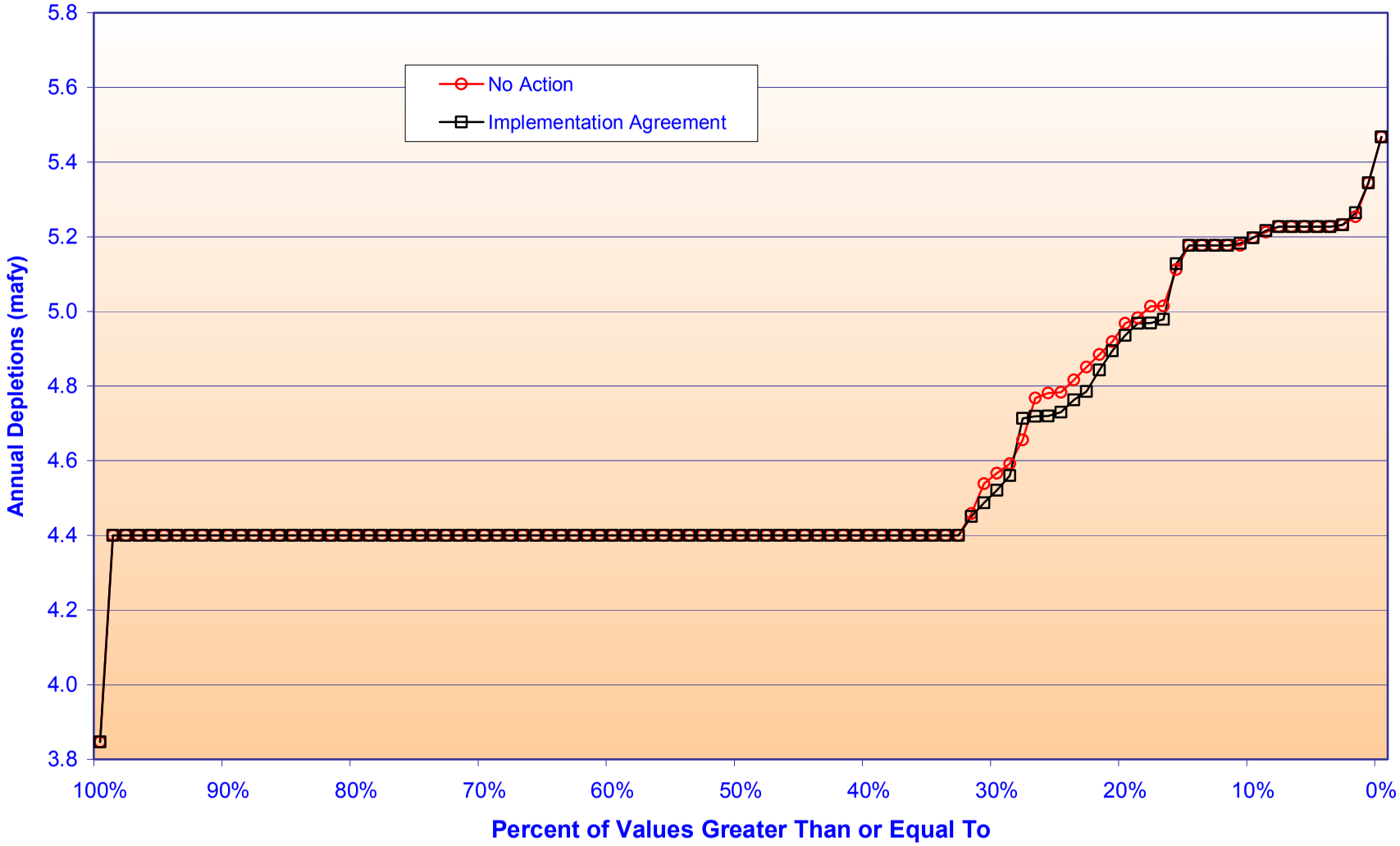
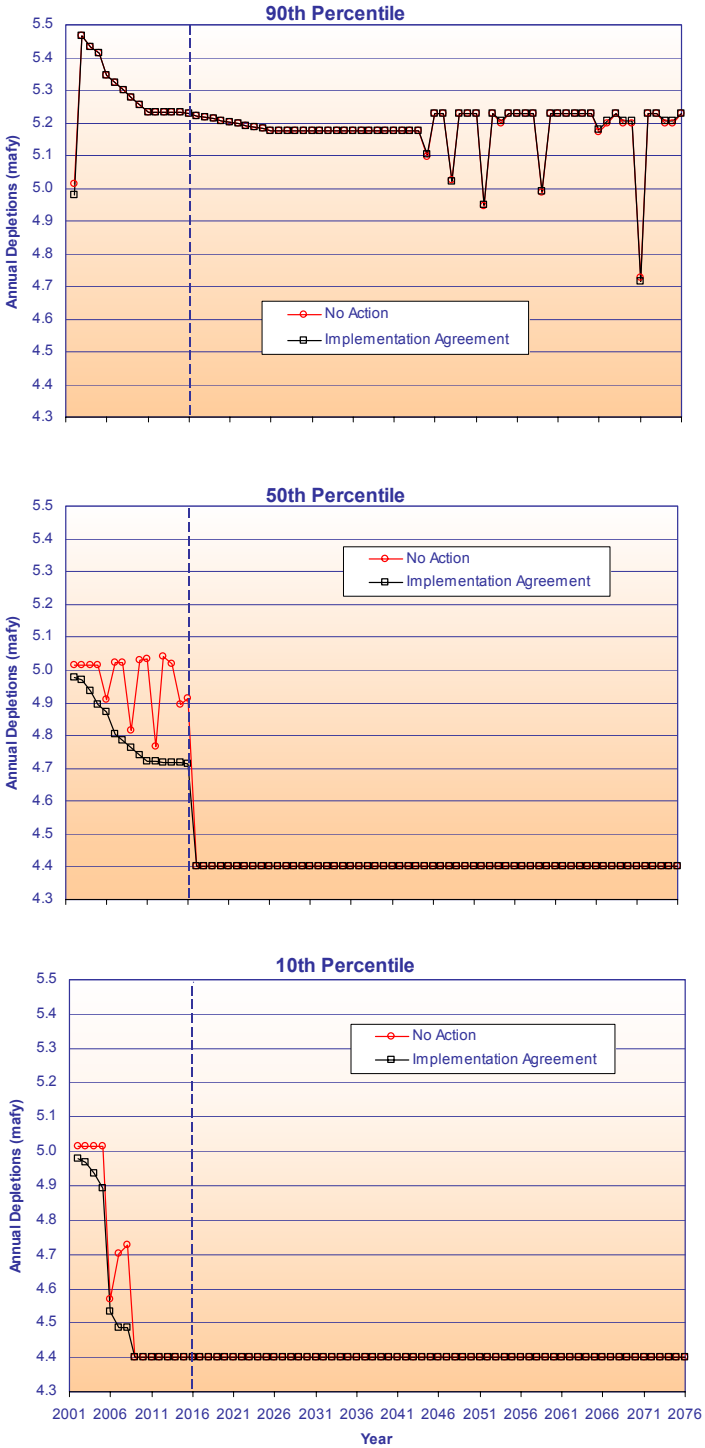


Figure 4.5-10 provides a comparison of the 90th, 50th and 10th percentile values for California's depletions under the Implementation Agreement Conditions to those of the No Action Conditions. As noted in Figure 4.5-10, there is little difference in the 90th percentile values resulting from the Implementation Agreement Conditions to those of the No Action Conditions. Both 90th percentile values generally coincide with California's depletion schedule during full surplus water supply conditions through year 2044. After year 2044, both 90th percentile lines occasionally fall below the full surplus schedule suggesting an increased probability of limited surplus conditions.

From 2002 through 2016, the 50th percentile lines for the Implementation Agreement and No Action conditions are above the normal depletion schedule suggesting a better than average probability of surplus condition deliveries. Comparing the two 50th percentile plots, it can be seen that with the Implementation Agreement California's depletions would reduce steadily during the initial years. In contrast, the depletions would remain higher under No Action conditions. After 2016, the 50th percentile lines for the Implementation Agreement and No Action conditions coincide with California's normal depletion schedule.

From 2002 through 2008, the 10th percentile lines for the Implementation Agreement and No Action conditions are generally above the normal depletion schedule, indicating a better than 90 percent frequency of surplus condition deliveries. The Implementation Agreement would result in a steady reduction in California's depletions in the initial years, in contrast to the No Action conditions. After 2008, the 10th percentile lines for the Implementation Agreement and No Action conditions coincide with California's normal depletion schedule.

Figure 4.5-10
California Modeled Annual Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
90th, 50th and 10th Percentile Values



Figures 4.5-7, 4.5-8 and 4.5-9 presented comparisons of the distribution of California's depletions under the Implementation Agreement Conditions to those of the No Action Conditions during the 15-year interim surplus guidelines period (years 2002 to 2016), the 60-year period that would follow the interim surplus guidelines (years 2017 to 2076) and the entire 75-year period of analysis (years 2002 to 2076), respectively. Table 4.5-2 provides a tabular summary and comparison for these three periods.

Table 4.5-2
Summary of California Modeled Annual Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions

Alternative/Conditions	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
No Action	100%	85%	0%	99%	18%	1%	99%	32%	<1%
Implementation Agreement	100%	86%	0%	99%	18%	1%	99%	32%	<1%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

The percentage values presented under the column heading labeled "Normal" in Table 4.5-2 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled "Surplus" represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled "Shortage" represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.5.3 STATE OF NEVADA

This section presents the simulated water deliveries to Nevada under the No Action Conditions and Implementation Agreement Conditions. The analysis of Nevada's water supply concentrated on total Nevada water depletions.

4.5.3.1 MODELING RESULTS OF NO ACTION

The water deliveries to Nevada are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90^{th}, 50^{th} and 10^{th} percentile ranking of modeled water deliveries to Nevada under the No Action Conditions is presented in Figure 4.5-11.

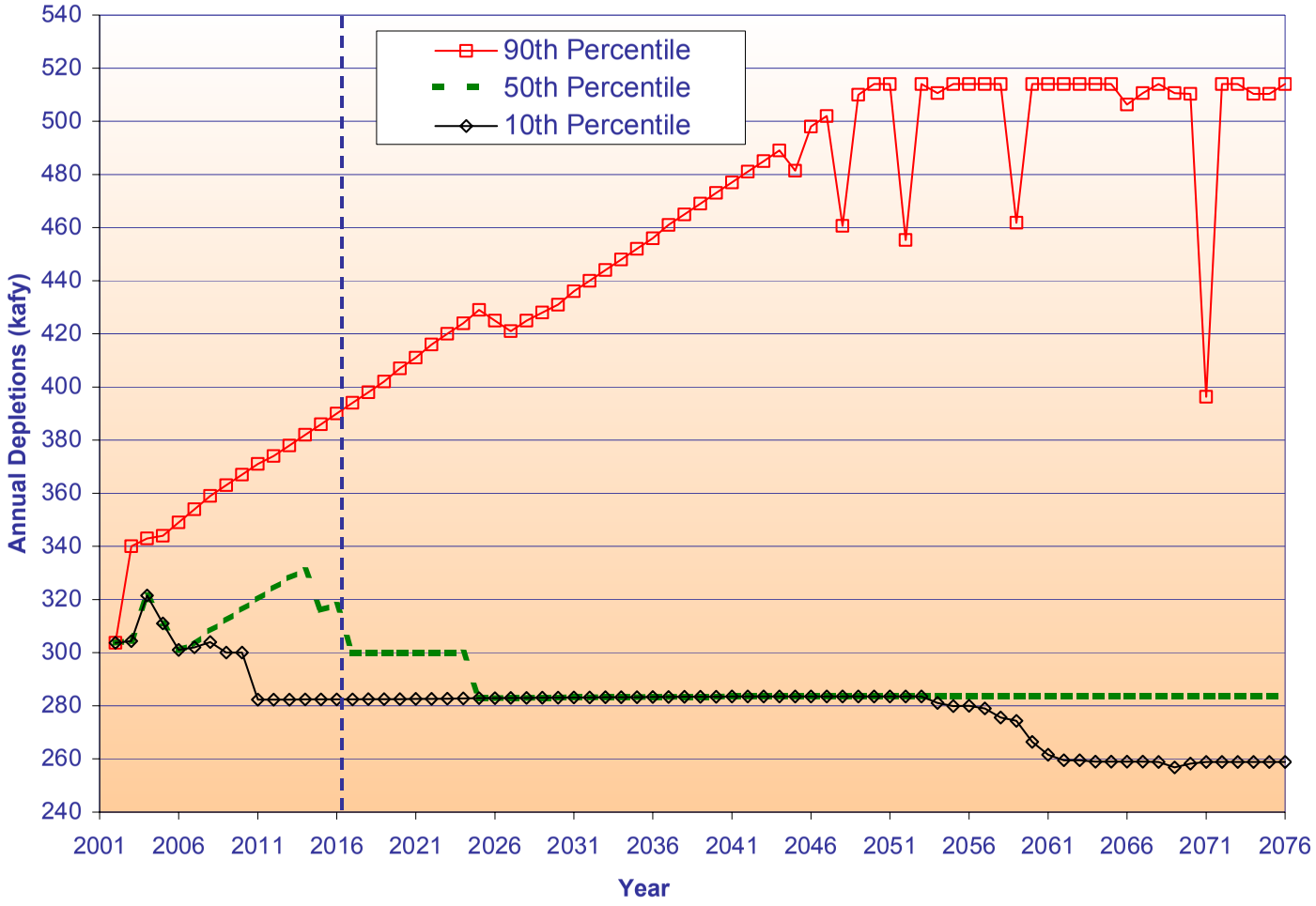
The 90^{th} percentile values generally coincide with Nevada's normal depletion schedule under No Action Conditions through year 2045. After year 2045, the 90^{th} percentile occasionally falls below the full surplus schedule, an indication of limited surplus conditions.

From 2002 through 2016, under No Action Conditions, the 50th percentile line for Nevada is at or above the normal depletion schedule suggesting a better than average probability of surplus condition deliveries. From 2017 through 2024, the 50th percentile line coincides with Nevada's normal depletion schedule. After 2024, the 50th percentile line coincides with Nevada's Level 1 shortage condition depletion schedule.

From 2002 through 2008, under No Action Conditions, the 10th percentile line for Nevada is also at or above the normal depletion schedule suggesting at least a 90 percent probability of surplus condition deliveries during this period. From 2009 through 2054, the 10th percentile line coincides with Nevada's Level 1 shortage condition depletion schedule. After 2054, under No Action Conditions, the 10th percentile begins to fall below 280 maf, an indication of frequent Level 2 shortage conditions.

As noted in Section 4.4.1, the SNWA and CAP essentially take all the reductions in water deliveries during shortage conditions (for modeling purposes). The model sets the SNWA's shortage condition delivery reductions to four percent of the total shortage condition delivery reduction amount when the Lake Mead water level is between elevation 1000 feet msl and the assumed shortage protection line as discussed in Section 2.3. This modeling assumption kept Nevada' annual delivery above 280 kaf until further cuts to the SNWA and CAP were necessary to maintain the Lake Mead water level above the 1000 feet msl elevation, a level 2 shortage condition. Under the No Action Conditions, deliveries to Nevada below 280 kaf occurred less than seven percent of the time during the 75-year period.

Figure 4.5-11
Nevada Modeled Annual Depletions Under No Action Conditions
90th, 50th and 10th Percentile Values



4.5.3.2 COMPARISON OF IMPLEMENTATION AGREEMENT TO NO ACTION

Figure 4.5-12 provides a comparison of the distribution of Nevada's depletions under the Implementation Agreement Conditions to those of the No Action Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016). This graph is best used to represent the frequency that different magnitude water deliveries to Nevada occurred during the 15-year Interim Surplus Guidelines period. The results presented in Figure 4.5-12 indicate an 92 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the No Action Conditions. The probability that Nevada would receive surplus condition deliveries under the No Action Conditions during this period was approximately 85 percent. The maximum surplus condition depletions under the No Action Conditions were 390 kaf during this 15-year period. The probability that Nevada would receive shortage condition deliveries under No Action Conditions was 8 percent. The minimum shortage condition depletion was 282.3 kaf.

Figure 4.5-13 provides a comparison of the distribution of the water deliveries to Nevada under the Implementation Agreement Conditions to those of the No Action Conditions for the 60-year period (years 2017 to 2076) that would follow the interim surplus guidelines period. The results presented in Figure 4.5-13 indicate a 37 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the No Action Conditions. The probability that Nevada would receive surplus condition deliveries during this same period under the No Action Conditions was approximately 18 percent. The maximum surplus condition depletions under the No Action Conditions were 514 kaf during this 60-year period. The probability that Nevada would receive shortage condition deliveries was less than 63 percent. The minimum shortage condition depletion during this period was 236.3 kaf.

Figure 4.5-14 provides a comparison of the distribution of the water deliveries to Nevada under the Implementation Agreement Conditions to those of the No Action Conditions for the entire 75-year period of analysis (years 2002 to 2076). The results presented in Figure 4.5-14 indicate a 48 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the No Action Conditions. The probability that Nevada would receive surplus condition deliveries during this same period under the No Action Conditions was approximately 31 percent. The maximum surplus condition depletions under the No Action Conditions were 514 kaf during this 75-year period. The probability that Nevada would receive shortage condition deliveries was less than 52 percent. The minimum shortage condition depletion during this period was 236.3 kaf.

Figure 4.5-12
Nevada Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2016

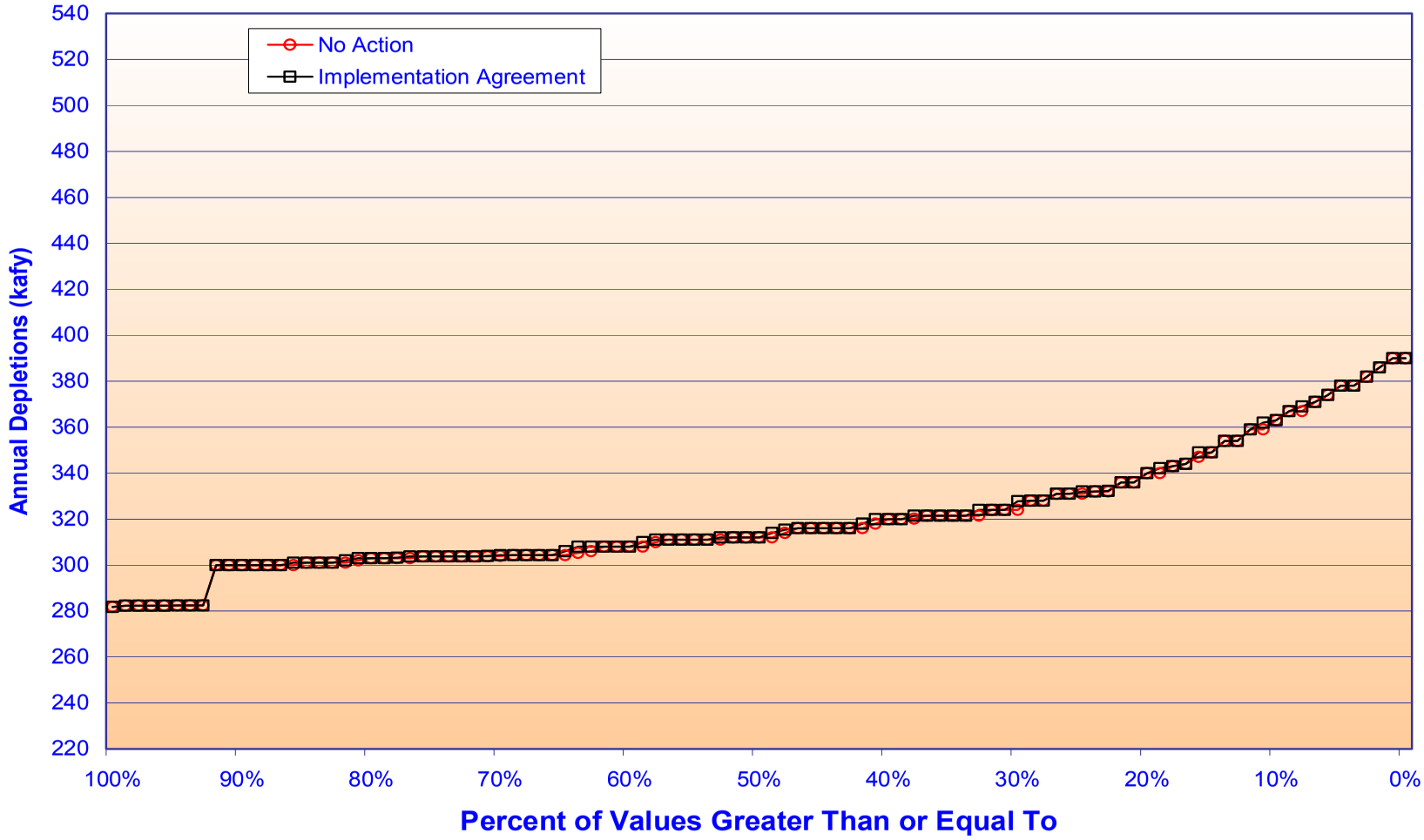


Figure 4.5-13
Nevada Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2017 to 2076

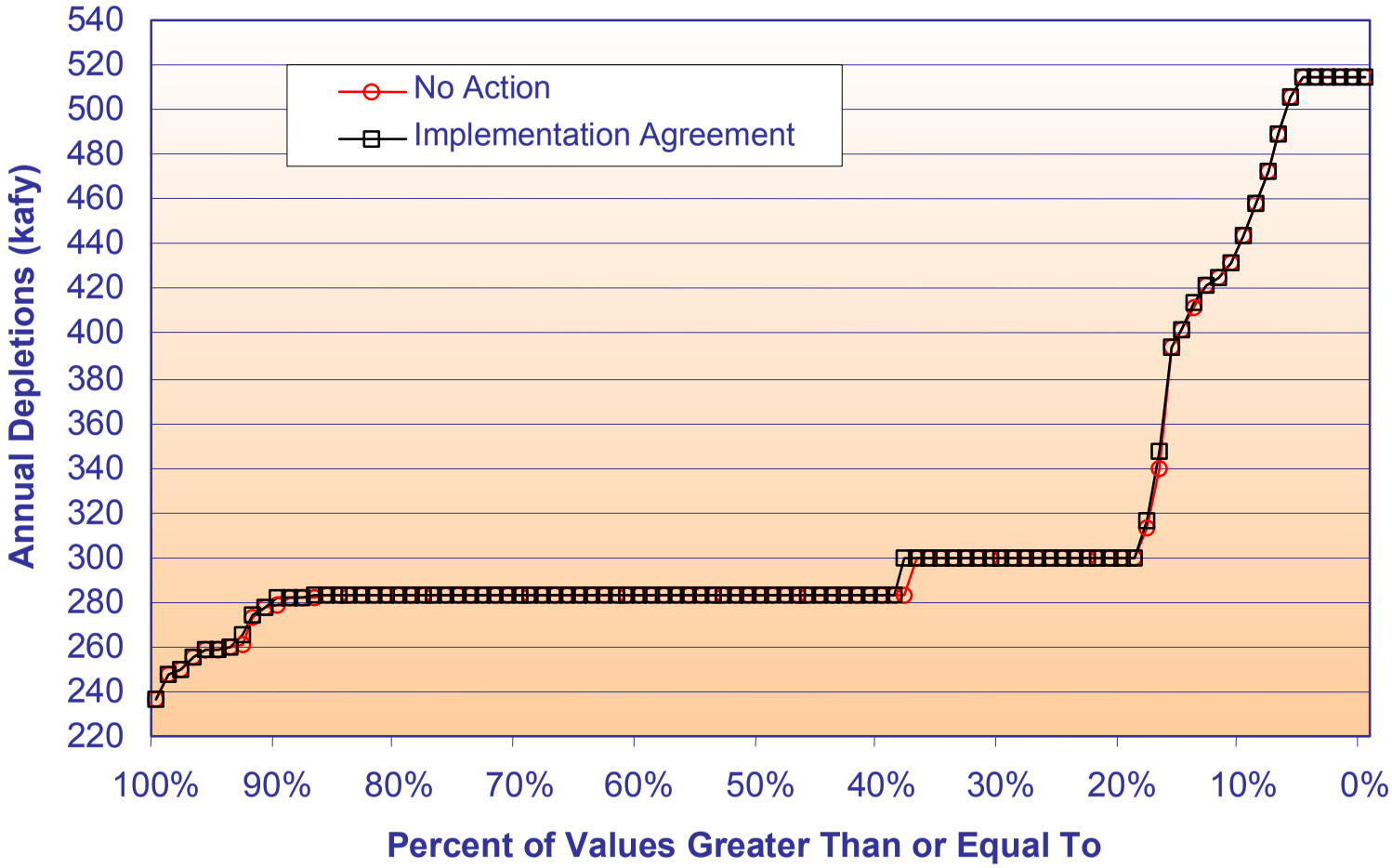


Figure 4.5-14
Nevada Modeled Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
Years 2002 to 2076

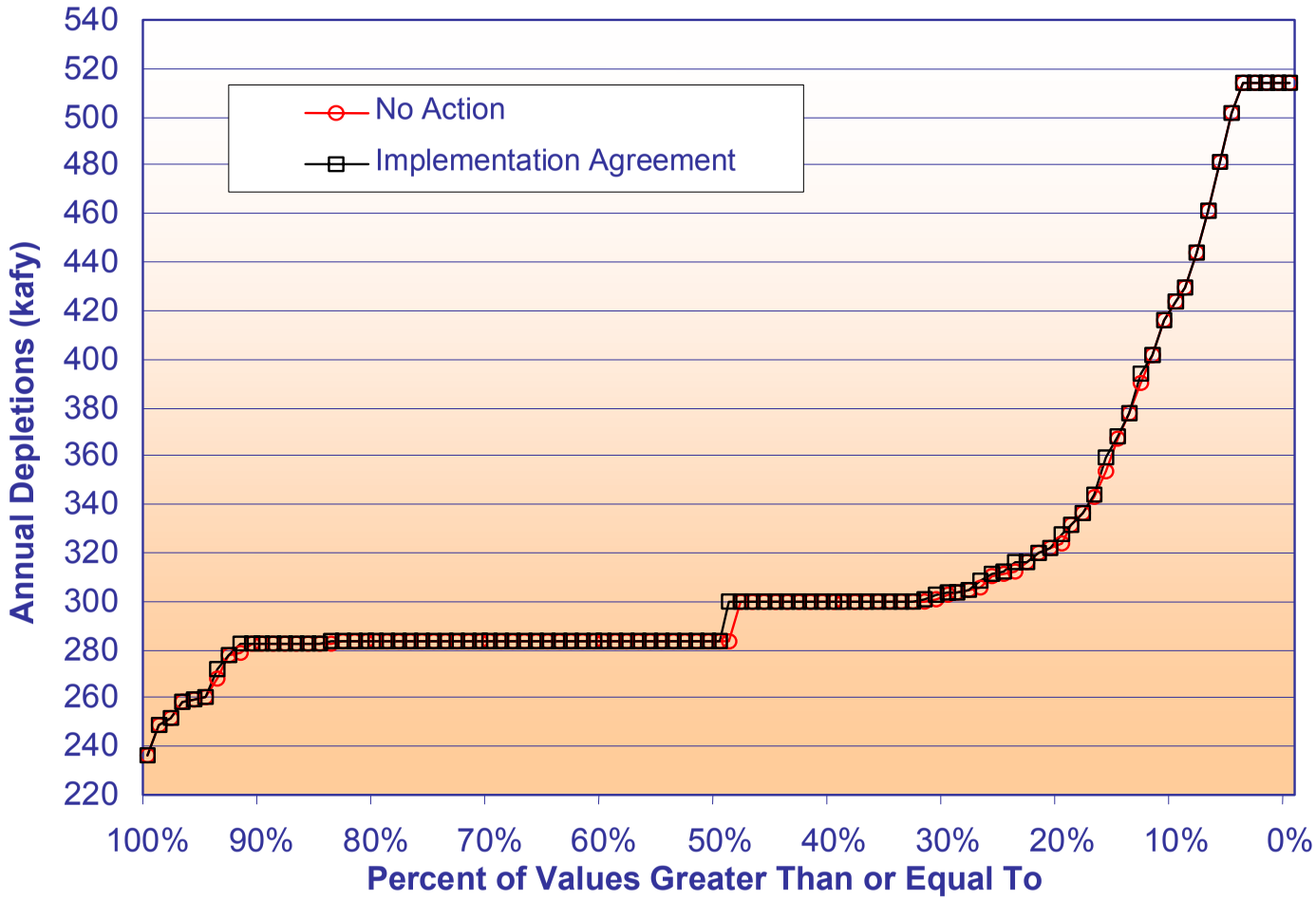
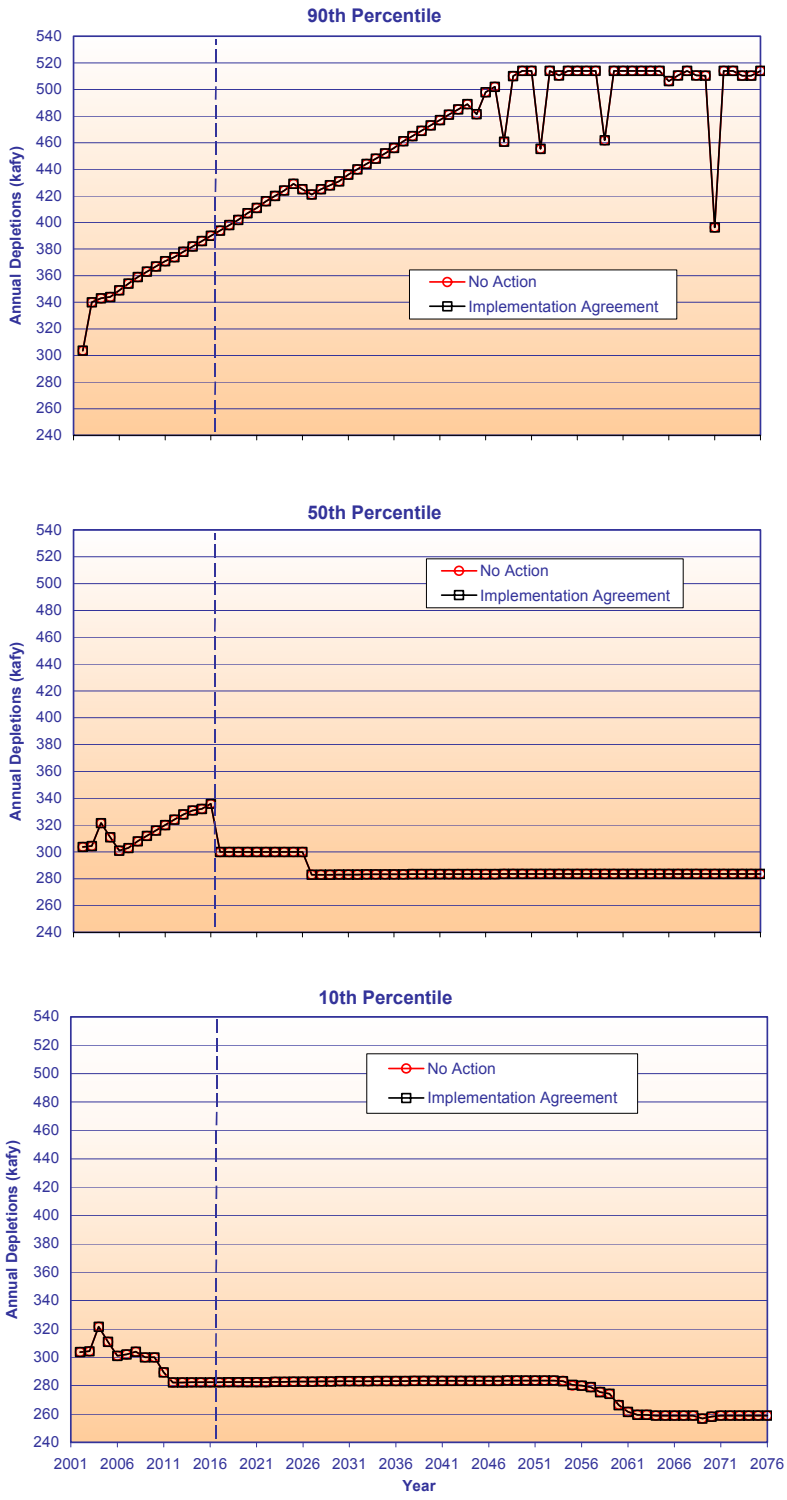


Figure 4.5-15 provides a comparison of the 90th, 50th and 10th percentile values for Nevada's depletions under the No Action Conditions to those of the Implementation Agreement Conditions. As noted in Figure 4.5-15, there is little difference between the 90th percentile values resulting from the Implementation Agreement Conditions and those of the No Action Conditions. Both 90th percentile lines generally coincide with Nevada's normal depletion schedule under No Action Conditions through year 2045. After year 2045, both 90th percentile lines occasionally fall below the full surplus schedule, an indication of limited surplus conditions.

From 2002 through 2016, the 50th percentile lines for both the No Action and Implementation conditions are at or above the normal depletion schedule, an indication of better than average probability of surplus condition deliveries. From 2017 through 2024, both 50th percentile lines coincide with Arizona's normal depletion schedule. After 2024, the 50th percentile line of the No Action Conditions falls to and thereafter coincides with Arizona's Level 1 shortage condition depletion schedule. The 50th percentile line under the Implementation Agreement Conditions continues to coincide with Arizona's normal depletion schedule until year 2026, two years longer than that of the No Action Conditions. After 2026, the 50th percentile line under the Implementation Agreement Conditions also falls to and thereafter coincides with Arizona's Level 1 shortage condition depletion schedule.

As noted in Figure 4.5-15, there is little difference between the 10th percentile values resulting from the Implementation Agreement Conditions and those of the No Action Conditions. Both 10th percentile lines are generally at or above Nevada's normal depletion schedule through year 2010. From 2011 through 2057, both 10th percentile lines generally coincide with Arizona's modeled Level 1 shortage condition depletion schedule. After 2057, the 10th percentile values resulting from the Implementation Agreement Conditions and No Action conditions fall and remain below the Level 1 shortage depletion schedule, an indication of the occurrence of more frequent Level 2 shortage condition deliveries.

Figure 4.5-15
Nevada Modeled Annual Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions
90th, 50th and 10th Percentile Values



Figures 4.5-12, 4.5-13 and 4.5-14 presented comparisons of the distribution of Nevada's depletions under the Implementation Agreement Conditions to those of the No Action Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016), the 60-year period that would follow the Interim Surplus Guidelines (years 2017 to 2076), and the entire 75-year period of analysis (years 2002 to 2076), respectively. These graphs represent the frequency that different magnitude annual deliveries to Nevada occurred under each respective period. Table 4.5-3 provides a tabular summary of the comparison for these three periods.

Table 4.5-3
Summary of Nevada Modeled Annual Depletions
Comparison of Implementation Agreement Conditions to No Action Conditions

Alternative/Conditions	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
No Action	92%	85%	8%	37%	18%	63%	48%	31%	52%
Implementation Agreement	92%	86%	8%	38%	18%	62%	49%	32%	51%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

The percentage values presented under the column heading labeled “Normal” in Table 4.5-3 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled “Surplus” represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled “Shortage” represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.5.4 UPPER BASIN STATES

There are no specific criteria in the *Law of the River* for surplus or shortage condition water deliveries to users within the Upper Basin states. The normal depletion schedule of the Upper Basin states would be met under both the No Action and Implementation Agreement conditions. The exceptions are potential reductions to certain Upper Basin users whose diversions are located upstream of Lake Powell. For these users, the potential reductions would be attributed to dry hydrologic conditions and inadequate regulating reservoir storage capacity upstream of their diversions.

The proposed water transfers were determined to have no effect on water deliveries to the Upper Basin states, including the Upper Basin Tribes. Therefore, detailed analyses were not necessary for the Upper Basin states' water supply.

4.6 ANALYSIS OF CUMULATIVE EFFECTS

This section describes the results of the analysis that evaluates the potential cumulative impacts to the water deliveries to each of the Lower Basin states and Mexico resulting from the proposed implementation of all the water management programs contemplated under this Technical Memorandum. The modeled operational scenarios that are used to evaluate the cumulative effects of the various water management programs in this section consist of the Baseline for the Cumulative Analysis (Baseline Conditions) and the Cumulative Analysis Conditions. These scenarios are defined in Section 2.2.

4.6.1 STATE OF ARIZONA

This section presents the simulated water deliveries to Arizona under the Baseline and Cumulative Analysis Conditions. The analysis of Arizona's water supply concentrated on total Arizona water depletions.

4.6.1.1 MODELING RESULTS OF BASELINE

The water deliveries to Arizona are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90th, 50th and 10th percentile ranking of modeled water deliveries to Arizona under the Baseline conditions are presented in Figure 4.6-1.

With the exception of the first year modeled (2002), the 90th percentile line coincides with Arizona's depletion schedule during full surplus water supply conditions through year 2044 (compare Figure 4.6-1 to Figure 4.4-1). As indicated by this 90th percentile line, the probability that the Baseline Conditions would provide Arizona's full surplus depletion schedule is at least 10 percent during this period. After year 2044, the 90th percentile line occasionally falls below the full surplus schedule although it still remains close to Arizona's depletion schedule during full surplus water supply conditions and generally at or above 3.0 mafy.

The 50th percentile line represents the median annual depletion values. This 50th percentile line generally coincides with Arizona's projected depletion schedule under normal water supply conditions through year 2027 (see Figure 4.4-1). After 2027, the median values drop to approximately 2.4 mafy and remain at approximately that level for the remainder of the 75 year period of analysis.

Under the Baseline Conditions, the 10th percentile values generally coincide with Arizona's normal depletion schedule through year 2013. After 2013, the median values drop to approximately 2.4 maf and remain at approximately that level until year 2054. After 2054, the 10th percentile line falls below 2.4 mafy and remains below this amount for the remainder of the 75 year period of analysis, an indication of an increased frequency of Level 2 Shortage conditions.

As noted in Section 4.4.1, under shortage conditions, Arizona would bear 96 percent of the reduction and Nevada would bear four percent. In Arizona, the reduction would be shared prorata among CAP and non-CAP holders of fourth priority entitlements. To simplify the modeling process, the model sets the CAP's shortage water supply condition deliveries at 1.0 maf when the Lake Mead water level is between elevation 1000 feet msl and the assumed shortage protection line as discussed in Section 2.4. This modeling assumption kept Arizona's annual deliveries above 2.4 maf until further cuts to the CAP were necessary to maintain the Lake Mead water level above the 1000 feet msl elevation (a Level 2 shortage condition). Under the Baseline scenario modeled, Level 2 shortage water supply condition deliveries to Arizona below 2.4 maf were observed to occur less than seven percent of the time during the 75-year period of analysis.

Figure 4.6-1
Arizona Modeled Annual Depletions Under Baseline Conditions
90th, 50th and 10th Percentile Values

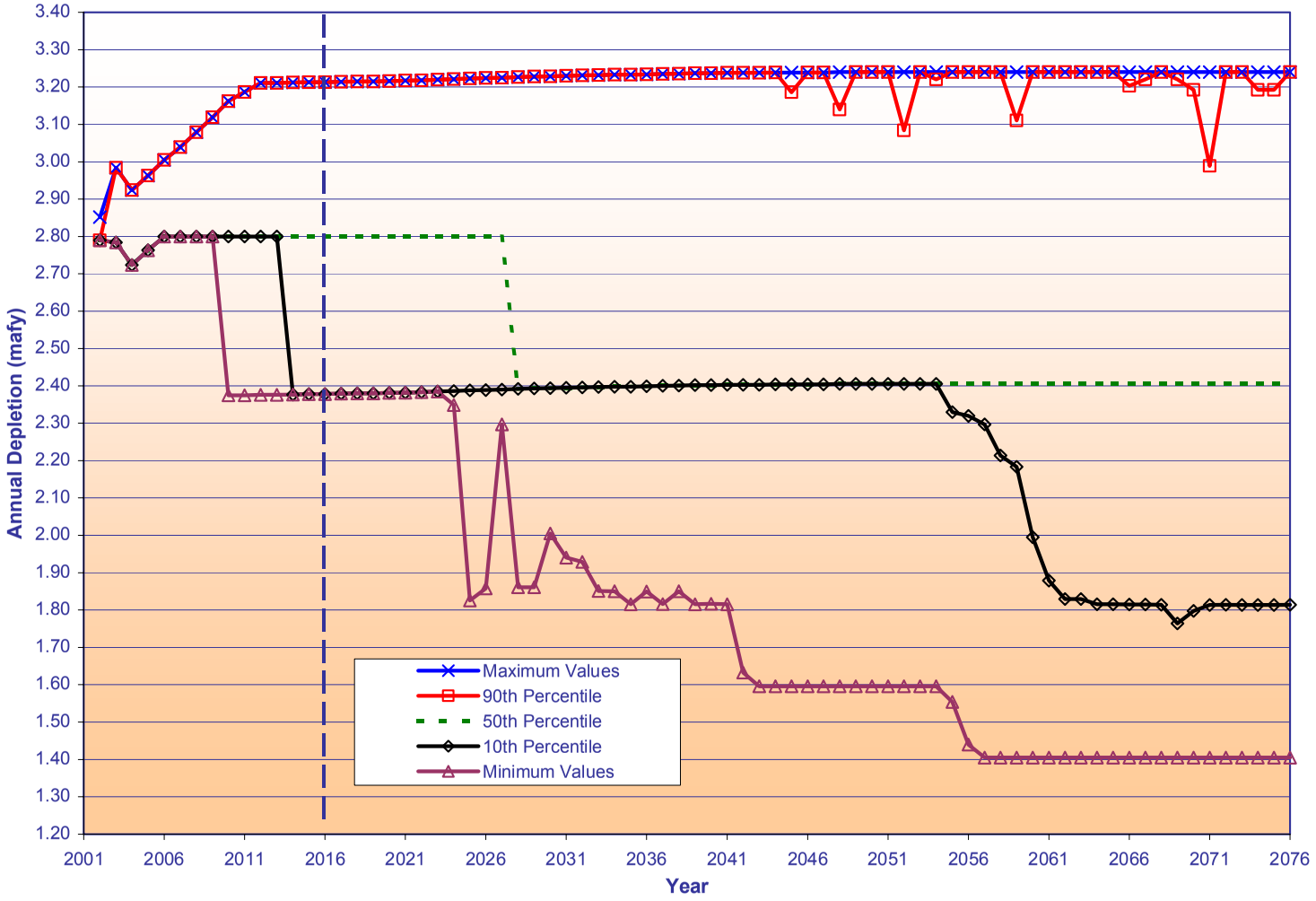


Figure 4.6-2 provides a comparison of the distribution of Arizona's depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016). This type of graph is used to represent the frequency that annual deliveries of different magnitudes occur in the respective period. The results presented in Figure 4.6-2 indicate a 74 percent probability that annual water deliveries to Arizona would meet or exceed its normal depletion schedule during this period under Baseline conditions. The probability that Arizona would receive surplus condition deliveries during this period was approximately 26 percent. The maximum surplus condition depletions under the Baseline Conditions were 3.213 maf during this period. The probability that Arizona would receive shortage condition deliveries was 26 percent. The minimum shortage condition depletion was 2.376 maf during this 15-year period.

Figure 4.6-3 provides a comparison of the distribution of the water deliveries to Arizona under the Cumulative Analysis Conditions to those of the Baseline Conditions for the 60-year period (years 2017 to 2076) that would follow the Interim Surplus Guidelines period. The results presented in Figure 4.6-3 indicate a 39 percent probability that water deliveries to Arizona would meet its normal depletion schedule during this period under the Baseline conditions. The probability that Arizona would receive surplus condition deliveries during this same period under the Baseline conditions was approximately 18 percent. The maximum surplus condition depletions under the Baseline Conditions were 3.24 maf during this period. The probability that Arizona would receive deliveries less than its normal schedule (Level 1 or Level 2 shortage condition deliveries) was approximately 61 percent. Second level shortage conditions occurred less than eight percent of the time during this period. The minimum shortage condition depletion was 1.405 maf.

Figure 4.6-4 provides a comparison of the distribution of the water deliveries to Arizona under the Cumulative Analysis Conditions to those of the Baseline Conditions for the entire 75-year period of analysis (years 2002 to 2076). The results presented in Figure 4.6-4 indicate a 46 percent probability that water deliveries to Arizona would meet or exceed its normal depletion schedule during this period under the Baseline Conditions. The probability that Arizona would receive surplus condition deliveries during this same period under the Baseline Conditions was approximately 20 percent. The maximum surplus condition depletions under the Baseline Conditions were 3.24 maf during this period. The probability that Arizona would receive deliveries less than its normal schedule (Level 1 or Level 2 shortage condition deliveries) was approximately 54 percent. Second level shortage conditions occurred less than seven percent of the time during this period. The minimum shortage condition depletion under the Baseline conditions was 1.405 maf.

Figure 4.6-2
Arizona Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2016

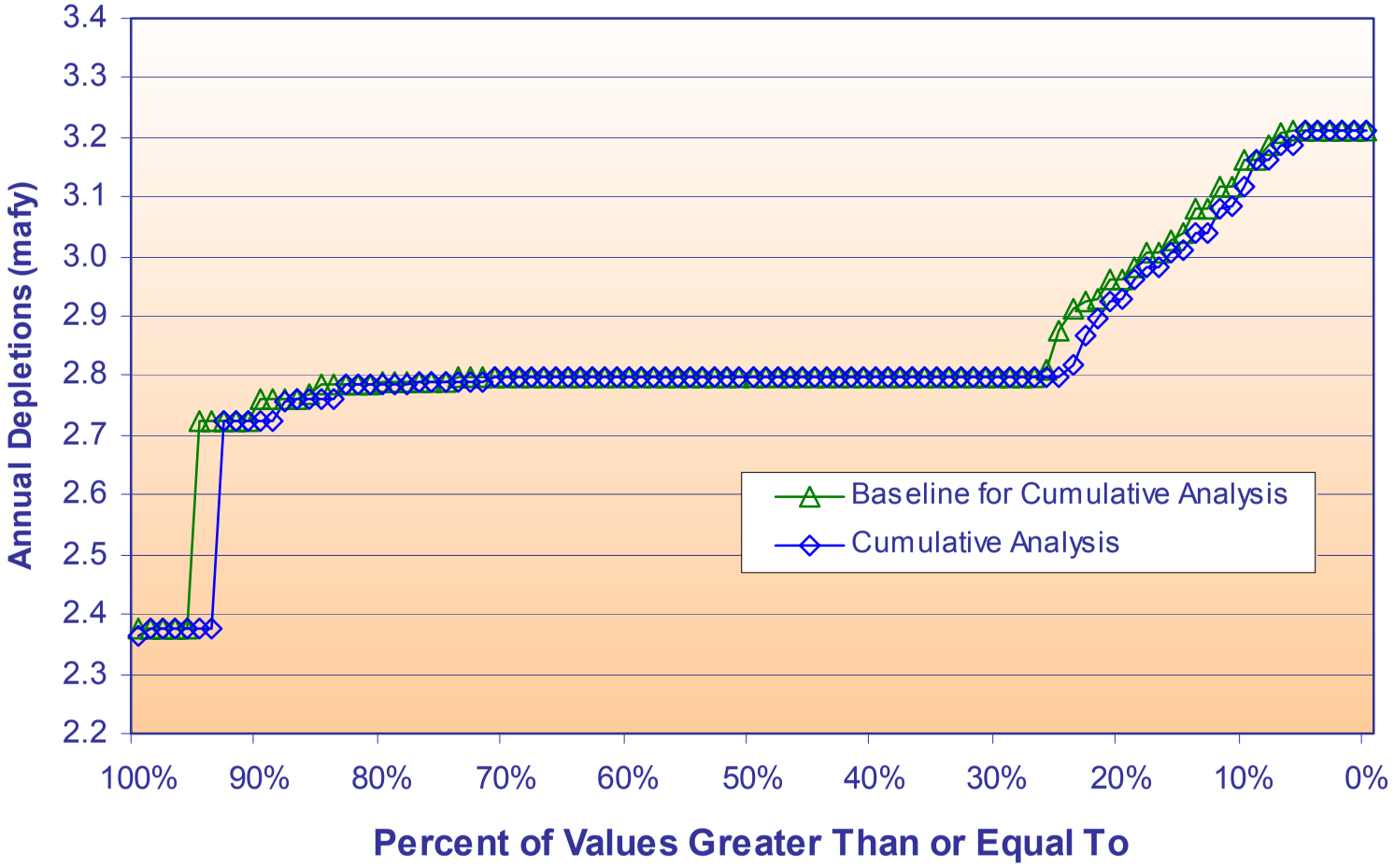


Figure 4.6-3
Arizona Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2017 to 2076

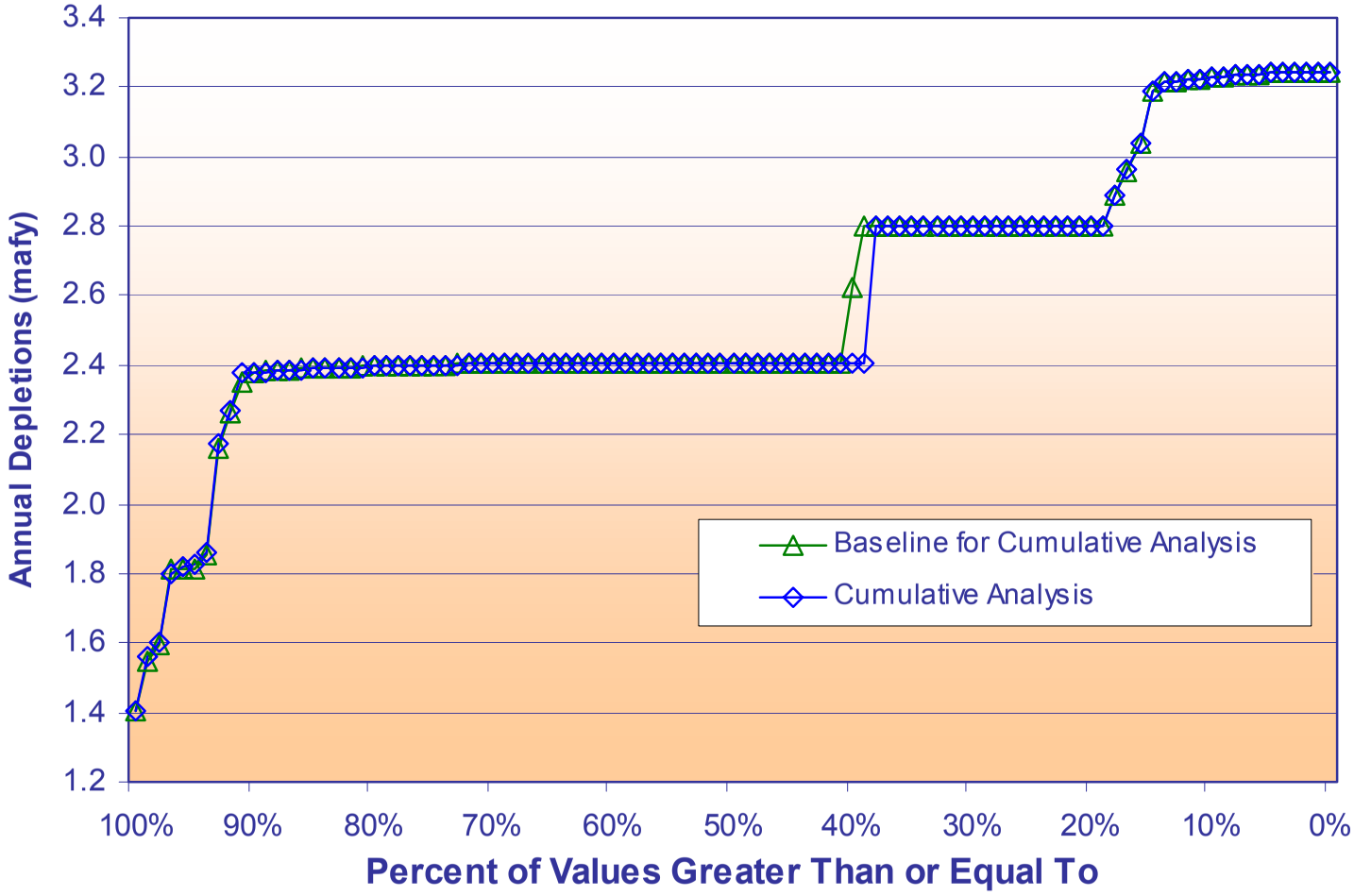
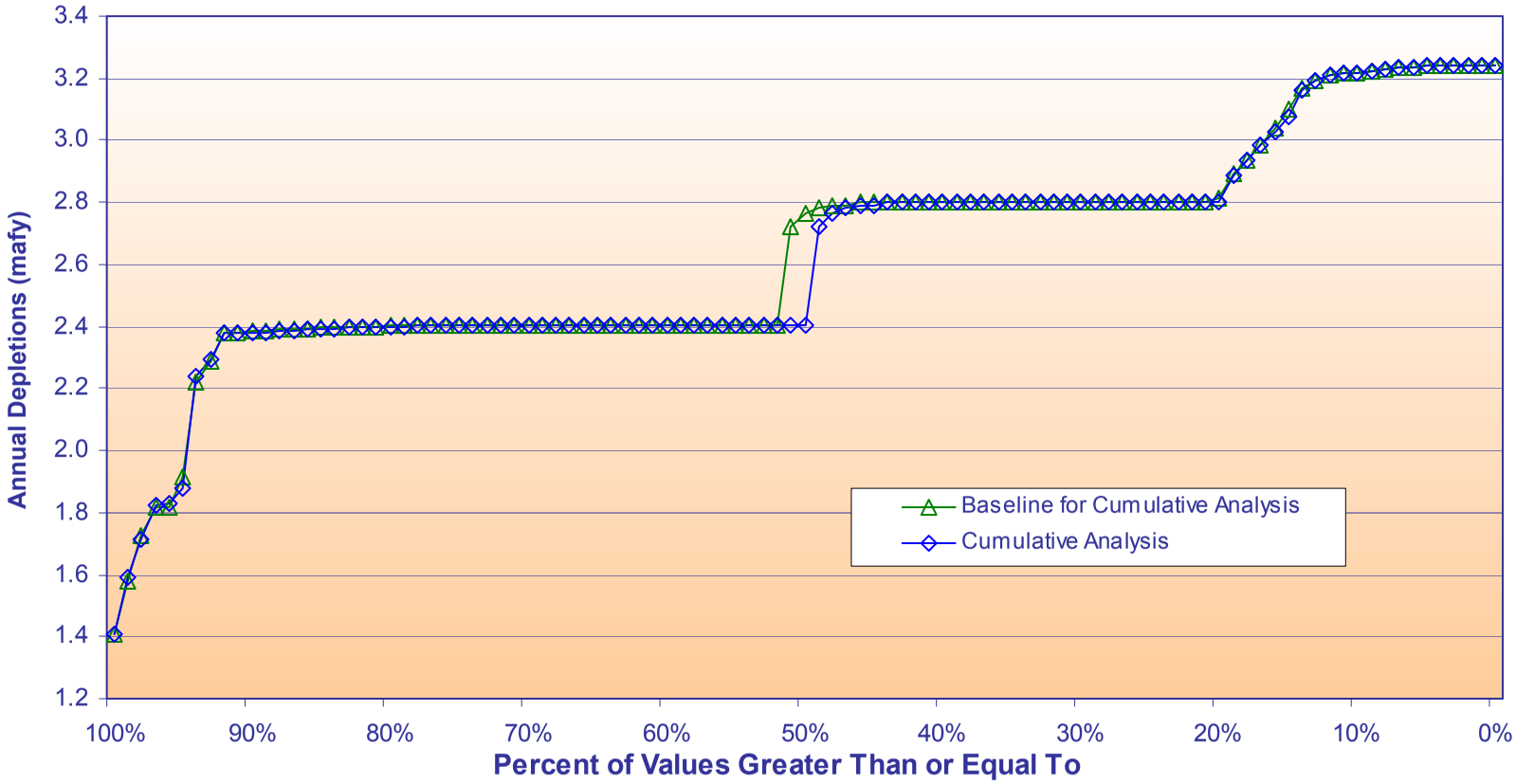


Figure 4.6-4
Arizona Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2076



4.6.1.2 COMPARISON OF BASELINE TO CUMULATIVE ANALYSIS

Figure 4.6-5 provides a comparison of the 90th, 50th and 10th percentile values for Arizona's modeled depletions under the Baseline conditions to those of the Cumulative Analysis conditions. As depicted in Figure 4.6-5, there is little difference in the 90th percentile lines resulting from the Cumulative Analysis conditions as compared to those of the Baseline conditions. Both 90th percentile lines generally coincide with Arizona's full surplus depletion schedule through year 2044. After year 2044, both 90th percentile lines occasionally fall below the full surplus schedule. Nevertheless, both 90th percentile lines remain close to Arizona's depletion schedule during full surplus water supply conditions and generally at or above 3.0 mafy.

The 50th percentile lines for the Baseline and Cumulative Analysis conditions are identical to each other through year 2026 and coincide with Arizona's normal depletion schedule during this period. After year 2026, the 50th percentile values for the Cumulative Analysis Conditions fall due to the increasing probability of Level 1 shortage condition deliveries. The 50th percentile line for the Baseline Conditions continues to coincide with the normal depletion schedule through year 2027, one year more than under the Cumulative Analysis. After 2028, the 50th percentile lines for the Baseline Conditions also falls due to the increasing probability of the Level 1 shortages conditions, under this modeled scenario. The 50th percentile values for the Baseline and Cumulative Analysis conditions remain at approximately 2.4 mafy after year 2028.

The 10th percentile lines for the Baseline and the Cumulative Analysis conditions are essentially at or above Arizona's normal depletion schedule through year 2010. After 2010, the 10th percentile values of Cumulative Analysis Conditions fall below the normal depletion schedule to approximately 2.4 mafy, an indication of the occurrence of more frequent Level 1 shortage condition delivery. The 10th percentile values observed under the Baseline Conditions remain at or above Arizona's normal depletion schedule through year 2013. After 2010, the 10th percentile values of Cumulative Analysis Conditions fall below the normal depletion schedule to approximately 2.4 mafy, an indication of the occurrence of more frequent Level 1 shortage condition delivery. The 10th percentile lines for the Baseline and the Cumulative Analysis conditions at approximately 2.4 mafy until 2054 and 2056, respectively and then fall below 2.4 mafy, due to increasing frequency of Level 2 shortage condition deliveries.

Figures 4.6-2, 4.6-3 and 4.6-4 present comparisons of the cumulative distribution of Arizona's depletions under the Baseline and the Cumulative Analysis conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016), the 60-year period that follows the Interim Surplus Guidelines (years 2017 to 2076), and the entire 75-year period of analysis (years 2002 to 2076), respectively. These graphs best illustrate the frequency that different amounts of annual Arizona water deliveries occur over these time frames. Table 4.6-1 provides a summary of the comparison for these three time periods.

Figure 4.6-5
Arizona Modeled Annual Depletions
Comparison of Baseline Conditions to Cumulative Analysis Conditions
90th, 50th and 10th Percentile Values

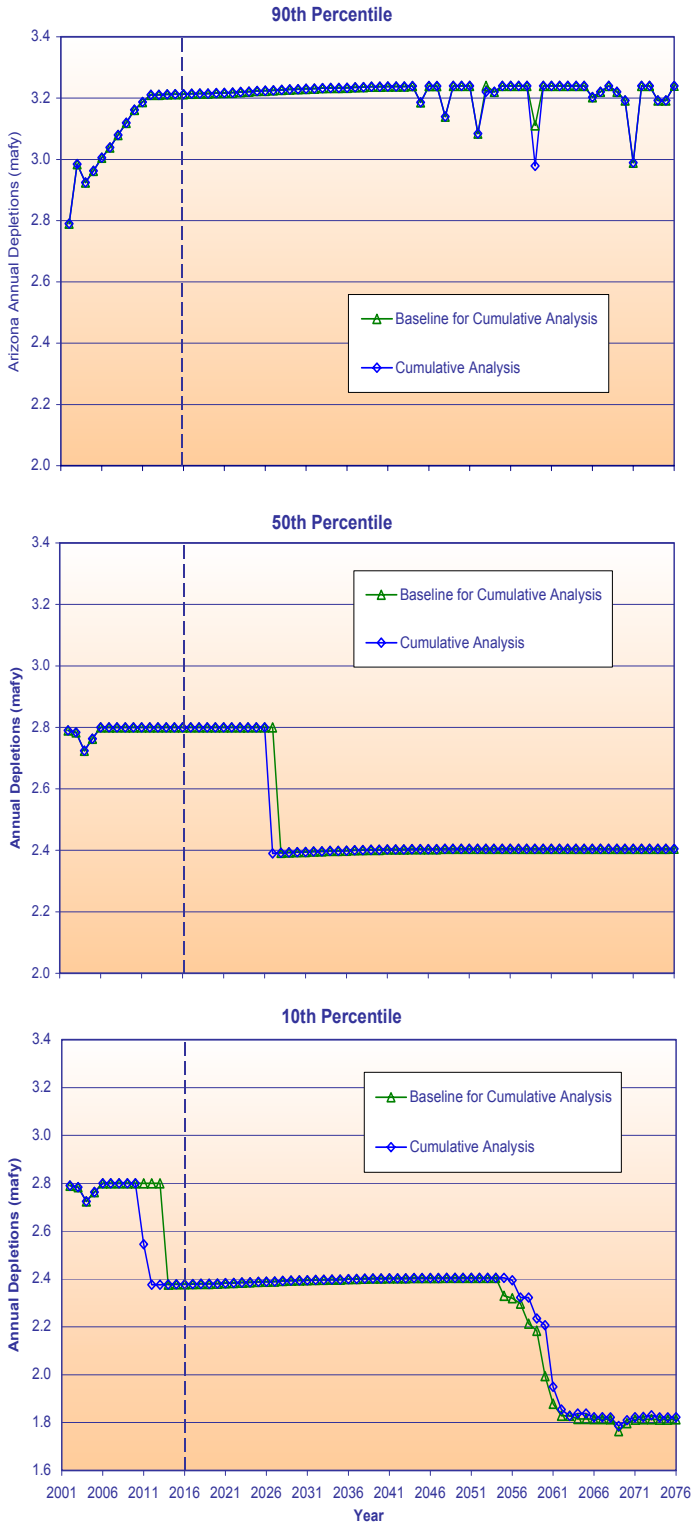


Table 4.6-1
Summary of Arizona Modeled Annual Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions

Alternative/Conditions	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
Baseline	74%	26%	26%	39%	18%	61%	46%	20%	54%
Cumulative Analysis	71%	24%	29%	38%	18%	62%	44%	19%	56%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

The percentage values presented under the column heading labeled "Normal" in Table 4.6-1 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled "Surplus" represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled "Shortage" represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.6.2 STATE OF CALIFORNIA

This section presents the simulated water deliveries to California under the Baseline and Cumulative Analysis conditions. The analysis of California's water supply concentrated on total California water depletions.

4.6.2.1 MODELING RESULTS OF BASELINE

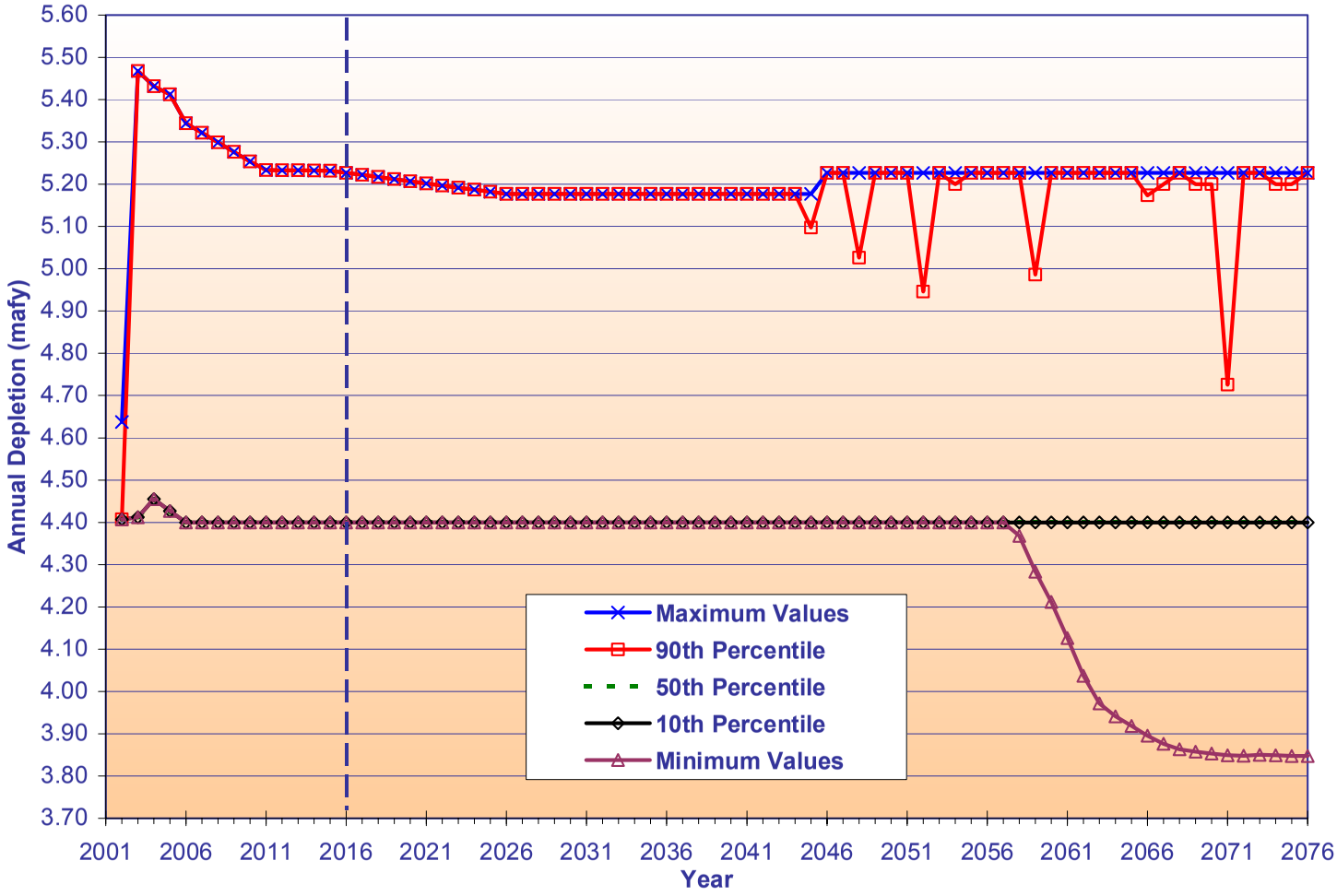
The water deliveries to California are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90th, 50th and 10th percentile rankings of modeled water deliveries to California under the Baseline Conditions are presented in Figure 4.6-6.

The observed 90th percentile values under the Baseline Conditions generally coincide with California's depletion schedule during full surplus water supply conditions through year 2044. The 90th percentile line represents the magnitude of surplus condition deliveries that would be available at least 10 percent of the time throughout the 75-year period of analysis. After year 2044, the 90th percentile line occasionally falls below the full surplus schedule, an indication of the occurrence of more frequent limited surplus conditions.

Under Baseline Conditions, the 50^{th} and 10^{th} percentile lines generally coincide with the normal depletion schedule throughout the 75-year period of analysis, and indication that water deliveries to California would meet or exceed its normal depletion schedule at least 90 percent of the time.

Annual water deliveries to California were observed to fall below California's normal apportionment of 4.4 maf (a Level 2 shortage condition) less than one percent of the time. The minimum observed delivery to California under baseline Conditions was 3.847 mafy.

Figure 4.6-6
California Modeled Annual Depletions Under Baseline Conditions
90th, 50th and 10th Percentile Values



4.6.2.2 COMPARISON OF BASELINE TO CUMULATIVE ANALYSIS

Figure 4.6-7 provides a comparison of the cumulative distribution of the observed California depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016). These graphs are best used to represent the frequency that different magnitude annual water deliveries to California occur in the respective period. The results presented in Figure 4.6-7 indicate a 100 percent probability that California's depletions would meet its normal depletion schedule during this period under the Baseline Conditions. The probability that California would receive surplus condition deliveries (any amount greater than 4.4 mafy) during this period under Baseline Conditions was approximately 47 percent. The maximum surplus condition depletions observed under the Baseline Conditions were 5.468 maf during this period.

Figure 4.6-8 provides a comparison of the cumulative distribution of the water deliveries to California under the Cumulative Analysis Conditions to those of the Baseline Conditions for the 60-year period (years 2017 to 2076) that follows the Interim Surplus Guidelines period. The results presented in Figure 4.6-8 indicate an approximate 99 percent probability that water deliveries to California would meet its normal depletion schedule during this period under the Baseline Conditions. Only one trace was observed to fall below the normal depletion schedule, an indication of a Level 2 shortage condition. The minimum delivery observed under this trace was 3.847 maf. The probability that California would receive surplus condition deliveries during this same period under the Baseline Conditions was approximately 18 percent. The maximum surplus condition depletions under the Baseline Conditions were 5.227 maf during this period.

Figure 4.6-9 provides a comparison of the cumulative distribution of the water deliveries to California under the Cumulative Analysis Conditions to those of the Baseline Conditions for the entire 75-year period of analysis (years 2002 to 2076). The results presented in Figure 4.6-9 also indicate an approximate 99 percent probability that water deliveries to California would meet its normal depletion schedule under the Baseline Conditions. Again, only one trace was observed to fall below the normal depletion schedule, an indication of a Level 2 shortage condition. The minimum delivery observed under this trace was 3.847 maf. The probability that California would receive surplus condition deliveries during this same period under the Baseline Conditions was approximately 24 percent. The maximum surplus condition depletions under the Baseline Conditions were 5.468 maf during this period.

Figure 4.6-7
California Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2016

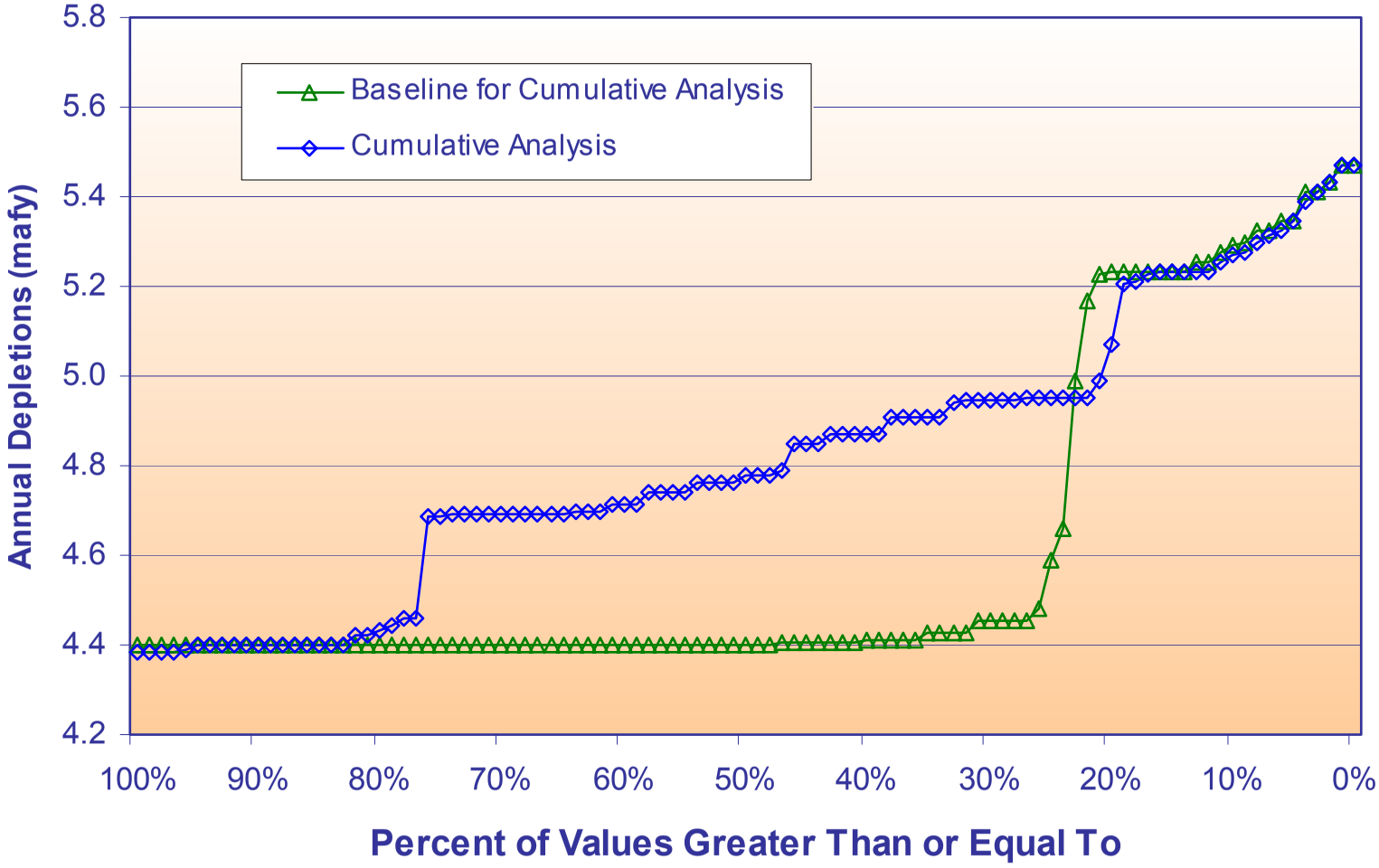


Figure 4.6-8
California Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2017 to 2076

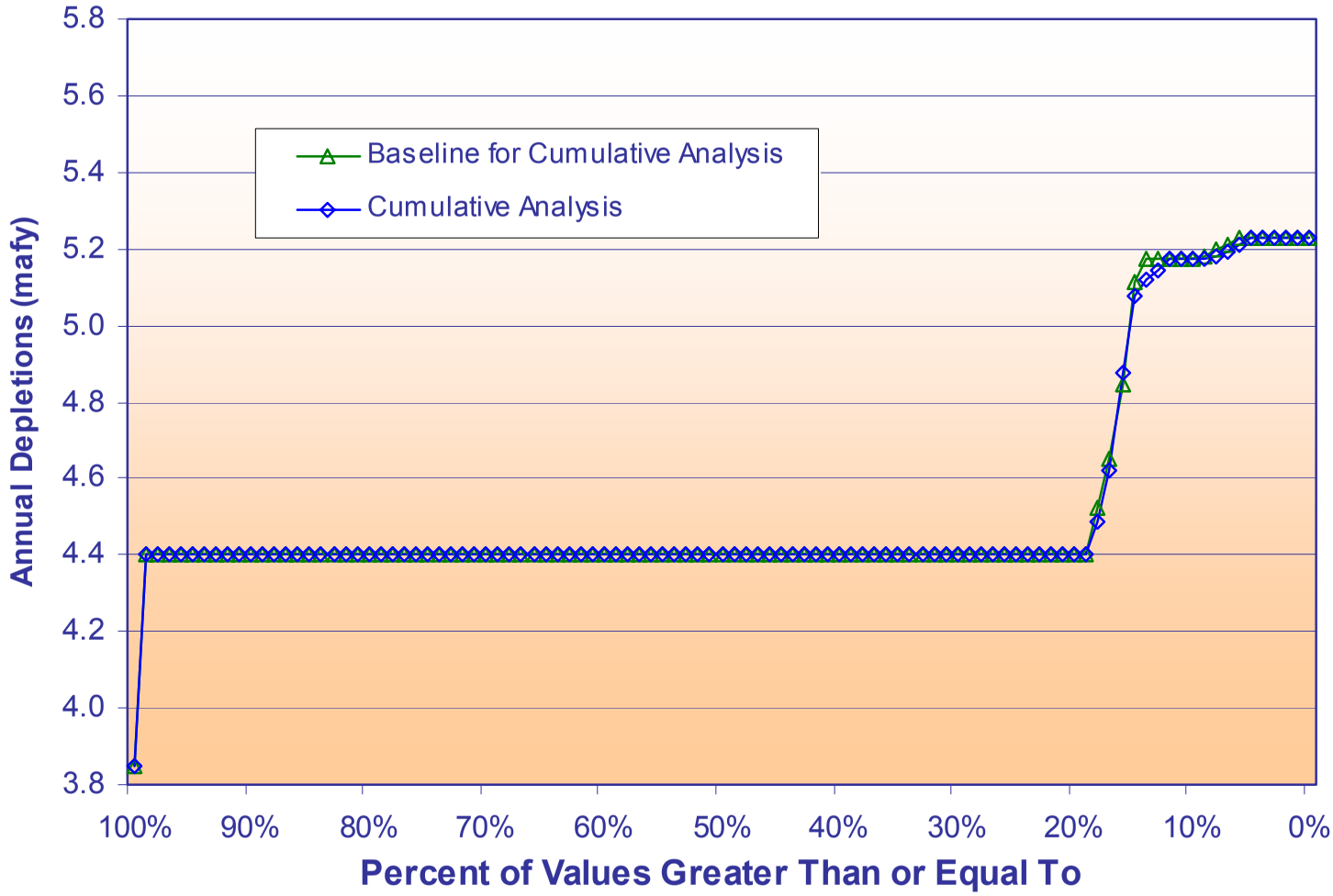


Figure 4.6-9
California Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2076

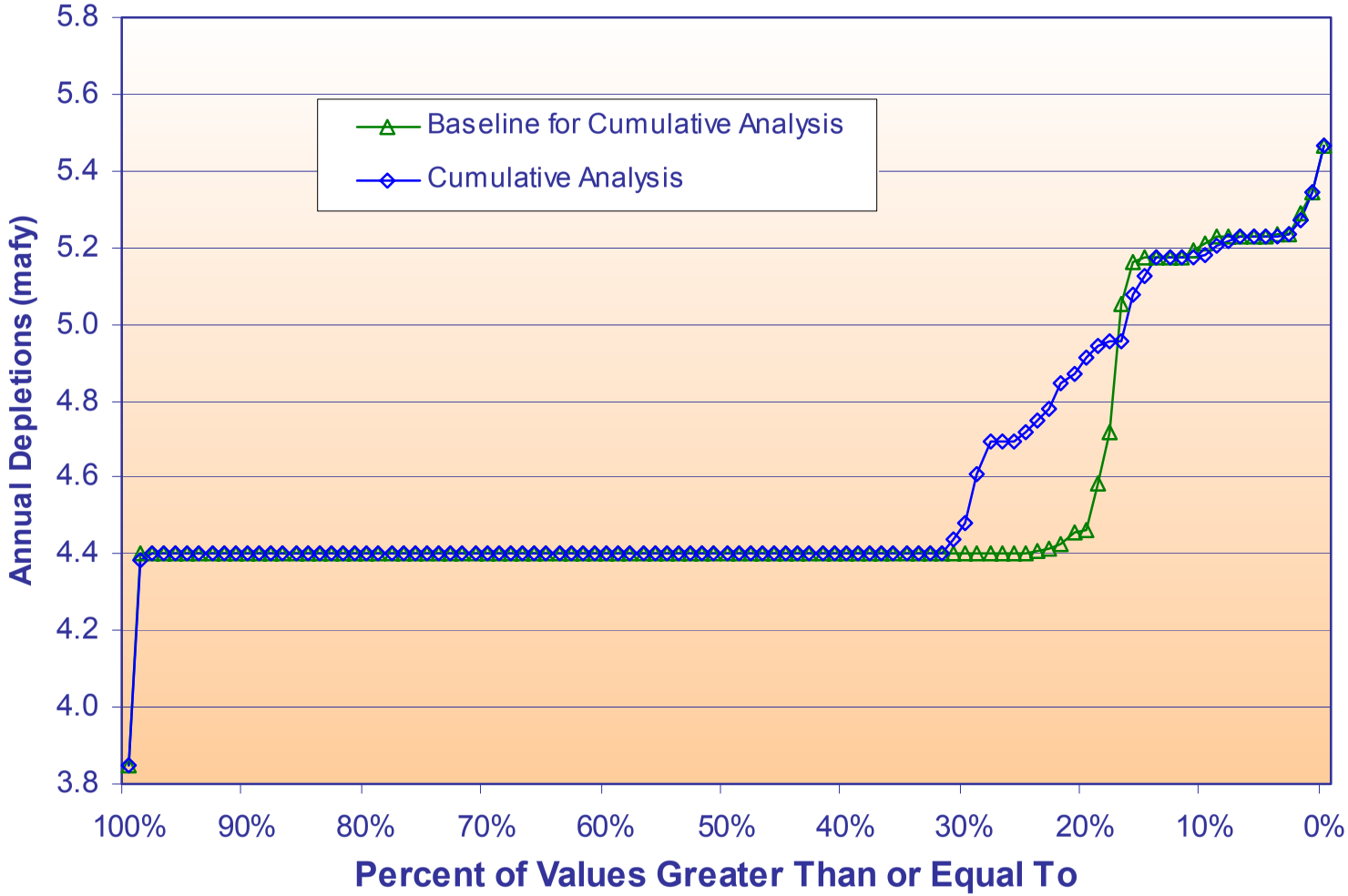
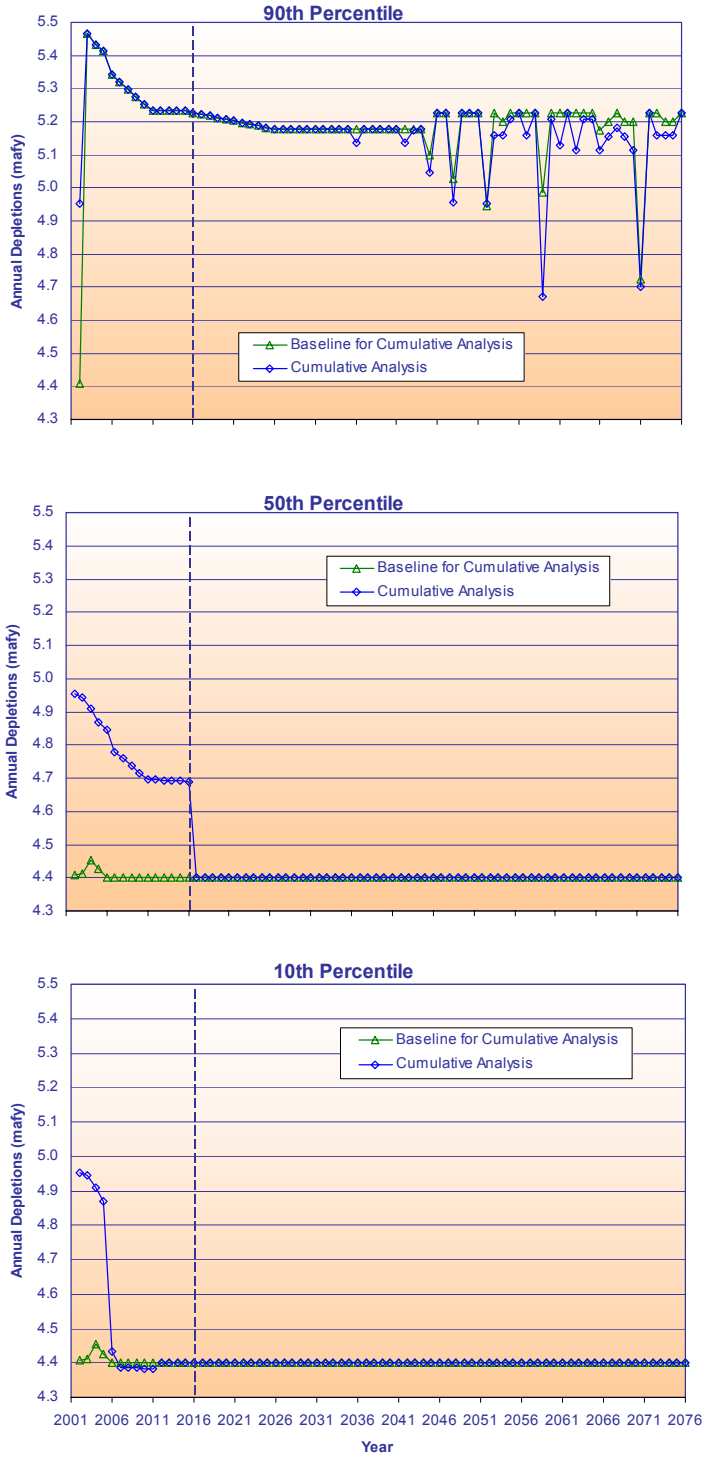


Figure 4.6-10 provides a comparison of the 90th, 50th and 10th percentile values for California's depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions. As depicted in Figure 4.6-10, there is little difference in the 90th percentile values resulting from the Cumulative Analysis Conditions to those of the Baseline Conditions. Both 90th percentile values generally coincide with California's depletion schedule during full surplus water supply conditions through year 2044. After year 2044, both 90th percentile lines occasionally fall below the full surplus schedule suggesting an increased probability of limited surplus conditions.

The 50th percentile line for the Baseline Conditions generally coincide with California's normal depletion schedule throughout the 75-year period of analysis. However, the 50th percentile values for the Cumulative Analysis Conditions are above the normal depletion schedule (above 4.4 mafy) for the initial 15 years (2002 to 2016), an indication of the frequent availability of surplus flows. After 2016, the 50th percentile lines for the Cumulative Analysis Conditions coincide with California's normal depletion schedule.

The 10th percentile line for the Baseline Conditions also coincides with California's normal depletion schedule throughout the 75-year period of analysis. Similar to the median values, the 10th percentile values for the Cumulative Analysis Conditions are above the normal depletion schedule (above 4.4 mafy) for the initial 5 years (2002 to 2006), an indication of the frequent availability of surplus flows during these initial five years. After 2006, the 10th percentile lines for the Cumulative Analysis Conditions coincide with California's normal depletion schedule.

Figure 4.6-10
California Modeled Annual Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
90th, 50th and 10th Percentile Values



Figures 4.6-7, 4.6-8 and 4.6-9 presented comparisons of the cumulative distribution of California's depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions during the Interim Surplus Guidelines period (years 2002 to 2016), the 60-year period that would follow the Interim Surplus Guidelines (years 2017 to 2076) and the entire period of analysis (years 2002 to 2076), respectively. Table 4.6-2 provides a tabular summary and comparison for these three periods.

Table 4.6-2
Summary of California Modeled Annual Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions

	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
Alternative/Conditions	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
Baseline	100%	47%	0%	99%	18%	1%	99%	24%	1%
Cumulative Analysis	95%	83%	5%	99%	18%	1%	98%	31%	2%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

The percentage values presented under the column heading labeled “Normal” in Table 4.6-2 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled “Surplus” represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled “Shortage” represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.6.3 STATE OF NEVADA

This section presents the simulated water deliveries to Nevada under the Baseline and Cumulative Analysis conditions. The analysis of Nevada's water supply concentrated on total Nevada water depletions.

4.6.3.1 MODELING RESULTS OF BASELINE

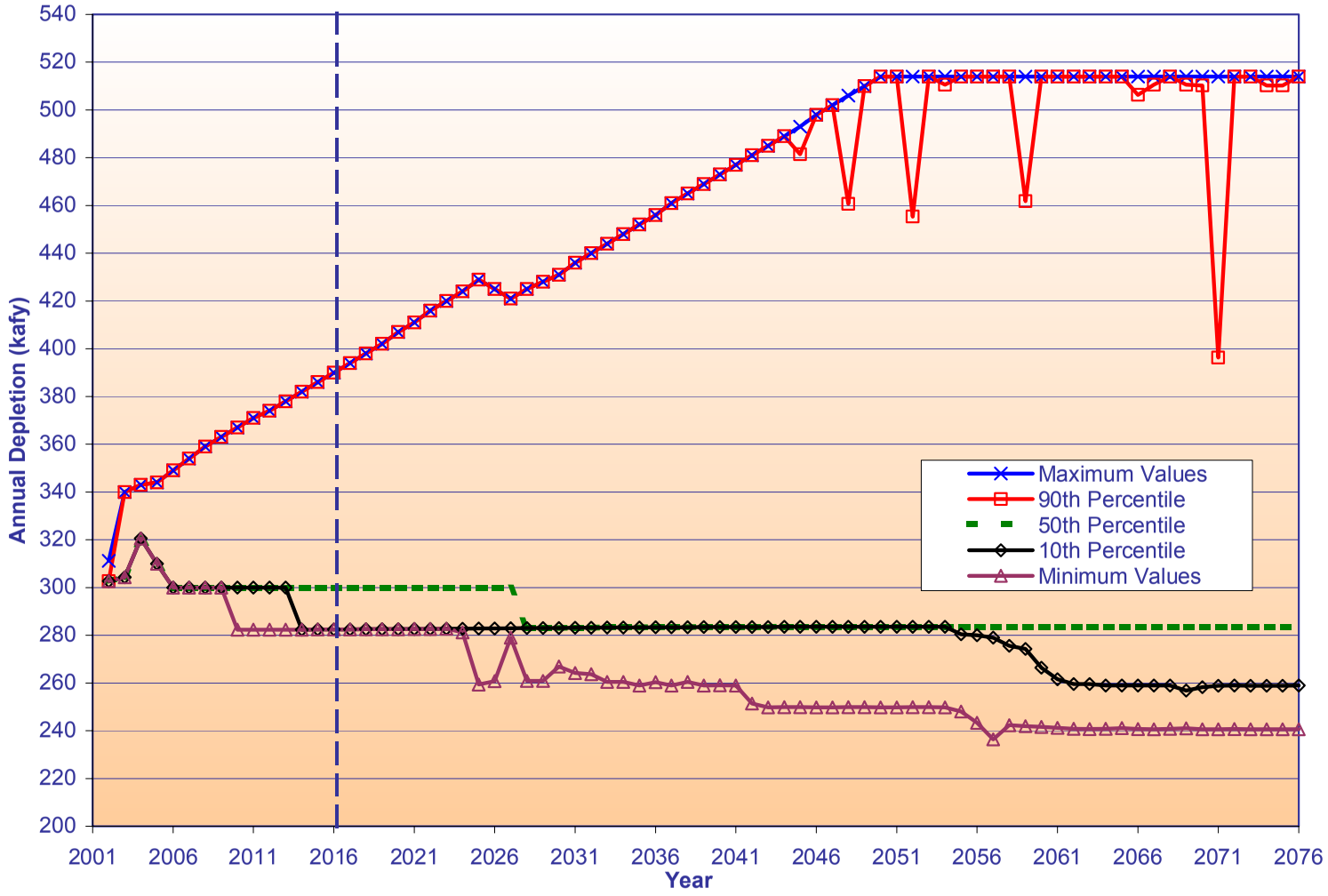
The water deliveries to Nevada are projected to fluctuate throughout the 75-year period of analysis reflecting variations in hydrologic conditions. The 90^{th}, 50^{th} and 10^{th} percentile ranking of modeled water deliveries to Nevada under the Baseline Conditions is presented in Figure 4.6-11.

The 90^{th} percentile values generally coincide with Nevada’s normal depletion schedule under Baseline Conditions through year 2047. After year 2047, the 90^{th} percentile values occasionally fall below the full surplus schedule, an indication of the occurrence of more frequent limited surplus conditions.

From 2002 through 2027, under Baseline Conditions, the 50th percentile line for Nevada coincides with the normal depletion schedule. After 2027, the 50th percentile line coincides with Nevada's Level 1 shortage condition depletion schedule (approximately 280 kafy).

From 2002 through 2013, under Nevada Baseline Conditions, the 10th percentile line for Nevada also coincides with the normal depletion schedule. From 2013 to 2054, the 10th percentile line coincides with Arizona's Level 1 shortage condition depletion schedule. After 2054, under Baseline Conditions, the 10th percentile begins to fall below 280 mafy, an indication of frequent Level 2 shortage conditions. Under Baseline Conditions, deliveries to Nevada below 280 kaf occurred less than seven percent of the time during the 75-year period.

Figure 4.6-11
Nevada Modeled Annual Depletions Under Baseline Conditions
90th, 50th and 10th Percentile Values



4.6.3.2 COMPARISON OF BASELINE TO CUMULATIVE ANALYSIS

Figure 4.6-12 provides a comparison of the cumulative distribution of Nevada's depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions during the Interim Surplus Guidelines period (years 2002 to 2016). This graph is best used to represent the frequency that different magnitude water deliveries to Nevada occurred during the 15-year Interim Surplus Guidelines period. The results presented in Figure 4.6-12 indicate a 95 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the Baseline Conditions. The probability that Nevada would receive surplus condition deliveries under the Baseline Conditions during this period was approximately 47 percent. The maximum surplus condition depletions under the Baseline Conditions were 390 kaf during this period. The probability that Nevada would receive shortage condition deliveries under Baseline Conditions was five percent. The minimum shortage condition depletion was 282.3 kaf.

Figure 4.6-13 provides a comparison of the cumulative distribution of the water deliveries to Nevada under the Cumulative Analysis Conditions to those of the Baseline Conditions for the 60-year period (years 2017 to 2076) that would follow the Interim Surplus Guidelines period. The results presented in Figure 4.6-13 indicate a 40 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the Baseline Conditions. The probability that Nevada would receive surplus condition deliveries during this same period under the Baseline Conditions was approximately 18 percent. The maximum surplus condition depletions under the Baseline Conditions were 514 kaf during this period. The probability that Nevada would receive shortage condition deliveries was approximately 60 percent. The minimum shortage condition depletion during this period was 236.3 kaf.

Figure 4.6-14 provides a comparison of the cumulative distribution of the water deliveries to Nevada under the Cumulative Analysis Conditions to those of the Baseline Conditions for the entire 75-year period of analysis (years 2002 to 2076). The results presented in Figure 4.6-14 indicate a 51 percent probability that water deliveries to Nevada would meet or exceed its normal depletion schedule during this period under the Baseline Conditions. The probability that Nevada would receive surplus condition deliveries during this same period under the Baseline Conditions was approximately 24 percent. The maximum surplus condition depletions under the Baseline Conditions were 514 kaf during this period. The probability that Nevada would receive shortage condition deliveries was approximately 49 percent. The minimum shortage condition depletion during this period was 236.3 kaf.

Figure 4.6-12
Nevada Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2016

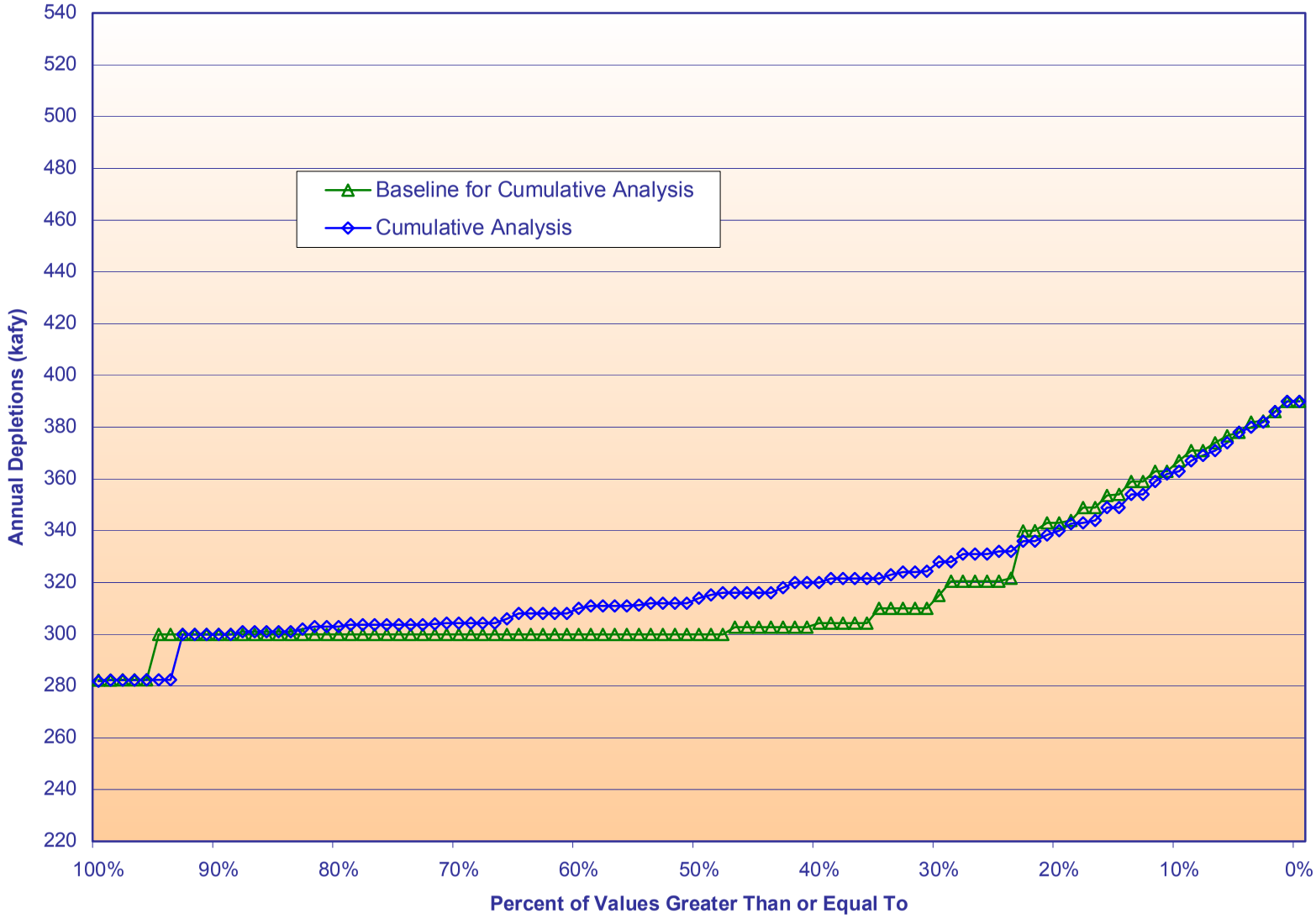


Figure 4.6-13
Nevada Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2017 to 2076

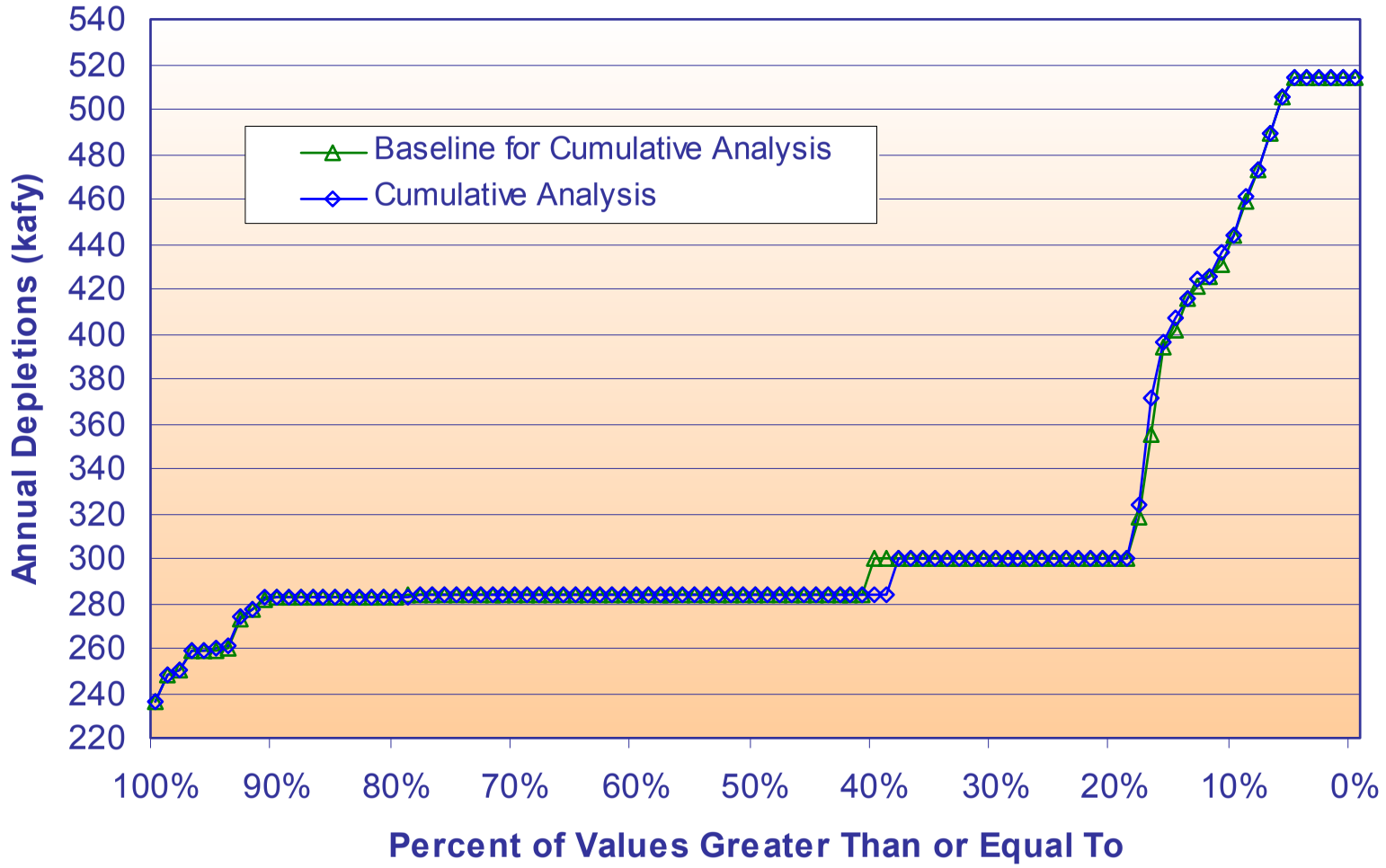


Figure 4.6-14
Nevada Modeled Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
Years 2002 to 2076

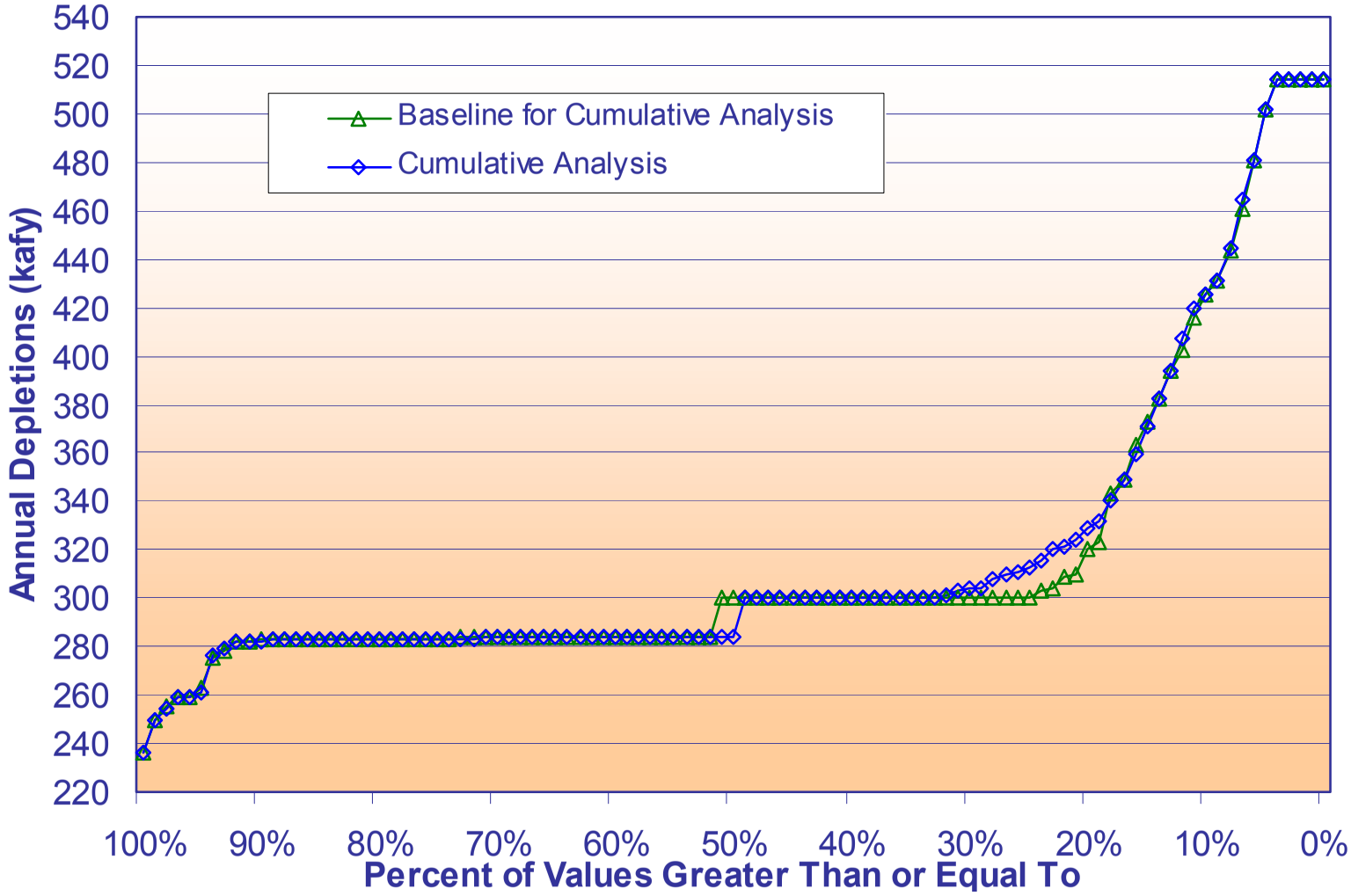


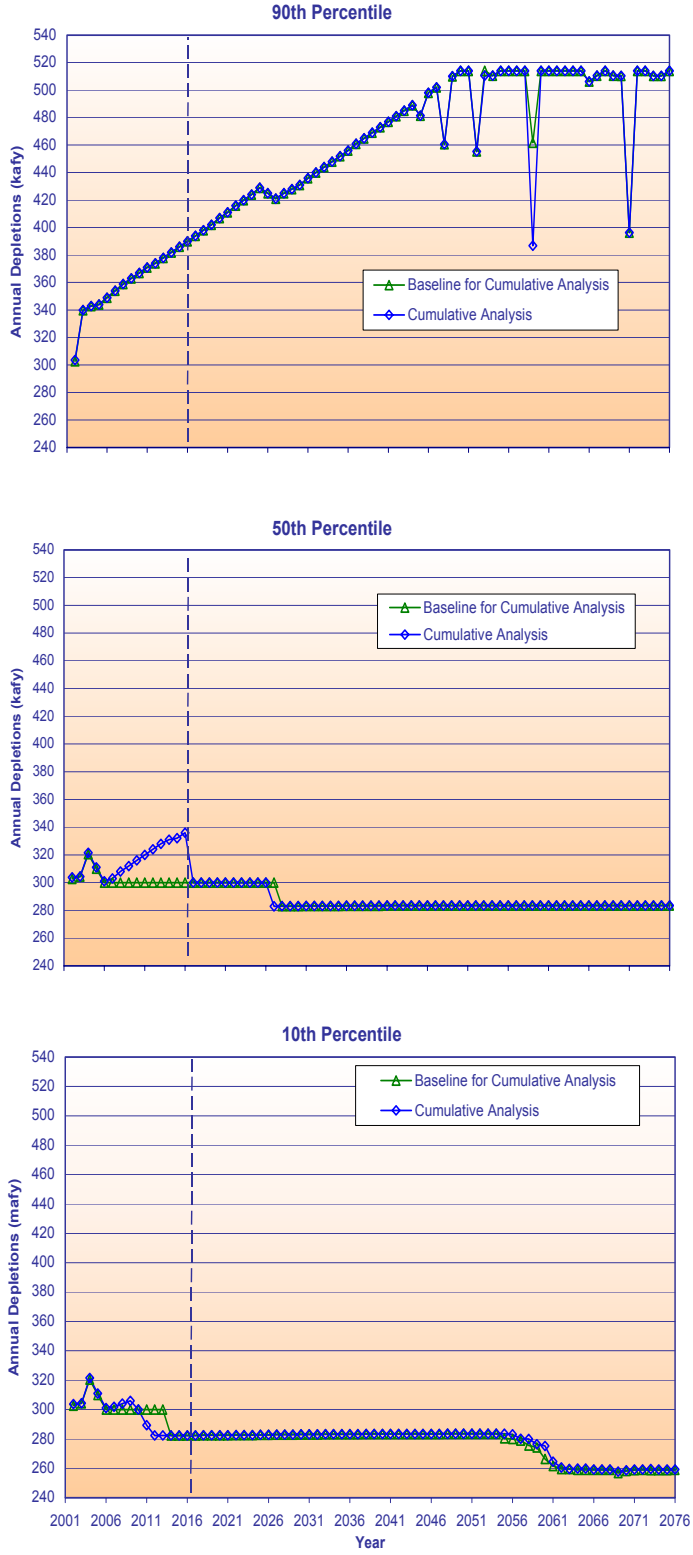
Figure 4.6-15 provides a comparison of the 90th, 50th and 10th percentile values for Nevada's depletions under the Baseline Conditions to those of the Cumulative Analysis Conditions. As noted in Figure 4.6-15, there is little difference between the 90th percentile values resulting from the Cumulative Analysis Conditions and those of the Baseline Conditions. Both 90th percentile lines generally coincide with Nevada's normal depletion schedule under Baseline Conditions through year 2047. After year 2047, both 90th percentile lines occasionally fall below the full surplus schedule, an indication of limited surplus conditions.

From 2002 through 2027, under Baseline Conditions, the 50th percentile line for Nevada coincides with the normal depletion schedule. After 2027, the 50th percentile line coincides with Nevada's Level 1 shortage condition depletion schedule (approximately 280 kafy). Under the Cumulative Analysis Conditions, the 50th percentile line is generally at or above Nevada's normal depletion schedule from year 2002 to 2016, an indication of better than average probability of the availability of limited surplus condition deliveries during this 15-year period. From 2016 to 2026, the 50th percentile values for Nevada under the Cumulative Analysis Conditions coincides with Nevada's normal depletion schedule. After 2026, the 50th percentile line under the Cumulative Analysis Conditions also falls to and thereafter coincides with Nevada's Level 1 shortage condition depletion schedule.

As noted in Figure 4.6-15, there is little difference between the 10th percentile values resulting from the Cumulative Analysis Conditions and those of the Baseline Conditions. From 2002 through 2013, under Baseline Conditions, the 10th percentile line for Nevada also coincides with the normal depletion schedule. From 2013 to 2054, the 10th percentile line of the Baseline Conditions coincides with Nevada's Level 1 shortage condition depletion schedule. After 2054, under Baseline Conditions, the 10th percentile begins to fall below 280 kafy. From 2002 through 2010, under Cumulative Analysis Conditions, the 10th percentile line for Nevada also coincides with the normal depletion schedule. However, this is approximately three years less than under the Baseline Conditions. From 2010 to 2059, the 10th percentile line coincides with Nevada's Level 1 shortage condition depletion schedule. After 2059, under Cumulative Analysis Conditions, the 10th percentile begins to fall below 280 kafy, an indication of the occurrence of more frequent Level 2 shortage condition deliveries.

Deliveries to Nevada below 280 kafy (Level 2 Shortage Condition deliveries) occurred less than seven percent of the time during the 75-year period of analysis under both the Baseline and Cumulative Analysis conditions.

Figure 4.6-15
Nevada Modeled Annual Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions
90th, 50th and 10th Percentile Values



Figures 4.6-12, 4.6-13 and 4.6-14 presented comparisons of the cumulative distribution of Nevada's depletions under the Cumulative Analysis Conditions to those of the Baseline Conditions during the 15-year Interim Surplus Guidelines period (years 2002 to 2016), the 60-year period that would follow the Interim Surplus Guidelines (years 2017 to 2076), and the entire 75-year period of analysis (years 2002 to 2076), respectively. These graphs represent the frequency that different magnitude annual deliveries to Nevada occurred under each respective period. Table 4.6-3 provides a tabular summary of the comparison for these two periods.

Table 4.6-3
Summary of Nevada Modeled Annual Depletions
Comparison of Cumulative Analysis Conditions to Baseline Conditions

	Years 2002 to 2016			Years 2017 to 2076			Years 2002 to 2076		
Alternative/Conditions	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage	Normal*	Surplus	Shortage
Baseline	95%	47%	5%	40%	18%	60%	51%	24%	49%
Cumulative Analysis	93%	88%	7%	38%	18%	62%	49%	32%	51%

*The values under normal represent the total percentage of time that depletions would be at or above the normal depletion conditions.

The percentage values presented under the column heading labeled “Normal” in Table 4.6-3 represent the total percentage of time that depletions under the noted conditions would be at or above the normal depletion schedule amount. The values presented under the column labeled “Surplus” represent the total percentage of time that depletions under the noted conditions exceed the normal depletion schedule amount. The values presented under the column labeled “Shortage” represent the total percentage of time that depletions under the noted conditions would be below the normal depletion schedule amount.

4.6.4 UPPER BASIN STATES

There are no specific criteria in the *Law of the River* for surplus or shortage condition water deliveries to users within the Upper Basin states. The normal depletion schedule of the Upper Basin states would be met under both the Baseline and Cumulative Analysis conditions. The exceptions are potential reductions to certain Upper Basin users whose diversions are located upstream of Lake Powell. For these users, the potential reductions would be attributed to dry hydrologic conditions and inadequate regulating reservoir storage capacity upstream of their diversions.

The proposed water transfers were determined to have no effect on water deliveries to the Upper Basin states, including the Upper Basin Tribes. Therefore, detailed analyses were not necessary for the Upper Basin states' water supply.

5.0 COLORADO RIVER SALINITY

This section addresses potential changes in salinity concentrations of Colorado River water from Lake Mead to Imperial Dam. The water transfers under the Secretarial Implementation Agreement could affect the salinity of Colorado River water, which affects municipal and industrial uses in the Lower Basin. "Salinity" refers to "total dissolved solids" (TDS), consisting of all of the soluble constituents dissolved in a river. The two terms are used interchangeably in this document.

5.1 BACKGROUND

The Colorado River increases in salinity from its headwaters to its mouth, carrying an average salt load of nine million tons annually past Hoover Dam. Approximately half (47 percent) of the salinity concentration is naturally caused and 53 percent of the concentration results from human activities including agricultural runoff, evaporation and municipal and industrial sources (Forum, 1999).

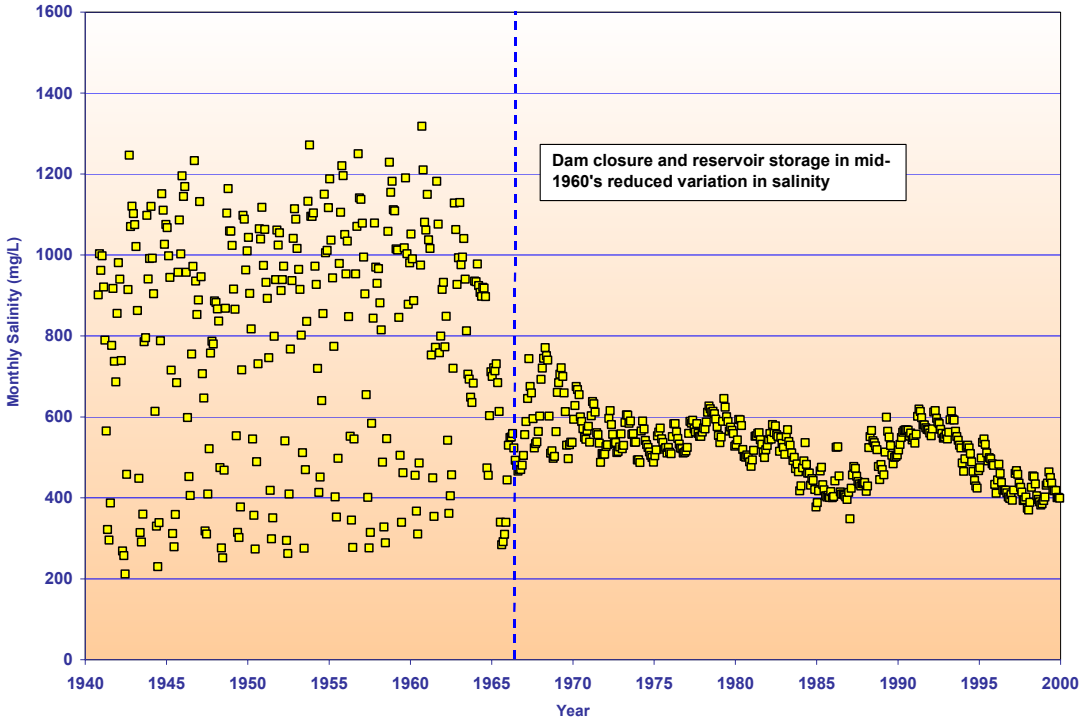
5.1.1 HISTORICAL SALINITY

Salinity of the river has fluctuated significantly over the period of record 1941 through 1997. Below Hoover Dam, annual salinity concentrations have ranged from 833 milligrams per liter (mg/l) in 1956 to 517 mg/l in 1986. However, the maximum monthly fluctuation in any year is approximately 50 mg/l. Salinity of the river is influenced by numerous factors including reservoir storage, water resource development (and associated return flows), salinity control, climatic conditions and natural runoff.

The impact of reservoir storage has almost eliminated seasonal fluctuations in salinity. As shown in Figure 5-1, the salinity of the river varied by as much as 1000 mg/l prior to the construction of Glen Canyon Dam in 1961 (Interior, 1999). By the 1980s, that variation was reduced to about 200 mg/l due to the mixing and dampening effect of the large volume of storage in Lake Powell.

Annual variations in salinity continue to occur, caused primarily by natural, climatic variations in precipitation and snowmelt runoff. The relationships between mainstream flows and salinity are described in the Interim Surplus Criteria Final EIS (USBR 2000, Pages 3.5-4 and 3.5-5).

Figure 5-1
Historical Monthly Salinity Concentrations Below Glen Canyon Dam (1940-1995)



5.1.2 REGULATORY REQUIREMENTS AND SALINITY CONTROL PROGRAM

In 1972, the EPA promulgated regulations requiring water quality standards for salinity, numeric criteria and a plan of implementation for salinity control. The Seven Colorado River Basin States, acting through the Forum, adopted numeric criteria for flow-weighted average annual salinity, at three points on the river as shown below:

Below Hoover Dam	723 mg/l
Below Parker Dam	747 mg/l
At Imperial Dam	879 mg/l

These criteria applied only to the lower portion of the Colorado River from Hoover Dam to Imperial Dam. Below Imperial Dam, salinity control is a federal responsibility to meet the terms of Minute 242 to the U.S.-Mexico Water Treaty of 1944. Minute 242 requires that salinity concentrations upstream of Mexico's diversion be no more than

115 mg/l $\pm$ 30 mg/l TDS higher than the average salinity of water arriving at Imperial Dam.

In 1974, the Colorado River Basin Salinity Control Act (P.L. 93-320) was enacted. The Act contains two Titles: 1) Title I provides the means for the United States to meet its commitment to Mexico; and 2) Title II creates a salinity control program within the Colorado River Basin in order that the numeric criteria will be met while the Basin States continue to develop their apportionment of Colorado River water.

It is estimated that 1,478,000 tons of salt will need to be removed or prevented from entering the Colorado River system to maintain the salinity concentration at or below the criteria through 2015. To date, over 720,000 tons have been controlled and an additional 756,000 tons will need to be controlled through 2015.

The federal/state salinity control program is designed to maintain the flow-weighted average annual salinity at or below the numeric criteria. The program is not intended to counteract short-term salinity variations resulting from short-term hydrologic conditions. Federal regulations provide for temporary increases above the criteria due to natural variations in flows.

The seven Basin States, acting through the Forum, review the numeric criteria and plan of implementation every three years and makes changes in the plan of implementation to accommodate changes salinity. The latest review was in 1999 (Forum, 1999). The review is currently undergoing adoption by the Basin States and approval by EPA.

At each triennial review, the current and future water uses are analyzed for their impact on the salinity of the Colorado River. If needed, additional salinity control projects are added to the plan to assure compliance with the standards.

The need for one or more additional salinity control projects is determined by monitoring the salinity of the river and making near-term projections of changes in diversions from and return flows to the river system. When an additional project is needed, it is selected from a list of potential projects that have undergone feasibility investigation. A proposal to implement the project is made through coordination with the Basin States. In selecting a project, considerable weight is given to the relative cost-effectiveness of the project. Cost-effectiveness is measured as the cost per ton of salt removed from the river system or prevented from entering the river system. Other factors are also considered, including environmental feasibility and institutional acceptability.

5.2 METHODOLOGY

Reclamation's model for salinity is used to create salinity reduction targets for the Colorado River Basin Salinity Control Program (SCP). To do this, the model simulates the effects of scheduled water development projects to predict future salinity levels. This data is then used to compute the amount of new salinity control projects required to reduce the river's salinity to meet the standards at some point in the future (2015). The model itself does not include future salinity controls because implementation schedules for future salinity control projects are not fixed and vary considerably. The salinity control standards are purposefully designed to be long-term (nondegradation) goals, rather than exceedance standards used for industry or drinking water.

By definition, the SCP is designed to be flexible enough to adjust for any changes caused by the water transfers and other operational changes addressed in this Technical Memorandum. Thus, it could be concluded that there would be no change in compliance with the standards from the implementation of the operational changes. However, if a change in river operation affects one of the factors influencing salinity (for example, if it changes the diluting effect of river flow on dissolved minerals) then that change in operation could increase or decrease the burden of the SCP to maintain the salinity standards on the river.

Such an increase or decrease can be inferred from the results of the salinity model operation in the following manner. For each future scenario (e.g., No Action Conditions or Implementation Agreement Conditions) the model produces different future TDS values, year by year, if the scenarios differ in their influence on river salinity. Thus the tendency of a future scenario to increase or decrease salinity relative to another scenario could be detected by comparing their modeled TDS values.

This approach was used to analyze the effect of the water transfers relative to no action, and of the cumulative conditions relative to the Baseline for Cumulative Analysis. Referring again to the assumption that the SCP would maintain the salinity control criteria listed above, the results are expressed in terms of the departures from the numeric criteria prior to any action by the Forum to address the changes.

5.3 ANALYSIS OF WATER TRANSFERS

The effect of the Implementation Agreement on the salinity of Colorado River water is expressed in terms of its differences from No Action Conditions. As discussed above under Methodology, the salinity under No Action Contusions is assumed to be at the numeric standards for the three locations along the lower Colorado River, and the effects of the water transfers are expressed as a departure from the numeric standards.

The differences in salinity concentration between Implementation Agreement Conditions and No Action Conditions are presented in Table 5-1. The "Value" column for each measuring station and year cited shows 1) the TDS concentration assumed or the No Action Condition, and 2) the TDS concentration that would occur with the water transfers prior to any action by the Forum to address the changes. The "Effects" column shows the incremental change, with a negative entry indicating a reduction in TDS concentration.

As shown on Table 5-1 the Implementation Agreement would have no significant effect at Hoover Dam and Parker Dam. However, at Imperial Dam, the Implementation Agreement would tend to cause an increase in TDS concentration of several parts per million, in effect placing more of a burden on future salinity control projects.

Table 5-1
Estimated Effects on Colorado River Salinity

Condition Analyzed	Effect of Condition Analyzed					
	Hoover Dam		Parker Dam		Imperial Dam	
	Value	Effect	Value	Effect	Value	Effect
2016						
No Action	723	NA	747	NA	879	NA
Implementation Agreement	724	1	748	1	886	7
Baseline for Cumulative Analysis	723	NA	747	NA	879	NA
Cumulative analysis	721	-2	746	-1	879	-4
2050						
No Action	723	NA	747	NA	879	NA
Implementation Agreement	723	0	748	1	887	8
Baseline for Cumulative Analysis	723	NA	747	NA	879	NA
Cumulative analysis	723	0	746	-1	870	-9
2076						
No Action	723	NA	747	NA	879	NA
Implementation Agreement	723	0	748	1	887	8
Baseline for Cumulative Analysis	723	NA	747	NA	879	NA
Cumulative analysis	723	0	748	1	869	-10

5.4 ANALYSIS OF CUMULATIVE EFFECTS

The effect of the Cumulative Analysis Conditions on the salinity of Colorado River water is expressed in terms of its differences from Baseline for Cumulative Analysis. As discussed above under Methodology, the salinity under the Baseline for Cumulative Analysis is assumed to be at the numeric standards for the three locations along the lower Colorado River, and the effects of the Cumulative Analysis Conditions are expressed as a departure from the numeric standards.

The differences in salinity concentration between Cumulative Analysis Conditions and Baseline for Cumulative Analysis are also presented in Table 5-1. The "Value" column for each measuring station and year cited shows 1) the TDS concentration assumed for the Baseline for Cumulative Analysis, and 2) the TDS concentration that would occur under the Cumulative Analysis Conditions prior to any action by the Forum to address the changes. The "Effects" column shows the incremental change, with a negative entry indicating a reduction in TDS concentration.

As shown on Table 5-1 the Cumulative Analysis Conditions would have no significant effect at Hoover Dam and Parker Dam. However, at Imperial Dam, the Cumulative Analysis Conditions would tend to cause a reduction in salinity. In other words, the Cumulative Analysis scenario would reduce the burden on future salinity control projects. These results show that the tendency of the water transfers to increase salinity would be more than compensated for by other actions included in the Cumulative Analysis Conditions.

Attachment A
Lower Basin Normal Depletion Schedules

As discussed in Section 2.0, four operational scenarios were modeled, labeled the No Action, Implementation Agreement, Baseline for Cumulative Analysis, and Cumulative Analysis scenarios. The primary areas of difference between the scenarios lie in the assumed schedules under normal conditions for certain California entities and the criteria used to determine surplus conditions. The differences in surplus determination are explained in Attachment C. This attachment focuses on the differences in the schedules under normal conditions (i.e., the "normal schedules").

Within each state, individual entities (or aggregations of individual entities) are represented in the model and normal schedules are provided as input. Since this DEIS is primarily concerned with the effect of the water transfers within California as defined by the Quantification Settlement Agreement (QSA), the schedules for the entities in Arizona and Nevada are consistent for all scenarios modeled. Similarly, since the QSA involves only the Metropolitan Water District (MWD), the Imperial Irrigation District (IID), and the Coachella Valley Water District (CVWD), all other California entities' schedules (with the exception of the Palo Verde Irrigation District (PVID)) are consistent for all of the scenarios. PVID's schedule varies only under the Cumulative Analysis scenario.

This leads to a logical presentation, which breaks out those entities in California (MWD, IID, CVWD and PVID) whose normal depletions may change between the operational scenarios. For this presentation, all California entities represented in the model except MWD, IID, CVWD, and PVID are termed "California Other Users".

Normal Schedules Consistent for All Operational Scenarios

As previously mentioned, the normal schedules for all entities within the states of Arizona and Nevada, as well as for the California Other Users, are assumed to be consistent for all operational scenarios.

The normal schedules used to model the normal depletions for the states of Arizona and Nevada are the same as those used in the Interim Surplus Criteria Final Environmental Impact Statement (Reclamation, 2000), extended to year 2076. These schedules are presented in Tables A-1 and A-2.

The normal schedules used for the California Other Users (as defined in this report) were the same as those used in the Interim Surplus Criteria Final Environmental Impact Statement (Reclamation, 2000), extended to year 2076. These schedules are presented in Table A-3.

Under the Law of the River, the Lower Division states' depletions total 7.5 maf under normal conditions. Of that total, California, Arizona, and Nevada are apportioned 4.4 maf, 2.8 maf, and 0.3 maf respectively; however, any apportionment unused by one state may be used by another state.

Arizona's unused apportionment in years 2002 - 2005 (as shown in Table A-1) has been allocated to MWD and the Southern Nevada Water Authority (SNWA) on a percentage basis (70% and 30% respectively) for all scenarios.

Although the individual schedules for MWD, IID, CVWD, and PVID may vary between scenarios, California's normal depletion schedule totals 4.4 maf in all years after 2005. Furthermore, Lower Division States Normal depletion schedules under all scenarios total 7.5 maf for all years, 2002-2076.

Normal Schedules for the No Action Scenario

Under the No Action scenario, no water transfers are assumed to take place (i.e., no QSA), other than the approximately 110 kaf transfer from the IID - MWD water conservation program under the IID/MWD 1988 Agreement and subsequent modifications in 1989 (the "1988/89 Agreements"). Table A-4 presents the normal depletion schedules for California under these assumptions.

Normal Schedules for the Implementation Agreement Scenario

Under the Implementation Agreement scenario, water transfers (in addition to the approximately 110 kaf transfer from the IID - MWD water conservation program under the 1988/89 Agreements) are assumed to take place consistent with the QSA. Table A-5 presents the normal depletion schedules for California under these assumptions.

Normal Schedules for the Baseline for Cumulative Analysis Scenario

Under the Baseline for Cumulative Analysis scenario, no water transfers are assumed to take place (i.e., no QSA), other than the 110 kaf transfer from IID to MWD under the 1988/89 Agreement. Consequently, the depletion schedules for all entities are identical to those used for the No Action scenario.

Normal Schedules for Cumulative Analysis Scenario

Under the Cumulative Analysis scenario, water transfers (in addition to the 110 kaf transfer from IID to MWD under the 1988/89 Agreement) are assumed to take place consistent with the QSA. Furthermore, an additional transfer from PVID to MWD under the Land Management, Crop Rotation, and Water Supply Program in the Palo Verde Irrigation District (PVID/MWD Program) is assumed to take place. Table A-6 presents the normal depletion schedules for California under these assumptions.

Table A-1

State of Arizona – Normal Depletion Schedules (kaf)

Year	CAP	Lake Mead NRA	Kingman	Fort Mohave Indian Res.	Mohave Valley I&DD	Mohave Valley M&I	Havasu NWR	Parker Ag.	Unused Depletion	Town of Parker et. al.	Imperial NWR	Cibola NWR	CRIR	CRIR Pumped	Gila Gravity Main Canal	Cocopah Ind. Res.	City of Yuma	Yuma Co. WUA	Arizona Pumpers	Total Arizona
2002	1,458	0	0	46	25	4	5	14	0	18	9	6	343	0	549	13	25	267	10	2,790
2003	1,447	0	0	50	25	4	5	13	0	19	9	6	351	0	543	13	25	264	10	2,784
2004	1,382	0	0	55	24	4	5	13	0	19	9	6	359	0	537	13	25	262	10	2,724
2005	1,415	0	0	60	24	4	5	13	0	20	9	7	367	0	531	13	25	259	10	2,763
2006	1,447	0	0	63	24	4	5	13	0	21	10	7	376	0	526	13	26	257	10	2,800
2007	1,441	0	0	65	24	4	5	13	0	22	10	7	386	0	521	13	26	255	10	2,800
2008	1,436	0	0	68	23	4	5	13	0	22	10	8	395	0	516	12	26	252	10	2,800
2009	1,431	0	0	70	23	4	5	13	0	23	10	8	405	0	510	12	26	250	10	2,800
2010	1,425	0	0	73	23	4	5	13	0	24	10	8	414	0	505	12	27	248	10	2,800
2011	1,425	0	0	73	22	4	5	12	0	24	10	8	424	0	499	12	27	245	10	2,800
2012	1,424	0	0	73	22	4	5	12	0	24	10	8	434	0	494	12	27	242	10	2,800
2013	1,424	0	0	73	21	4	5	12	0	24	10	8	443	0	487	12	27	239	10	2,800
2014	1,423	0	0	73	20	4	5	12	0	24	10	8	453	0	482	12	27	237	10	2,800
2015	1,422	0	0	73	20	5	5	12	0	24	9	8	463	0	477	12	27	234	10	2,800
2016	1,422	0	0	73	19	5	5	12	0	25	9	8	463	0	476	12	28	234	10	2,800
2017	1,421	0	0	73	19	5	5	12	0	25	9	8	463	0	477	12	28	234	10	2,800
2018	1,420	0	0	73	18	5	5	12	0	26	9	8	463	0	477	12	29	234	10	2,800
2019	1,420	0	0	73	18	5	5	12	0	26	9	8	463	0	476	12	29	234	10	2,800
2020	1,419	0	0	73	17	5	5	12	0	27	9	8	463	0	477	12	30	234	10	2,800
2021	1,418	0	0	73	17	5	5	12	0	27	9	9	463	0	477	12	30	233	10	2,800
2022	1,417	0	0	73	17	5	5	12	0	27	9	10	463	0	476	12	31	233	10	2,800
2023	1,415	0	0	73	17	5	5	12	0	28	10	10	463	0	477	12	32	233	10	2,800
2024	1,414	0	0	73	17	5	5	12	0	28	10	11	463	0	477	12	32	232	10	2,800
2025	1,412	0	0	73	17	5	5	12	0	28	10	12	463	0	477	12	33	232	10	2,800
2026	1,411	0	0	73	17	5	5	12	0	29	10	13	463	0	477	12	33	232	10	2,800
2027	1,410	0	0	73	17	5	5	12	0	29	10	14	463	0	476	12	34	231	10	2,800
2028	1,408	0	0	73	17	5	5	12	0	29	10	14	463	0	477	12	34	231	10	2,800
2029	1,407	0	0	73	17	6	5	12	0	30	10	15	463	0	477	12	35	230	10	2,800
2030	1,406	0	0	73	17	6	5	12	0	30	10	16	463	0	476	12	35	229	11	2,800
2031	1,405	0	0	73	17	6	5	12	0	30	10	16	463	0	476	12	36	229	11	2,800
2032	1,404	0	0	73	17	6	5	12	0	30	10	16	463	0	476	12	36	230	11	2,800
2033	1,403	0	0	73	17	6	5	12	0	30	10	16	463	0	476	12	37	230	11	2,800
2034	1,402	0	0	73	17	6	5	12	0	31	10	16	463	0	477	12	38	230	11	2,800
2035	1,402	0	0	73	17	6	5	12	0	31	10	16	463	0	476	12	38	229	11	2,800
2036	1,401	0	0	73	17	6	5	12	0	31	10	16	463	0	476	12	39	229	11	2,800
2037	1,400	0	0	73	17	6	5	12	0	31	10	16	463	0	476	12	39	230	11	2,800
2038	1,399	0	0	73	17	6	5	12	0	31	10	16	463	0	477	12	40	230	11	2,800
2039	1,398	0	0	73	17	6	5	12	0	32	10	16	463	0	477	12	40	230	11	2,800
2040	1,398	0	0	73	17	6	5	12	0	32	10	16	463	0	476	12	41	229	11	2,800
2041	1,397	0	0	73	17	6	5	12	0	32	10	16	463	0	477	12	41	230	11	2,800
2042	1,397	0	0	73	17	6	5	12	0	32	10	16	463	0	477	12	41	230	11	2,800
2043	1,397	0	0	73	17	6	5	12	0	32	10	16	463	0	476	12	41	230	11	2,800
2044	1,396	0	0	73	17	6	5	12	0	33	10	16	463	0	477	12	41	230	11	2,800
2045	1,396	0	0	73	17	6	5	12	0	33	10	16	463	0	477	12	41	230	11	2,800
2046	1,396	0	0	73	17	6	5	12	0	33	10	16	463	0	477	12	41	230	11	2,800
2047	1,396	0	0	73	17	6	5	12	0	33	10	16	463	0	476	12	41	230	11	2,800
2048	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	477	12	41	230	11	2,800
2049	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	477	12	41	230	11	2,800
2050	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2051	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2052	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2053	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2054	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2055	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2056	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2057	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2058	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2059	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2060	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2061	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2062	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2063	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2064	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2065	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2066	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2067	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2068	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2069	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2070	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2071	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2072	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2073	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2074	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2075	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800
2076	1,395	0	0	73	17	6	5	12	0	34	10	16	463	0	476	12	41	230	11	2,800

Table A-2
State of Nevada – Normal Depletion Schedules (kaf)

Year	Laughlin M&I	Mohave Steam Plant	Ft. Mohave Ind. Res.	Total Nevada
2002	4	16	6	26
2003	4	16	6	26
2004	4	16	7	27
2005	4	16	8	28
2006	4	16	8	28
2007	4	16	8	28
2008	4	16	9	29
2009	4	16	9	29
2010	4	16	9	29
2011	4	16	9	29
2012	4	16	9	29
2013	4	16	9	29
2014	4	16	9	29
2015	4	16	9	29
2016	4	16	9	29
2017	4	16	9	29
2018	4	16	9	29
2019	4	16	9	29
2020	4	16	9	29
2021	4	16	9	29
2022	4	16	9	29
2023	4	16	9	29
2024	4	16	9	29
2025	4	16	9	29
2026	4	8	9	21
2027	4	0	9	13
2028	4	0	9	13
2029	4	0	9	13
2030	4	0	9	13
2031	4	0	9	13
2032	4	0	9	13
2033	4	0	9	13
2034	4	0	9	13
2035	4	0	9	13
2036	4	0	9	13
2037	4	0	9	13
2038	4	0	9	13
2039	4	0	9	13
2040	4	0	9	13
2041	4	0	9	13
2042	4	0	9	13
2043	4	0	9	13
2044	4	0	9	13
2045	4	0	9	13
2046	4	0	9	13
2047	4	0	9	13
2048	4	0	9	13
2049	4	0	9	13
2050	4	0	9	13
2051	4	0	9	13
2052	4	0	9	13
2053	4	0	9	13
2054	4	0	9	13
2055	4	0	9	13
2056	4	0	9	13
2057	4	0	9	13
2058	4	0	9	13
2059	4	0	9	13
2060	4	0	9	13
2061	4	0	9	13
2062	4	0	9	13
2063	4	0	9	13
2064	4	0	9	13
2065	4	0	9	13
2066	4	0	9	13
2067	4	0	9	13
2068	4	0	9	13
2069	4	0	9	13
2070	4	0	9	13
2071	4	0	9	13
2072	4	0	9	13
2073	4	0	9	13
2074	4	0	9	13
2075	4	0	9	13
2076	4	0	9	13

Table A-3
State of California – Other Users – Normal Depletion Schedules (kaf)

Year	Ft. Mohave Ind. Res.	City of Needles	Havasu NWR	Chemehuevi Ind. Res.	Others & Misc. PPRs	Imperial NWR	CRIR Ind. Res.	Unused Depletion	AAC Yuma Project Bard Unit	AAC Yuma Project Unit Quechan	California Pumpers	Other Pumpers Below NIB	Total California Other
2002	14	1	0	2	2	0	5	0	18	19	0	0	61
2003	13	1	0	2	2	0	7	0	18	21	0	0	63
2004	13	1	0	3	2	0	8	0	18	22	0	0	65
2005	12	1	0	3	2	0	9	0	18	23	0	0	68
2006	12	1	0	3	2	0	11	0	18	24	0	0	71
2007	12	1	0	4	2	0	13	0	18	25	0	0	75
2008	12	1	0	4	2	0	15	0	18	27	0	0	78
2009	12	1	0	5	2	0	17	0	18	28	0	0	82
2010	12	1	0	5	2	0	19	0	18	29	0	0	86
2011	12	1	0	6	2	0	23	0	18	30	0	0	92
2012	12	1	0	6	2	0	27	0	18	32	0	0	98
2013	12	1	0	7	2	0	31	0	18	33	0	0	104
2014	12	1	0	7	2	0	35	0	18	35	0	0	110
2015	12	1	0	8	2	0	39	0	18	36	0	0	116
2016	12	1	0	8	2	0	39	0	18	36	0	0	116
2017	12	1	0	8	2	0	39	0	18	36	0	0	116
2018	12	1	0	8	2	0	39	0	18	36	0	0	116
2019	12	1	0	8	2	0	39	0	18	36	0	0	116
2020	12	1	0	8	2	0	39	0	18	36	0	0	116
2021	12	1	0	8	2	0	39	0	18	36	0	0	116
2022	12	1	0	8	2	0	39	0	18	36	0	0	116
2023	12	1	0	8	2	0	39	0	18	36	0	0	116
2024	12	1	0	8	2	0	39	0	18	36	0	0	116
2025	12	1	0	8	2	0	39	0	18	36	0	0	116
2026	12	1	0	8	2	0	39	0	18	36	0	0	116
2027	12	1	0	8	2	0	39	0	18	36	0	0	116
2028	12	1	0	8	2	0	39	0	18	36	0	0	116
2029	12	1	0	8	2	0	39	0	18	36	0	0	116
2030	12	1	0	8	2	0	39	0	18	36	0	0	116
2031	12	1	0	8	2	0	39	0	18	36	0	0	116
2032	12	1	0	8	2	0	39	0	18	36	0	0	116
2033	12	1	0	8	2	0	39	0	18	36	0	0	116
2034	12	1	0	8	2	0	39	0	18	36	0	0	116
2035	12	1	0	8	2	0	39	0	18	36	0	0	116
2036	12	1	0	8	2	0	39	0	18	36	0	0	116
2037	12	1	0	8	2	0	39	0	18	36	0	0	116
2038	12	1	0	8	2	0	39	0	18	36	0	0	116
2039	12	1	0	8	2	0	39	0	18	36	0	0	116
2040	12	1	0	8	2	0	39	0	18	36	0	0	116
2041	12	1	0	8	2	0	39	0	18	36	0	0	116
2042	12	1	0	8	2	0	39	0	18	36	0	0	116
2043	12	1	0	8	2	0	39	0	18	36	0	0	116
2044	12	1	0	8	2	0	39	0	18	36	0	0	116
2045	12	1	0	8	2	0	39	0	18	36	0	0	116
2046	12	1	0	8	2	0	39	0	18	36	0	0	116
2047	12	1	0	8	2	0	39	0	18	36	0	0	116
2048	12	1	0	8	2	0	39	0	18	36	0	0	116
2049	12	1	0	8	2	0	39	0	18	36	0	0	116
2050	12	1	0	8	2	0	39	0	18	36	0	0	116
2051	12	1	0	8	2	0	39	0	18	36	0	0	116
2052	12	1	0	8	2	0	39	0	18	36	0	0	116
2053	12	1	0	8	2	0	39	0	18	36	0	0	116
2054	12	1	0	8	2	0	39	0	18	36	0	0	116
2055	12	1	0	8	2	0	39	0	18	36	0	0	116
2056	12	1	0	8	2	0	39	0	18	36	0	0	116
2057	12	1	0	8	2	0	39	0	18	36	0	0	116
2058	12	1	0	8	2	0	39	0	18	36	0	0	116
2059	12	1	0	8	2	0	39	0	18	36	0	0	116
2060	12	1	0	8	2	0	39	0	18	36	0	0	116
2061	12	1	0	8	2	0	39	0	18	36	0	0	116
2062	12	1	0	8	2	0	39	0	18	36	0	0	116
2063	12	1	0	8	2	0	39	0	18	36	0	0	116
2064	12	1	0	8	2	0	39	0	18	36	0	0	116
2065	12	1	0	8	2	0	39	0	18	36	0	0	116
2066	12	1	0	8	2	0	39	0	18	36	0	0	116
2067	12	1	0	8	2	0	39	0	18	36	0	0	116
2068	12	1	0	8	2	0	39	0	18	36	0	0	116
2069	12	1	0	8	2	0	39	0	18	36	0	0	116
2070	12	1	0	8	2	0	39	0	18	36	0	0	116
2071	12	1	0	8	2	0	39	0	18	36	0	0	116
2072	12	1	0	8	2	0	39	0	18	36	0	0	116
2073	12	1	0	8	2	0	39	0	18	36	0	0	116
2074	12	1	0	8	2	0	39	0	18	36	0	0	116
2075	12	1	0	8	2	0	39	0	18	36	0	0	116
2076	12	1	0	8	2	0	39	0	18	36	0	0	116

Table A-4
State of California - Normal Depletion Schedules WITHOUT QSA (kaf)

Year	CA Others	MWD	IID	CVWD	PVID	CA Total
2002	61	643	2,990	330	383	4,407
2003	63	647	2,990	330	381	4,412
2004	65	689	2,990	330	380	4,455
2005	68	660	2,990	330	379	4,427
2006	71	631	2,990	330	378	4,400
2007	75	629	2,990	330	377	4,400
2008	78	626	2,990	330	375	4,400
2009	82	624	2,990	330	374	4,400
2010	86	621	2,990	330	373	4,400
2011	92	617	2,990	330	372	4,400
2012	98	612	2,990	330	370	4,400
2013	104	608	2,990	330	369	4,400
2014	110	603	2,990	330	367	4,400
2015	116	598	2,990	330	366	4,400
2016	116	598	2,990	330	366	4,400
2017	116	598	2,990	330	366	4,400
2018	116	598	2,990	330	366	4,400
2019	116	598	2,990	330	366	4,400
2020	116	598	2,990	330	366	4,400
2021	116	598	2,990	330	366	4,400
2022	116	598	2,990	330	366	4,400
2023	116	598	2,990	330	366	4,400
2024	116	598	2,990	330	366	4,400
2025	116	598	2,990	330	366	4,400
2026	116	598	2,990	330	366	4,400
2027	116	598	2,990	330	366	4,400
2028	116	598	2,990	330	366	4,400
2029	116	598	2,990	330	366	4,400
2030	116	598	2,990	330	366	4,400
2031	116	598	2,990	330	366	4,400
2032	116	598	2,990	330	366	4,400
2033	116	598	2,990	330	366	4,400
2034	116	598	2,990	330	366	4,400
2035	116	598	2,990	330	366	4,400
2036	116	598	2,990	330	366	4,400
2037	116	598	2,990	330	366	4,400
2038	116	598	2,990	330	366	4,400
2039	116	598	2,990	330	366	4,400
2040	116	598	2,990	330	366	4,400
2041	116	598	2,990	330	366	4,400
2042	116	598	2,990	330	366	4,400
2043	116	598	2,990	330	366	4,400
2044	116	598	2,990	330	366	4,400
2045	116	598	2,990	330	366	4,400
2046	116	598	2,990	330	366	4,400
2047	116	598	2,990	330	366	4,400
2048	116	598	2,990	330	366	4,400
2049	116	598	2,990	330	366	4,400
2050	116	598	2,990	330	366	4,400
2051	116	598	2,990	330	366	4,400
2052	116	598	2,990	330	366	4,400
2053	116	598	2,990	330	366	4,400
2054	116	598	2,990	330	366	4,400
2055	116	598	2,990	330	366	4,400
2056	116	598	2,990	330	366	4,400
2057	116	598	2,990	330	366	4,400
2058	116	598	2,990	330	366	4,400
2059	116	598	2,990	330	366	4,400
2060	116	598	2,990	330	366	4,400
2061	116	598	2,990	330	366	4,400
2062	116	598	2,990	330	366	4,400
2063	116	598	2,990	330	366	4,400
2064	116	598	2,990	330	366	4,400
2065	116	598	2,990	330	366	4,400
2066	116	598	2,990	330	366	4,400
2067	116	598	2,990	330	366	4,400
2068	116	598	2,990	330	366	4,400
2069	116	598	2,990	330	366	4,400
2070	116	598	2,990	330	366	4,400
2071	116	598	2,990	330	366	4,400
2072	116	598	2,990	330	366	4,400
2073	116	598	2,990	330	366	4,400
2074	116	598	2,990	330	366	4,400
2075	116	598	2,990	330	366	4,400
2076	116	598	2,990	330	366	4,400

Table A-5
State of California - Normal Depletion Schedules WITH QSA (kaf)

Year	CA Others	MWD	IID	CVWD	PVID	CA Total
2002	61	679	2,959	326	383	4,407
2003	63	693	2,939	335	381	4,412
2004	65	770	2,919	321	380	4,455
2005	68	783	2,877	321	379	4,427
2006	71	778	2,852	321	378	4,400
2007	75	847	2,781	321	377	4,400
2008	78	864	2,761	321	375	4,400
2009	82	887	2,736	321	374	4,400
2010	86	910	2,711	321	373	4,400
2011	92	930	2,686	321	372	4,400
2012	98	930	2,681	321	370	4,400
2013	104	931	2,676	321	369	4,400
2014	110	931	2,671	321	367	4,400
2015	116	932	2,666	321	366	4,400
2016	116	937	2,661	321	366	4,400
2017	116	942	2,656	321	366	4,400
2018	116	947	2,651	321	366	4,400
2019	116	952	2,646	321	366	4,400
2020	116	957	2,641	321	366	4,400
2021	116	962	2,636	321	366	4,400
2022	116	967	2,631	321	366	4,400
2023	116	972	2,626	321	366	4,400
2024	116	977	2,621	321	366	4,400
2025	116	982	2,616	321	366	4,400
2026	116	987	2,611	321	366	4,400
2027	116	987	2,611	321	366	4,400
2028	116	987	2,611	321	366	4,400
2029	116	987	2,611	321	366	4,400
2030	116	987	2,611	321	366	4,400
2031	116	987	2,611	321	366	4,400
2032	116	987	2,611	321	366	4,400
2033	116	987	2,611	321	366	4,400
2034	116	987	2,611	321	366	4,400
2035	116	987	2,611	321	366	4,400
2036	116	987	2,611	321	366	4,400
2037	116	987	2,611	321	366	4,400
2038	116	987	2,611	321	366	4,400
2039	116	987	2,611	321	366	4,400
2040	116	987	2,611	321	366	4,400
2041	116	987	2,611	321	366	4,400
2042	116	987	2,611	321	366	4,400
2043	116	987	2,611	321	366	4,400
2044	116	987	2,611	321	366	4,400
2045	116	987	2,611	321	366	4,400
2046	116	987	2,611	321	366	4,400
2047	116	937	2,661	321	366	4,400
2048	116	937	2,661	321	366	4,400
2049	116	937	2,661	321	366	4,400
2050	116	937	2,661	321	366	4,400
2051	116	937	2,661	321	366	4,400
2052	116	937	2,661	321	366	4,400
2053	116	937	2,661	321	366	4,400
2054	116	937	2,661	321	366	4,400
2055	116	937	2,661	321	366	4,400
2056	116	937	2,661	321	366	4,400
2057	116	937	2,661	321	366	4,400
2058	116	937	2,661	321	366	4,400
2059	116	937	2,661	321	366	4,400
2060	116	937	2,661	321	366	4,400
2061	116	937	2,661	321	366	4,400
2062	116	937	2,661	321	366	4,400
2063	116	937	2,661	321	366	4,400
2064	116	937	2,661	321	366	4,400
2065	116	937	2,661	321	366	4,400
2066	116	937	2,661	321	366	4,400
2067	116	937	2,661	321	366	4,400
2068	116	937	2,661	321	366	4,400
2069	116	937	2,661	321	366	4,400
2070	116	937	2,661	321	366	4,400
2071	116	937	2,661	321	366	4,400
2072	116	937	2,661	321	366	4,400
2073	116	937	2,661	321	366	4,400
2074	116	937	2,661	321	366	4,400
2075	116	937	2,661	321	366	4,400
2076	116	937	2,661	321	366	4,400

Table A-6
State of California - Normal Depletion Schedules Used for Cumulative Analysis (With Additional Transfers from PVID to MWD, kaf)

Year	CA Others	MWD	IID	CVWD	PVID	CA Total
2002	61	711	2,959	326	351	4,407
2003	63	793	2,939	335	281	4,412
2004	65	870	2,919	321	280	4,455
2005	68	883	2,877	321	279	4,427
2006	71	878	2,852	321	278	4,400
2007	75	947	2,781	321	277	4,400
2008	78	964	2,761	321	275	4,400
2009	82	987	2,736	321	274	4,400
2010	86	1,010	2,711	321	273	4,400
2011	92	1,030	2,686	321	272	4,400
2012	98	1,030	2,681	321	270	4,400
2013	104	1,031	2,676	321	269	4,400
2014	110	1,031	2,671	321	267	4,400
2015	116	1,032	2,666	321	266	4,400
2016	116	1,037	2,661	321	266	4,400
2017	116	1,042	2,656	321	266	4,400
2018	116	1,047	2,651	321	266	4,400
2019	116	1,052	2,646	321	266	4,400
2020	116	1,057	2,641	321	266	4,400
2021	116	1,062	2,636	321	266	4,400
2022	116	1,067	2,631	321	266	4,400
2023	116	1,072	2,626	321	266	4,400
2024	116	1,077	2,621	321	266	4,400
2025	116	1,082	2,616	321	266	4,400
2026	116	1,087	2,611	321	266	4,400
2027	116	1,088	2,611	321	264	4,400
2028	116	1,098	2,611	321	255	4,400
2029	116	1,098	2,611	321	255	4,400
2030	116	1,098	2,611	321	255	4,400
2031	116	1,098	2,611	321	255	4,400
2032	116	1,098	2,611	321	255	4,400
2033	116	1,098	2,611	321	255	4,400
2034	116	1,098	2,611	321	255	4,400
2035	116	1,098	2,611	321	255	4,400
2036	116	1,098	2,611	321	255	4,400
2037	116	1,096	2,611	321	257	4,400
2038	116	1,087	2,611	321	266	4,400
2039	116	1,087	2,611	321	266	4,400
2040	116	1,087	2,611	321	266	4,400
2041	116	1,087	2,611	321	266	4,400
2042	116	1,087	2,611	321	266	4,400
2043	116	1,087	2,611	321	266	4,400
2044	116	1,087	2,611	321	266	4,400
2045	116	1,087	2,611	321	266	4,400
2046	116	1,087	2,611	321	266	4,400
2047	116	1,037	2,661	321	266	4,400
2048	116	1,037	2,661	321	266	4,400
2049	116	1,037	2,661	321	266	4,400
2050	116	1,037	2,661	321	266	4,400
2051	116	1,037	2,661	321	266	4,400
2052	116	1,037	2,661	321	266	4,400
2053	116	1,037	2,661	321	266	4,400
2054	116	1,037	2,661	321	266	4,400
2055	116	1,037	2,661	321	266	4,400
2056	116	1,037	2,661	321	266	4,400
2057	116	1,037	2,661	321	266	4,400
2058	116	1,037	2,661	321	266	4,400
2059	116	1,037	2,661	321	266	4,400
2060	116	1,037	2,661	321	266	4,400
2061	116	1,037	2,661	321	266	4,400
2062	116	1,038	2,661	321	264	4,400
2063	116	1,048	2,661	321	255	4,400
2064	116	1,048	2,661	321	255	4,400
2065	116	1,048	2,661	321	255	4,400
2066	116	1,048	2,661	321	255	4,400
2067	116	1,048	2,661	321	255	4,400
2068	116	1,048	2,661	321	255	4,400
2069	116	1,048	2,661	321	255	4,400
2070	116	1,048	2,661	321	255	4,400
2071	116	1,048	2,661	321	255	4,400
2072	116	1,046	2,661	321	257	4,400
2073	116	1,037	2,661	321	266	4,400
2074	116	1,037	2,661	321	266	4,400
2075	116	1,037	2,661	321	266	4,400
2076	116	1,037	2,661	321	266	4,400

Table B-1
Upper Basin Depletion Schedules

Calendar Year	Colorado	Utah	Wyoming	New Mexico	Arizona	Reservoir Evaporation	Total Upper Basin
2002	2,419	859	501	449	45	574	4,847
2003	2,433	873	503	466	45	574	4,893
2004	2,447	886	505	484	45	574	4,940
2005	2,494	899	507	501	45	574	5,019
2006	2,501	913	508	510	45	574	5,052
2007	2,509	926	510	520	45	574	5,084
2008	2,517	940	512	529	45	574	5,117
2009	2,524	953	514	539	45	574	5,149
2010	2,580	1,009	517	548	50	574	5,278
2011	2,583	1,013	519	552	50	574	5,291
2012	2,586	1,017	520	557	50	574	5,303
2013	2,588	1,020	522	561	50	574	5,316
2014	2,591	1,024	524	565	50	574	5,328
2015	2,594	1,028	526	570	50	574	5,341
2016	2,597	1,032	527	573	50	574	5,353
2017	2,600	1,036	529	576	50	574	5,365
2018	2,603	1,041	531	579	50	574	5,378
2019	2,606	1,045	532	583	50	574	5,390
2020	2,626	1,055	535	589	50	574	5,429
2021	2,629	1,062	537	590	50	574	5,443
2022	2,633	1,069	540	591	50	574	5,457
2023	2,636	1,077	542	593	50	574	5,471
2024	2,639	1,084	544	594	50	574	5,485
2025	2,643	1,091	547	595	50	574	5,499
2026	2,646	1,099	549	597	50	574	5,514
2027	2,649	1,107	551	599	50	574	5,529
2028	2,652	1,114	553	600	50	574	5,545
2029	2,656	1,122	556	602	50	574	5,560
2030	2,675	1,129	571	604	50	574	5,603
2031	2,677	1,134	575	604	50	574	5,614
2032	2,679	1,139	580	604	50	574	5,626
2033	2,680	1,145	584	604	50	574	5,637
2034	2,682	1,150	588	604	50	574	5,649
2035	2,684	1,155	593	605	50	574	5,660
2036	2,686	1,160	597	605	50	574	5,671
2037	2,688	1,165	601	605	50	574	5,683
2038	2,689	1,171	605	605	50	574	5,694
2039	2,691	1,176	610	605	50	574	5,706
2040	2,703	1,177	615	605	50	574	5,724
2041	2,708	1,180	622	605	50	574	5,739
2042	2,712	1,184	629	605	50	574	5,754
2043	2,717	1,187	637	605	50	574	5,769
2044	2,721	1,190	644	605	50	574	5,784
2045	2,726	1,194	651	605	50	574	5,800
2046	2,731	1,197	658	605	50	574	5,815
2047	2,735	1,200	665	605	50	574	5,830
2048	2,740	1,203	673	605	50	574	5,845
2049	2,744	1,207	680	605	50	574	5,860
2050	2,776	1,207	687	605	50	574	5,899
2051	2,776	1,207	687	605	50	574	5,899
2052	2,776	1,207	687	605	50	574	5,899
2053	2,776	1,207	687	605	50	574	5,899
2054	2,776	1,207	687	605	50	574	5,899
2055	2,776	1,207	687	605	50	574	5,899
2056	2,776	1,207	687	605	50	574	5,899
2057	2,776	1,207	687	605	50	574	5,899
2058	2,776	1,207	687	605	50	574	5,899
2059	2,776	1,207	687	605	50	574	5,899
2060	2,776	1,207	687	605	50	574	5,899
2061	2,776	1,207	687	605	50	574	5,899
2062	2,776	1,207	687	605	50	574	5,899
2063	2,776	1,207	687	605	50	574	5,899
2064	2,776	1,207	687	605	50	574	5,899
2065	2,776	1,207	687	605	50	574	5,899
2066	2,776	1,207	687	605	50	574	5,899
2067	2,776	1,207	687	605	50	574	5,899
2068	2,776	1,207	687	605	50	574	5,899
2069	2,776	1,207	687	605	50	574	5,899
2070	2,776	1,207	687	605	50	574	5,899
2071	2,776	1,207	687	605	50	574	5,899
2072	2,776	1,207	687	605	50	574	5,899
2073	2,776	1,207	687	605	50	574	5,899
2074	2,776	1,207	687	605	50	574	5,899
2075	2,776	1,207	687	605	50	574	5,899
2076	2,776	1,207	687	605	50	574	5,899

Attachment C
Lower Basin Surplus Strategies and Depletion Schedules

As documented in Section 2.0, the Lower Basin surplus strategies used for each operational scenario are:

- No Action Scenario:
  - Interim Surplus Guidelines, 2002-2016
  - 70R Strategy, 2017-2076
- Implementation Agreement Scenario:
  - Interim Surplus Guidelines, 2002-2016
  - 70R Strategy, 2017-2076
- Baseline for Cumulative Analysis Scenario:
  - 70R Strategy, 2002-2076
- Cumulative Analysis Scenario:
  - Interim Surplus Guidelines, 2002-2016
  - 70R Strategy, 2017-2076

This attachment presents a brief description of each strategy and depletion schedules that were utilized to model each respective strategy.

Interim Surplus Guidelines

As stated in the Interim Surplus Guidelines Record of Decision (USBR, 2001) determination of Lake Mead surplus operation during the interim period is as follows:

1. Partial Domestic Surplus (Lake Mead between elevation 1125 ft. and 1145 ft.)
   In years when Lake Mead storage is projected to be between elevation 1125 ft. and elevation 1145 ft. on January 1, the Secretary shall determine a Partial Domestic Surplus. The amount of such Surplus shall equal:

   a. For Direct Delivery Domestic Use by MWD, 1.212 maf reduced by:
      (1) the amount of basic apportionment available to MWD and
      (2) the amount of its domestic demand which MWD offsets in such year by offstream groundwater withdrawals or other options. The amount offset under (2) shall not be less than 400,000 af in 2002 and will be reduced by 20,000 af/yr over the Interim Period so as to equal 100,000 af in 2016.

   b. For use by SNWA, one half of the Direct Delivery Domestic Use within the SNWA service area in excess of the State of Nevada's basic apportionment.

   c. For Arizona, one half of the Direct Delivery Domestic Use in excess of the State of Arizona's basic apportionment.

2. Full Domestic Surplus (Lake Mead above Elevation 1145 ft. and below 70R Strategy)
   In years when Lake Mead content is projected to be above elevation 1145 ft., but less than the amount which would initiate a Surplus under B.3. 70R Strategy or B.4. Flood Control Surplus hereof on January 1, the Secretary shall determine a Full Domestic Surplus. The amount of such Surplus shall equal:

a. For Direct Delivery Domestic Use by MWD, 1.250 maf reduced by the amount of basic apportionment available to MWD.

b. For use by SNWA, the Direct Delivery Domestic Use within the SNWA service area in excess of the State of Nevada's basic apportionment.

c. For use in Arizona, the Direct Delivery Domestic Use in excess of Arizona's basic apportionment.

3. Quantified Surplus (70R Strategy)
In years when the Secretary determines that water should be released for beneficial consumptive use to reduce the risk of potential reservoir spills based on the 70R Strategy the Secretary shall determine and allocate a Quantified Surplus sequentially as follows:

a. Establish the volume of the Quantified Surplus.

b. Allocate and distribute the Quantified Surplus 50% to California, 46% to Arizona and 4% to Nevada, subject to c. through e. that follow.

c. Distribute California's share first to meet basic apportionment demands and MWD's Direct Delivery Domestic Use and Off-stream Banking demands, and then to California Priorities 6 and 7 and other surplus contracts. Distribute Nevada's share first to meet basic apportionment demands and then to the remaining Direct Delivery Domestic Use and Off-stream Banking demands. Distribute Arizona's share to surplus demands in Arizona including Off-stream Banking and interstate banking demands. Arizona, California and Nevada agree that Nevada would get first priority for interstate banking in Arizona.

d. Distribute any unused share of the Quantified Surplus in accordance with Section 1, Allocation of Unused Basic Apportionment Water Under Article II(B)(6).

e. Determine whether MWD, SNWA and Arizona have received the amount of water they would have received under Section 2.B.2., Full Domestic Surplus if a Quantified Surplus had not been declared. If they have not, then determine and meet all demands provided for in Section 2.B.2. Full Domestic Surplus (a), (b) and (c).

4. Flood Control Surplus
In years in which the Secretary makes space-building or flood control releases pursuant to the Field Working Agreement, the Secretary shall determine a Flood Control Surplus for the remainder of that year or the subsequent year as specified in Section 7. In such years, releases will be made to satisfy all beneficial uses within the United States, including unlimited off-stream banking. Under current practice, surplus declarations under the Treaty for Mexico are declared when flood control releases are made. Modeling assumptions used in the FEIS are based on this practice. The proposed action is not intended to identify, or change in any manner, conditions when Mexico may schedule up to an additional 0.2 maf. Any issues relating to the implementation of the Treaty, including any potential changes in approach relating to surplus declarations under the Treaty, must be addressed in a bilateral fashion with the Republic of Mexico.

For the Implementation Agreement and Cumulative Analysis scenarios, the surplus schedules for each surplus level are given in Tables C-1, C-2, C-3 and C-4.

Table C-1
Partial Domestic Surplus Schedules, (Kaf)

Date	CA Other	MWD	IID	CVWD	CA Total	AZ Other	CAP	AZ Total	NV Other	SNWP	NV Total	Total LB
2002	444	832	2,959	360	4,594	1,332	1,458	2,790	26	278	304	7,688
2003	444	852	2,939	354	4,589	1,337	1,447	2,784	26	278	304	7,678
2004	445	872	2,902	350	4,569	1,342	1,382	2,724	27	295	322	7,615
2005	447	892	2,882	356	4,576	1,348	1,415	2,763	28	283	311	7,650
2006	449	912	2,811	356	4,528	1,353	1,447	2,800	28	273	301	7,629
2007	452	932	2,786	361	4,530	1,359	1,441	2,800	28	274	302	7,632
2008	453	952	2,761	366	4,533	1,364	1,436	2,800	29	275	304	7,637
2009	456	972	2,736	371	4,535	1,369	1,431	2,800	29	277	306	7,641
2010	459	992	2,711	376	4,537	1,375	1,425	2,800	29	279	308	7,645
2011	464	1,012	2,686	381	4,542	1,375	1,425	2,800	29	281	310	7,652
2012	468	1,032	2,681	386	4,567	1,376	1,424	2,800	29	283	312	7,679
2013	473	1,052	2,676	391	4,591	1,376	1,424	2,800	29	285	314	7,705
2014	477	1,072	2,671	396	4,616	1,377	1,423	2,800	29	287	316	7,732
2015	482	1,092	2,666	401	4,640	1,378	1,422	2,800	29	287	316	7,756
2016	482	1,112	2,661	406	4,510	1,378	1,422	2,800	29	289	318	7,628

Table C-2
Full Domestic Surplus Schedules, (Kaf)

Date	CA Other	MWD	IID	CVWD	CA Total	AZ Other	CAP	AZ Total	NV Other	SNWP	NV Total	Total LB
2002	444	1,250	2,959	360	5,012	1,332	1,458	2,790	26	278	304	8,016
2003	444	1,250	2,939	354	4,987	1,337	1,447	2,784	26	278	304	8,076
2004	445	1,250	2,902	350	4,947	1,342	1,382	2,724	27	295	322	7,993
2005	447	1,250	2,882	356	4,934	1,348	1,415	2,763	28	283	311	8,008
2006	449	1,250	2,811	356	4,866	1,353	1,447	2,800	28	273	301	7,967
2007	452	1,250	2,786	361	4,848	1,359	1,441	2,800	28	275	303	7,951
2008	453	1,250	2,761	366	4,831	1,364	1,436	2,800	29	279	308	7,939
2009	456	1,250	2,736	371	4,813	1,369	1,431	2,800	29	283	312	7,925
2010	459	1,250	2,711	376	4,795	1,375	1,425	2,800	29	287	316	7,911
2011	464	1,250	2,686	381	4,780	1,375	1,425	2,800	29	291	320	7,900
2012	468	1,250	2,681	386	4,785	1,376	1,424	2,800	29	295	324	7,909
2013	473	1,250	2,676	391	4,789	1,376	1,424	2,800	29	299	328	7,917
2014	477	1,250	2,671	396	4,794	1,377	1,423	2,800	29	302	331	7,925
2015	482	1,250	2,666	401	4,798	1,378	1,422	2,800	29	303	332	7,930
2016	482	1,250	2,661	406	4,798	1,378	1,422	2,800	29	307	336	7,934

Table C-3
Quantified Surplus (70R Strategy) Schedules, (Kaf)

Date	CA Other	MWD	IID	CVWD	CA Total	AZ Other	CAP	AZ Total	NV Other	SNWP	NV Total	Total LB
2002	444	1,250	2,959	489	5,141	1,332	1,658	2,990	26	312	338	8,469
2003	445	1,250	2,939	483	5,116	1,337	1,647	2,984	26	314	340	8,440
2004	446	1,250	2,902	478	5,076	1,342	1,582	2,924	27	316	343	8,343
2005	447	1,250	2,882	485	5,063	1,348	1,615	2,963	28	316	344	8,370
2006	449	1,250	2,811	485	4,994	1,353	1,652	3,005	28	321	349	8,348
2007	451	1,250	2,786	490	4,977	1,359	1,680	3,039	28	326	354	8,370
2008	454	1,250	2,761	495	4,959	1,364	1,715	3,079	29	330	359	8,397
2009	456	1,250	2,736	500	4,941	1,369	1,750	3,119	29	334	363	8,423
2010	459	1,250	2,711	505	4,924	1,375	1,787	3,162	29	338	367	8,453
2011	463	1,250	2,686	510	4,908	1,375	1,812	3,187	29	342	371	8,466
2012	468	1,250	2,681	515	4,913	1,376	1,835	3,211	29	345	374	8,498
2013	472	1,250	2,676	520	4,918	1,376	1,835	3,211	29	349	378	8,507
2014	477	1,250	2,671	525	4,922	1,377	1,835	3,212	29	353	382	8,516
2015	482	1,250	2,666	530	4,927	1,378	1,835	3,213	29	357	386	8,526
2016	482	1,250	2,661	535	4,927	1,378	1,835	3,213	29	361	390	8,530

Table C-4
Flood Control Surplus Schedules, (Kaf)

Date	CA Other	MWD	IID	CVWD	CA Total	AZ Other	CAP	AZ Total	NV Other	SNWP	NV Total	Total LB
2002	444	1250	3209	585	5487	1332	1658	2990	26	312	338	8815
2003	445	1250	3189	585	5468	1337	1647	2984	26	314	340	8792
2004	446	1250	3152	585	5432	1342	1582	2924	27	316	343	8699
2005	447	1250	3132	585	5413	1348	1615	2963	28	316	344	8720
2006	449	1250	3061	585	5344	1353	1652	3005	28	321	349	8698
2007	451	1250	3036	585	5322	1359	1680	3039	28	326	354	8715
2008	454	1250	3011	585	5299	1364	1715	3079	29	330	359	8737
2009	456	1250	2986	585	5276	1369	1750	3119	29	334	363	8758
2010	459	1250	2961	585	5254	1375	1787	3162	29	338	367	8783
2011	463	1250	2936	585	5233	1375	1812	3187	29	342	371	8791
2012	468	1250	2931	585	5233	1376	1835	3211	29	345	374	8818
2013	472	1250	2926	585	5233	1376	1835	3211	29	349	378	8822
2014	477	1250	2921	585	5232	1377	1835	3212	29	353	382	8826
2015	482	1250	2916	585	5232	1378	1835	3213	29	357	386	8831
2016	482	1250	2911	585	5227	1378	1835	3213	29	361	390	8830
2017	482	1250	2906	585	5222	1379	1835	3214	29	365	394	8830
2018	482	1250	2901	585	5217	1380	1835	3215	29	369	398	8830
2019	482	1250	2896	585	5212	1380	1835	3215	29	373	402	8829
2020	482	1250	2891	585	5207	1381	1835	3216	29	378	407	8830
2021	482	1250	2886	585	5202	1382	1835	3217	29	382	411	8830
2022	482	1250	2881	585	5197	1383	1835	3218	29	387	416	8831
2023	482	1250	2876	585	5192	1385	1835	3220	29	391	420	8832
2024	482	1250	2871	585	5187	1386	1835	3221	29	395	424	8832
2025	482	1250	2866	585	5182	1388	1835	3223	29	400	429	8834
2026	482	1250	2861	585	5177	1389	1835	3224	21	404	425	8826
2027	482	1250	2861	585	5177	1390	1835	3225	13	408	421	8823
2028	482	1250	2861	585	5177	1392	1835	3227	13	412	425	8829
2029	482	1250	2861	585	5177	1393	1835	3228	13	415	428	8833
2030	482	1250	2861	585	5177	1394	1835	3229	13	418	431	8837
2031	482	1250	2861	585	5177	1395	1835	3230	13	423	436	8843
2032	482	1250	2861	585	5177	1396	1835	3231	13	427	440	8848
2033	482	1250	2861	585	5177	1397	1835	3232	13	431	444	8853
2034	482	1250	2861	585	5177	1398	1835	3233	13	435	448	8858
2035	482	1250	2861	585	5177	1398	1835	3233	13	439	452	8862
2036	482	1250	2861	585	5177	1399	1835	3234	13	443	456	8867
2037	482	1250	2861	585	5177	1400	1835	3235	13	448	461	8873
2038	482	1250	2861	585	5177	1401	1835	3236	13	452	465	8878
2039	482	1250	2861	585	5177	1402	1835	3237	13	456	469	8883
2040	482	1250	2861	585	5177	1402	1835	3237	13	460	473	8887
2041	482	1250	2861	585	5177	1403	1835	3238	13	464	477	8892
2042	482	1250	2861	585	5177	1403	1835	3238	13	468	481	8896
2043	482	1250	2861	585	5177	1403	1835	3238	13	472	485	8900
2044	482	1250	2861	585	5177	1404	1835	3239	13	476	489	8905
2045	482	1250	2861	585	5177	1404	1835	3239	13	480	493	8909
2046	482	1250	2911	585	5227	1404	1835	3239	13	485	498	8964
2047	482	1250	2911	585	5227	1404	1835	3239	13	489	502	8968
2048	482	1250	2911	585	5227	1405	1835	3240	13	493	506	8973
2049	482	1250	2911	585	5227	1405	1835	3240	13	497	510	8977
2050	482	1250	2911	585	5227	1405	1835	3240	13	501	514	8981

In the Interim Surplus Guidelines Record of Decision, benchmark quantities for agricultural use of Colorado River water in California were specified as shown in Table C-5. These benchmark quantities include the use of 14,500 acre-feet of Present Perfected Rights.

Table C-5
Interim Surplus Guidelines
Benchmarks for Quantity of California
Agricultural Use of Colorado River Water

Year	Benchmark Quantity, kaf
2003	3740
2006	3640
2009	3530
2012	3470

Since these benchmarks would not be met through QSA water transfers under the No Action Scenario, it was assumed that MWD would reduce its use to permit the benchmarks to be met in effect and therefore keep the ISG in effect.

The modeling assumptions for these benchmarks was that MWD would meet these benchmarks linearly over time and that the first benchmark of 110 kaf in 2003 is already met by the 1988/89 Agreements among IID, MWD, CVWD, and PVID. The ramping of these transfers and their effect on the surplus schedules are shown in Table C-6.

Table C-6
Comparison of MWD Surplus Schedules
With and Without Benchmark Reductions

Year	Partial Domestic Surplus		Full Domestic Surplus	
	With	Without	With	Without
2002		832		1,250
2003		852		1,250
2004		872		1,250
2005		892		1,250
2006		912		1,250
2007		932		1,250
2008		952		1,250
2009		972		1,250
2010		992		1,250
2011		1,012		1,250
2012		1,032		1,250
2013		1,052		1,250
2014		1,072		1,250
2015		1,092		1,250
2016		1,112		1,250

70R Strategy

R Strategy

Under the R surplus strategy, a surplus condition is based on the system space requirement at the beginning of each year. Based on an assumed runoff, Upper and Lower Basin depletion schedules, and Lake Powell and Lake Mead contents at the beginning of the year, the volume of water in excess of the system space requirement at the end of the year is estimated. If that volume is greater than zero, a surplus is declared and full surplus schedules are met for the year. It should be noted that variations of the R strategies include a "volume limited" surplus, where just the computed surplus volume is distributed to certain Lower Division States' users (i.e., a full surplus is not assumed).

The assumed runoff corresponds to a particular percentile historical runoff. For example, the 70R strategy assumes a runoff corresponding to the 70^{th} percentile (70% of the historical values are less than that value, or approximately 17.4 maf of natural inflow into Lake Powell).

Based on the original CRSS implementation, the surplus volume is computed by:

SurVol = (PowellStorage + MeadStorage – maxStorage) x (1.0 + aveBankStorCoeff) + runoff – UBdemand – Lbdemand

Where:

PowellStorage = Lake Powell content at the beginning of the year

MeadStorage = Lake Mead content at the beginning of the year

maxStorage = maximum combined storage at Lakes Powell and Mead that will meet the system space requirement at the beginning of the year, assuming 30% of that requirement will be met by the reservoirs upstream of Powell (live capacity of Lakes Powell and Mead - 0.7 x 5.35 maf = 47.96 maf)

aveBankStorageCoeff = average of Lake Powell and Lake Mead bank storage coefficients

runoff = assumed percentile runoff

UBdemand = Upper Basin depletion scheduled for the year + the average evaporation loss in the Upper Basin (same as assumed in equalization, 560 kaf)

LBdemand = sum of the depletions below Powell + the evaporation losses in the Lower Basin mainstream reservoirs (average loss of 900 kaf at Mead and computed for Lakes Mohave and Havasu, based on the target storage) – average gains between Powell and Mead (801 kaf) – average gains below Mead (427 kaf)

Attachment D
Sensitivity Analysis of Shortage Protection Assumptions

Overview

This attachment to the Technical Memorandum presents the results of a sensitivity analysis conducted to assess the effects of using different Lake Mead shortage protection criteria in the modeling of the Implementation Agreement and the Cumulative Assessment Conditions. As discussed in Section 2.4 of the Technical Memorandum, it was assumed that the Lake Mead water surface elevation of 1083 feet msl would be protected with a certain degree of confidence (approximately 80 percent of the time). Also, separate modeling studies were used to determine a "protection line" or trigger such that if Lake Mead's water surface elevation falls below the specified protection line, a Level 1 shortage is declared. A representation of the modeled 1083 feet msl protection line is shown on Figure D-1. It should be noted that while an 80 percent level of confidence was desired, with respect to the protection of this Lake Mead water surface elevation, the actual assurance achieved was less than this amount. The actual assurance achieved is approximately 100 percent during the initial nine years. Thereafter, the assurance level decreases over time with the minimum assurance achieved being approximately 57 percent. As shown on Figure 3.2-4 of this Technical Memorandum, the assurance level drops below 80% in 2021.

The lower level of confidence achieved after 2021 can be attributed to the independently produced shortage protection line values and their integration with the index sequential method used in the RiverWare model simulation of the Colorado River system operation. However, while a lower level of confidence was achieved, the validity of the comparisons between the modeled operation scenarios is not compromised since all of the modeled conditions use the same shortage protection assumptions.

For the sensitivity analysis, the modeling assumptions included a lower protection line than was used for the analysis in the Technical Memorandum (one that was intended to protect Lake Mead water surface elevation of 1050 feet msl approximately 80% of the time). The lower protection line (i.e., the shortage protection triggers) used for this purpose is also presented graphically in Figure D-1. The actual assurance levels achieved with respect to the protection of the Lake Mead water level of 1050 foot msl were similar to those observed under the 1083 foot msl water level protection criteria. The actual assurance achieved under the 1050 foot msl water level protection criteria is approximately 100 percent during the initial nine years. Thereafter, the assurance level decreases over time with the minimum assurance achieved being approximately 55 percent.

The sensitivity analysis evaluates the effect that a change in shortage protection assumptions would have on the modeling results for the Implementation Agreement Conditions and the Cumulative Assessment Conditions. The effect is expressed as differences in Lake Powell and Lake Mead water surface levels observed under the two different modeled Lake Mead shortage protection criteria (1050 feet msl and 1083 feet msl Lake Mead protection lines). In general, the 1050 foot msl Lake Mead water level protection criteria resulted in lower Lake Mead water levels under the Implementation Agreement Conditions and the Cumulative Assessment Conditions. At Lake Powell, the use of the 1050-foot msl

protection line for Lake Mead produced little to no difference in water levels compared to the use of the 1083-foot protection line.

Lake Mead Water Surface Elevations

Comparisons of Lake Mead water surface elevations were made for the Implementation Agreement Conditions and for the Cumulative Analysis Conditions. The results of these two comparisons are presented on Figures D-2 and D-3, respectively.

Figure D-2 compares the Lake Mead water surface elevations observed under the modeled Implementation Agreement Condition that uses the1050-feet msl protection line to those under Implementation Agreement Condition that uses the1083-feet msl protection line. Specifically, the 90th, 50th and 10th percentile values of the observed Lake Mead water surface elevations from these two-modeled conditions are compared to each other. This figure may be compared to Figure 3.2-2 in the Technical Memorandum, which also presents Lake Mead water surface elevations under Implementation Agreement Conditions based on the 1083-foot protection level.

Figure D-2 shows that the 90th percentile values are essentially the same under the 1050-foot and 1083-foot modeled shortage protection conditions. The observed 50th percentile values (median values) under the 1050-foot protection conditions are also essentially the same as those observed under the 1083-foot protection conditions until 2016. Thereafter, the median elevations under the 1050-foot protection conditions fall below and remain at a lower level than those observed under the 1083-foot shortage protection conditions. The maximum departure between the two sets of median elevations is approximately 14.33 feet. The 10th percentile values observed under the 1050-foot protection conditions are the same as those observed under the 1083-foot protection conditions until 2009. Thereafter, the 10th percentile values observed under the 1050-foot protection conditions fall below and remain at a lower level than those observed under the 1083-foot shortage protection conditions. Table D-1 lists the observed maximum, minimum and average departures of the observed 90th, 50th and 10th percentile values of the 1050-foot shortage protection modeling results from those of the 1083-foot shortage protection conditions.

Table D-1
Lake Mead Water Surface Elevations
90th, 50th and 10th Percentile Values for Implementation Agreement Conditions
Departure of 1050-foot from 1083-foot Shortage Protection Modeled Conditions

	Departures (75-year Period)		
	90th Percentile Values	50th Percentile Values	10th Percentile Values
Maximum Departure	3.24	14.33	14.47
Minimum Departure	-3.65	0.00	0.00
Average Departure	0.32	5.39	4.15

Figure D-3 compares the Lake Mead water surface elevations observed under modeled Cumulative Analysis Condition that uses the1050-feet msl protection line to those under Cumulative Analysis Condition that uses the1083-feet msl protection line. Specifically, the 90th, 50th and 10th percentile values of the observed Lake Mead water surface elevations from these two-modeled conditions are compared to each other. This figure may be compared to Figure 3.3-2 in the Technical Memorandum, which also presents Lake Mead water surface elevations under Cumulative Analysis Conditions based on the 1083-foot protection level.

Figure D-3 shows that the 90th percentile values are essentially the same under the 1050-foot and 1083-foot modeled shortage protection condition. The observed median values under the 1050-foot protection conditions are essentially the same as those observed under the 1083-foot protection condition until 2016. Thereafter, the median elevations under the 1050-foot protection condition fall and remain at a lower level than those observed under the 1083-foot shortage protection condition. The maximum departure between the two sets of median elevations is approximately 15.49 feet. The 10th percentile values observed under the 1050-foot protection conditions are also essentially the same as those observed under the 1083-foot protection condition until 2011. Thereafter, the 10th percentile elevations under the 1050-foot protection condition fall and remain at a lower level than those observed under the 1083-foot shortage protection condition. Table D-2 lists the observed maximum, minimum and average departures of the observed 90th, 50th and 10th percentile values of the 1050-foot shortage protection modeling results from those of the 1083-foot shortage protection conditions.

Table D-2
Lake Mead Water Surface Elevations
90th, 50th and 10th Percentile Values for Cumulative Analysis Conditions
Departure of 1050-foot from 1083-foot Shortage Protection Modeled Conditions

	Departures (75-year Period)		
	90th Percentile Values	50th Percentile Values	10th Percentile Values
Maximum Departure	2.95	15.49	14.01
Minimum Departure	-3.91	0.00	0.00
Average Departure	0.30	5.40	4.24

The lower Lake Mead levels observed under the 1050-foot protection condition can be attributed to a more liberal availability of surplus water, allowing Lake Mead to be drawn down lower before the shortage triggers takes effect and further water delivery reductions begin.

Lake Powell Water Surface Elevations

Comparisons of Lake Powell water surface elevations were made for the Implementation Agreement Conditions and for the Cumulative Analysis Conditions. The results of these two comparisons are presented on Figures D-4 and D-5, respectively.

Figure D-4 compares the Lake Powell water surface elevations observed under the modeled Implementation Agreement Condition that uses the 1050-foot msl protection line to those under Implementation Agreement Condition that uses the 1083-foot msl protection line. Specifically, the 90th, 50th and 10th percentile values of the observed Lake Powell water surface elevations from these two-modeled conditions are compared to each other. It should be noted that the shortage protection criteria (triggers) are applied to the Lake Mead operations in the model. As such, any effect that this criterion would have on Lake Powell water levels would result from equalization.

Figure D-4 shows that the 90th, 50th and 10th percentile values are essentially the same under the 1050-foot and 1083-foot modeled shortage protection conditions. Table D-3 lists the observed maximum, minimum and average departures of the observed 90th, 50th and 10th percentile values of 1050-foot shortage protection modeling results from those of the 1083-foot shortage protection conditions.

Table D3
Lake Powell Water Surface Elevations
90th, 50th and 10th Percentile Values for Implementation Agreement Conditions
Departure of 1050-foot from 1083-foot Shortage Protection Modeled Conditions

	Departures (75-year Period)		
	90th Percentile Values	**50th Percentile Values**	**10th Percentile Values**
Maximum Departure	0.56	0.85	0.00
Minimum Departure	0.00	0.00	0.00
Average Departure	0.01	0.01	0.00

Figure D-5 compares the Lake Powell water surface elevations observed under the modeled Cumulative Analysis Condition that uses the 1050-foot msl protection line to those under the Cumulative Analysis that uses the 1083-foot msl protection line. Figure D-5 shows that the 90th, 50th and 10th percentile values are essentially the same under the 1050-foot and 1083-foot modeled shortage protection conditions. Table D-4 lists the observed maximum, minimum and average departures of the observed 90th, 50th and 10th percentile values of 1050-foot shortage protection modeling results from those of the 1083-foot shortage protection conditions.

Table D-4
Lake Powell Water Surface Elevations
90th, 50th and 10th Percentile Values for Cumulative Analysis Conditions
Departure of 1050-foot from 1083-foot Shortage Protection Modeled Conditions

	Departures (75-year Period)		
	90th Percentile Values	**50th Percentile Values**	**10th Percentile Values**
Maximum Departure	0.38	0.69	0.00
Minimum Departure	0.00	0.00	0.00
Average Departure	0.01	0.01	0.00

Table D-5 presents a list of the figures that were referenced hereinbefore and that that are attached to and made a part of this attachment.

Table D-5
List of Figures

D-1	Lake Mead Level 1 Shortage Triggers
D-2	Lake Mead End-of-December Water Elevations Comparison of Shortage Assumptions for Implementation Agreement Conditions 90th, 50th, and 10th Percentile
D-3	Lake Mead End-of-December Water Elevations Comparison of Shortage Assumptions for Cumulative Assessment Conditions 90th, 50th, and 10th Percentile Values
D-4	Lake Powell End-of-July Water Elevations Comparison of Shortage Assumptions for Implementation Agreement Conditions 90th, 50th, and 10th Percentile Values
D-5	Lake Powell End-of-July Water Elevations Comparison of Shortage Assumptions for Cumulative Assessment Conditions 90th, 50th, and 10th Percentile Values

Figure D-1
Lake Mead Level 1 Shortage Triggers

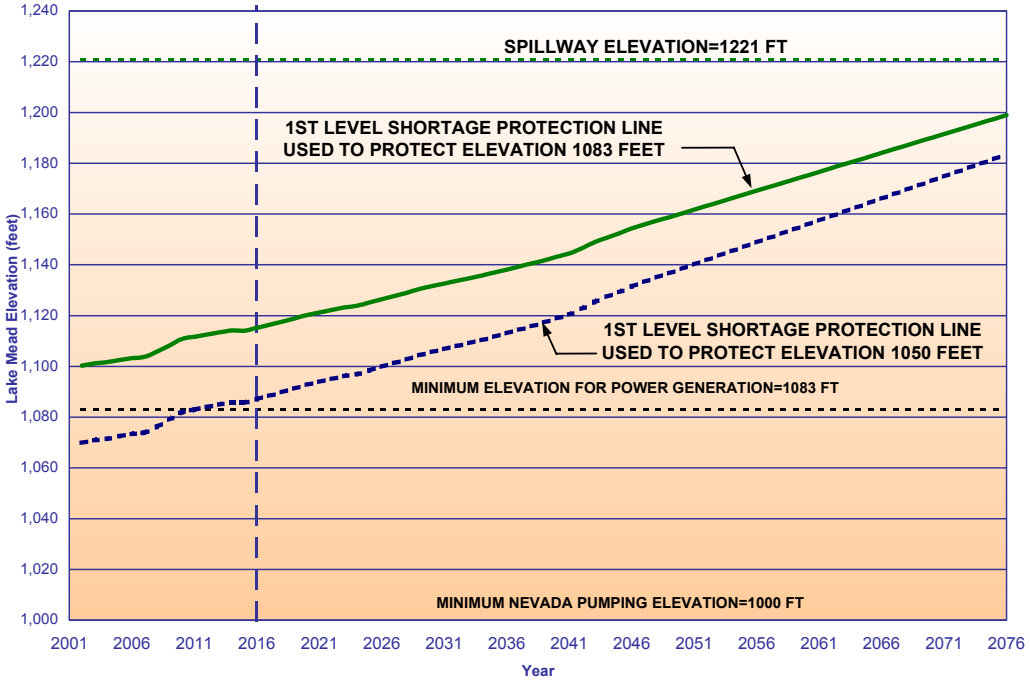


Figure D-2
Lake Mead End-of-December Water Elevations
Comparison of Shortage Assumptions for Implementation Agreement Conditions
90th, 50th, and 10th Percentile

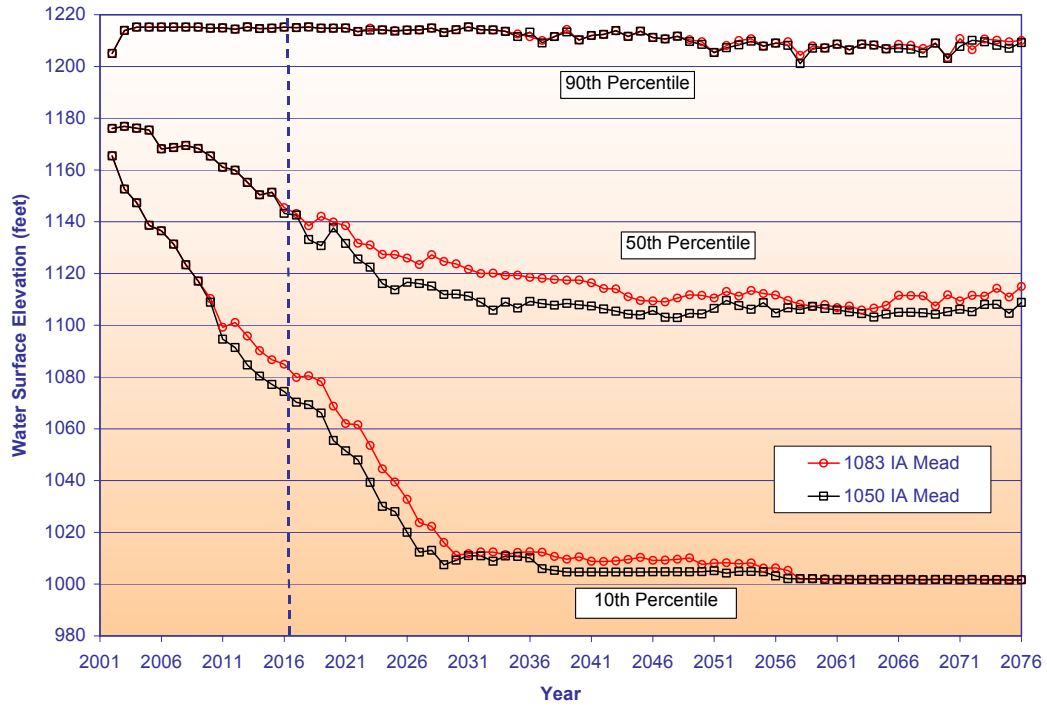


Figure D-3
Lake Mead End-of-December Water Elevations
Comparison of Shortage Assumptions for Cumulative Assessment Conditions
90th, 50th, and 10th Percentile Values

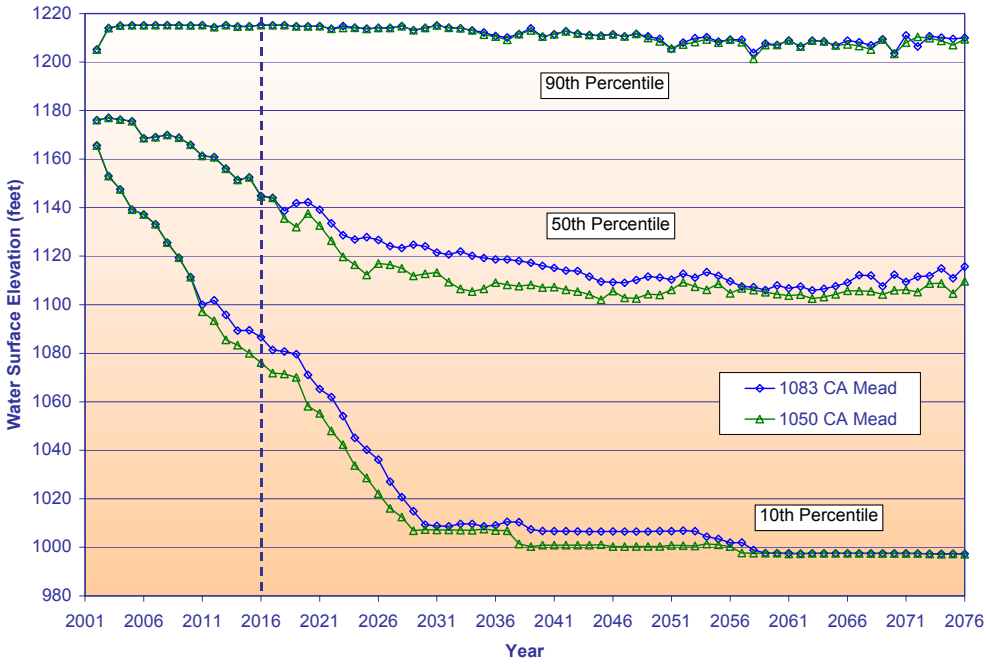


Figure D-4
Lake Powell End-of-July Water Elevations
Comparison of Shortage Assumptions for Implementation Agreement Conditions
90th, 50th, and 10th Percentile Values

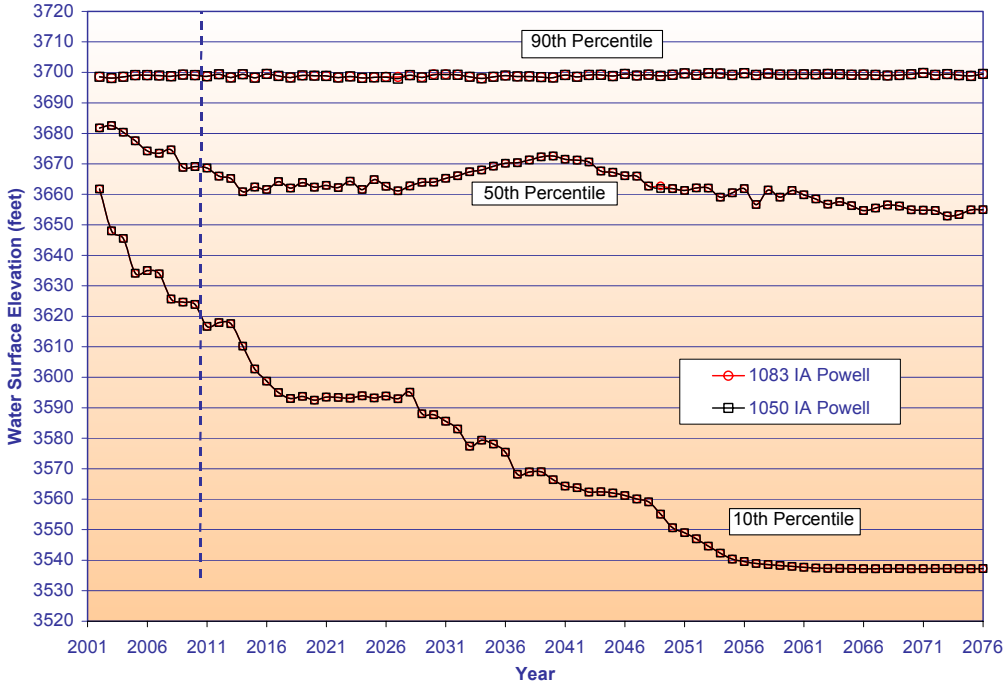
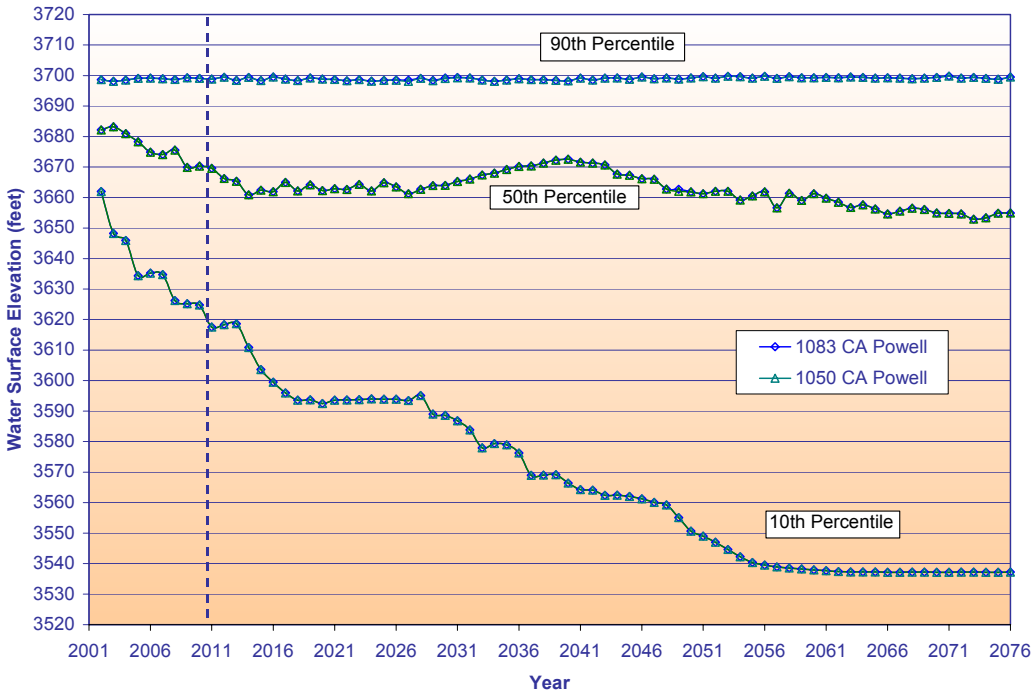


Figure D-5
Lake Powell End-of-July Water Elevations
Comparison of Shortage Assumptions for Cumulative Assessment Conditions
90th, 50th, and 10th Percentile Values



ALL-AMERICAN CANAL LINING PROJECT

IMPERIAL COUNTY, CALIFORNIA

Final Environmental Impact Statement/
Final Environmental Impact Report

March 1994

United States Department of the Interior
Bureau of Reclamation
Lower Colorado Region
Boulder City, Nevada

Imperial Irrigation District
Imperial, California

California State Clearinghouse Number SCH 90010472

MISSION STATEMENTS

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

IMPERIAL IRRIGATION DISTRICT

Headquartered in the Imperial Valley, a leading agricultural center in the lower southeastern corner of southern California, the Imperial Irrigation District serves water and power to the residents and growers in this "irrigated desert." Governed by a board of five elected directors, the Imperial Irrigation District was organized in 1911 under the California Irrigation District Act. The Imperial Irrigation District faces the ever-challenging future with a commitment to providing customers with the best possible service at the lowest possible rates.

SUMMARY

This final environmental impact statement/ final environmental impact report (FEIS/FEIR) has been prepared to evaluate the environmental aspects of a proposed project to control seepage from the All-American Canal (AAC). The project lies along a 29.9-mile reach of the existing unlined AAC which begins just south of Pilot Knob and ends at Drop 4, where the canal approaches the irrigated area of the Imperial Irrigation District (IID) in Imperial County, California (general location map). The reach traverses the East Mesa and runs along the international boundary with Mexico. The proposed action is to "line" a 23-mile section of the canal by constructing a concrete-lined canal parallel to the existing canal.

PURPOSE AND NEED

The purpose of the AAC Lining Project is to conserve seepage lost from the unlined AAC. The conserved water is needed in the southern California coastal area to offset a projected water shortage of 1.2 million acre-feet that is expected by the year 2010. The proposed project has the potential to conserve about 67,700 acre-feet per year.

BACKGROUND

The existing unlined AAC, authorized by the Boulder Canyon Project Act (Public Law (P.L.) 70-642, December 1928), was constructed in the 1930's by the Bureau of

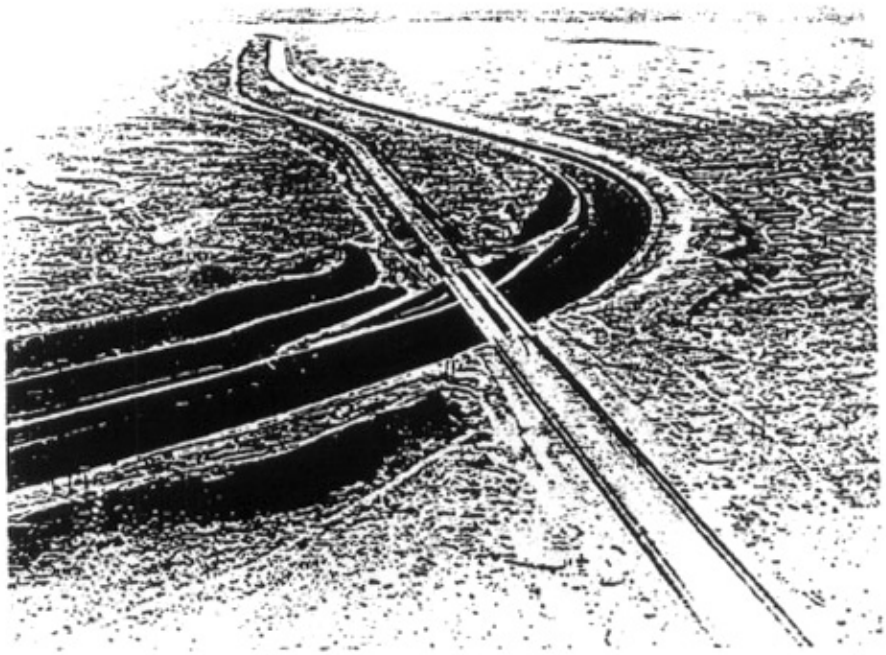


Photo 1.—View looks west over the All-American Canal as it approaches the sand dunes. The Interstate 8 highway crossing is in the foreground.

Reclamation (Reclamation) and began delivering water in the 1940's. The unlined canal was constructed in sandy desert soils. Its width varies from 196 to 171 feet in the section under consideration. The AAC conveys over 3 million acre-feet of water from the Colorado River annually for the Imperial and Coachella Valleys. The water is diverted from the Colorado River at Imperial Dam. The AAC supplies irrigation water on a year-round basis.

Although lining the AAC has been considered for decades, incentives to do so have not materialized until recently. On November 17, 1988, P.L. 100-675 authorized the Secretary of the Interior (Secretary) to line the canal or recover the seepage from the canal using construction funds from California water agencies entitled to the use of Colorado River water (attachment A).

ALTERNATIVES

The canal must remain in service continually. Thus, the range of physical options was limited to lining the existing canal under water, constructing a new concrete-lined canal parallel to the existing canal, or recovering the seepage from wells along the canal.

Although the greatest seepage reduction would be attained by lining the entire 29.9-mile section of canal under consideration, an expensive program would be required to mitigate the impacts on seepage-induced wetlands. Thus, the canal lengths considered for lining were Pilot Knob to Drop 3 and Pilot Knob to Drop 4. These alternatives were developed using both physical options; namely, lining the existing canal or constructing a new parallel canal. A well field alternative was developed with wells along the canal between Pilot Knob and midway between Drops 1 and 2. Farther west, well pumping would have increased seepage from the canal. The required No Action Alternative was included for comparison.

The scoping process produced the alternatives listed in the box below.

Alternative	Description
Parallel Canal Alternative	**Preferred Alternative** - New parallel canal from 1 mile west of Pilot Knob to Drop 3 (23 miles)
Drop 3 Alternative	In-place lining from Pilot Knob to Drop 3 (24.6 miles)
Drop 4 Alternative	In-place lining from Pilot Knob to Drop 4 (29.9 miles)
Well Field Alternative	Wells along the canal between Pilot Knob and Drop 2 (15 miles)
No Action	Canal remains unlined (29.9 miles)

The preferred alternative would be to construct a parallel canal along the existing canal from 1 mile west of Pilot Knob to Drop 3. The new canal would have a top width about two-thirds as wide as the existing canal and would be about 40 percent deeper.

USE OF THE CONSERVED WATER

Public Law 100-675 provides that the conserved water would be made available to specified California contracting water agencies according to established priorities. The priorities are structured so that if the conserved water is not used by IID, Coachella Valley Water District (CVWD), or Palo Verde Irrigation District, the conserved water would be available for use by the Metropolitan Water District of Southern California (MWD).

Public Law 100-675 provides that California agencies currently having contracts with the Secretary may contract with the Secretary to line the canal and gives IID the option of becoming the sole participating contractor for a period not to exceed 15 months after enactment.

MWD has expressed interest in funding the project in return for use of the conserved water when available. This is the general premise under which the project is being developed. The existing Colorado River Aqueduct, capable of diverting 1.3 million acre-feet per year, would be used to transport the conserved water from Lake Havasu to the southern California coastal area.

SUMMARY OF PHYSICAL PROPERTIES AND COSTS

Table S-1 presents a comparison of the physical differences and cost variations among the alternatives.

The project cost includes the cost of mitigation. The cost per acre-foot of water conserved indicates the relative cost effectiveness of each alternative. The cost per acre-foot was computed by combining the estimated costs of implementing and operating the project, converting those costs to an annual equivalent cost, and then dividing by the amount of water conserved.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The environmental aspects of primary concern are the potential loss of seepage-induced wetlands habitat along the canal and the reduction in the fish population in the canal. The mitigation plans developed for each of the action alternatives would permit their implementation with no significant loss of environmental resources. Moreover, the preferred alternative achieves a national wetlands planning objective of "avoidance" of impact to a 1,422-acre wetlands complex between Drops 3 and 4.

Ground Water

A large ground-water aquifer, known locally as the Colorado River Aquifer, lies under the canal. This aquifer extends north under the East Mesa of the Imperial Valley and south across the international boundary with Mexico under the Mexicali

Table S-1.—Summary of physical properties and design elements and costs

Dimension	Existing canal	Parallel Canal Alternative	Drop 3 Alternative	Drop 4 Alternative	Well Field Alternative
Length involved (miles)	[1]29.9	23.0	24.6	29.9	15.0
Excavation volume (million cubic yards)	—	25.0	0.8	1.0	—
Concrete volume (cubic yards)	—	214,000	265,000	320,000	800
Sand and gravel volume (cubic yards)	—	185,000	355,000	535,000	41,000
Top width[2] (feet)	196	120	215	215	196
Water depth[2] (feet)	16.6	23.1	[3]15.5	[3]15.5	16.6
Sideslopes[4]	2:1	1-1/2:1	2-1/2:1	2-1/2:1	2:1
Water volume[5] (acre-feet)	8,630	6,800	8,900	9,300	8,620
Water velocity at full flow[6] (feet per second)	3.8	5.2	4.1	4.1	3.8
Water conserved annually (acre-feet)	—	67,700	66,700	68,700	68,000
Construction cost[7] (1990 $ millions)	—	88.4	105.7	137.9	21.0
Cost per acre-foot of water conserved (1990 $)[8]	—	109	135	171	69
Operation and maintenance annual cost increase (1990 $)	—	14,000	14,000	26,000	[9]2,930,000

[1] From Rock Section 2 at Pilot Knob to Drop 4.
[2] Between Pilot Knob and Drop 1 at full canal flow. Downstream from Drop 1, the dimensions are approximately 88 percent of values shown.
[3] Checked to depth of 16.6 feet at upstream end of Drop 1.
[4] Horizontal distance to vertical distance.
[5] Entire 29.9 miles. Does not include effect of silt deposition in canal.
[6] Average velocity in canal at maximum waterflow (10,155 cubic feet per second). Velocity at sides of canal is less than average. Velocity at center of canal is greater than average.
[7] Includes cost of mitigation.
[8] For comparison purposes; based on cost recovery at 8-percent interest over an assumed 50-year period.
[9] Annual equivalent; based on future price escalation of 5 percent per year.

Valley. The seepage through the unlined canal bottom has raised the ground-water level under the canal as much as 40 feet. There has been extensive pumping from wells in Mexico since the 1950's. Since that time, the ground-water gradient is to the south, which causes most of the seepage to flow under the international boundary into the Mexicali Valley of Mexico, where seepage augments local ground water pumped from wells for irrigation. The high ground water also has induced wetlands vegetation along the canal.

The preferred alternative would reduce seepage from the canal by approximately 67,700 acre-feet per year. This would allow the ground-water level under the canal upstream from Drop 3 to decline and would reduce one source of ground-water recharge for the Mexicali Valley. Seepage from the AAC contributes 10 to 12 percent of the Mexicali Valley ground-water recharge. If pumping in Mexico continues at the current rate, it would cause the ground water under the canal to decline to a greater depth than prior to operation of the canal and would ultimately withdraw water from under the East Mesa of Imperial County. The ground-water table under part of the northeastern portion of the Mexicali Valley would decline.

The Lower Colorado Water Supply Project well field is being constructed along the canal in the Sand Hills area. Lining of the AAC was taken into account as the project was planned, and the wells have been designed to operate with a lower ground-water table.

Surface Water

The preferred alternative would increase the usable supply of water in the Colorado River by 67,700 acre-feet per year. It would reduce the amount of water diverted into the AAC by that amount, which is about 2 percent. Diversion of the conserved water at Lake Havasu would reduce the flow in the Colorado River downstream from Parker Dam by an average of approximately 94 cubic feet per second.

After canal flow is diverted into the parallel canal, the volume of water in the entire 29.9-mile canal section under study would reduce from 8,630 acre-feet to 6,800 acre-feet under full flow conditions, less under partial flow conditions.

Water Quality

Under the preferred alternative, salinity of the Colorado River below Parker Dam would tend to increase very slightly (unmeasurable increase). Therefore, the preferred alternative would have no significant impacts on the quality of water in the AAC or in the Colorado River. The salinity of the pumped ground water under the AAC at the Lower Colorado Water Supply well field is projected to increase by 2 milligrams per liter per year as a maximum probable impact estimate. The quality of current drainage water in the northeastern portion of the Mexicali Valley would deteriorate, based on information provided by the Government of Mexico.

Air Quality

The preferred alternative would not have any permanent impacts on air quality. Construction emission of dust and exhaust products would be controlled under regulations of the Imperial County Air Pollution Control District. Typical construction dust would be controlled by water spray.

Wetlands Habitat

The seepage-caused high ground water along the canal has resulted in moist soil conditions in topographically low areas along the canal. These conditions have resulted in wetlands vegetation being established in these places, mainly in the wetlands complex between Drops 3 and 4. The wetlands vegetation provides habitat for various species of wildlife; therefore, the potential loss of wetlands is of particular concern because the wetlands in question provide habitat for the endangered Yuma clapper rail, and because of the national goal of no overall net loss of wetlands.

An interagency biological work group was formed to analyze the potential impact on wetlands habitat. Representatives of Reclamation, U.S. Fish and Wildlife Service, Bureau of Land Management (BLM), the California Department of Fish and Game, MWD, IID, and CVWD developed a habitat rating system that was used to plan mitigation features for the potential habitat losses.

The preferred alternative and Drop 3 Alternative avoid impact to a 1,422-acre wetlands complex between Drops 3 and 4. To compensate for the loss of isolated tracts of wetlands and canal vegetation along the canal upstream from Drop 3, the wetlands complex between Drops 3 and 4 would be enlarged slightly.

Wetlands Habitat Along the Colorado River

Beginning about halfway between Blythe and the Imperial Dam, the Colorado River changes from being extensively channelized to having an irregular channel with numerous backwaters on the flood plain. Here the dominant vegetation of cattails and reeds creates a substantial band of vegetation around the backwaters. The wetlands along the river are host to a variety of wildlife, including the federally endangered Yuma clapper rail.

To ensure that the project does not cause an adverse change to wetlands along the Colorado River, future habitat restoration work along the river would include funding of $100,000 to improve backwater along the lower river. Reclamation, in cooperation with the Lower Colorado River Work Group Backwaters Committee, is planning several backwater restoration or enlargement projects along the river. Mitigation for the AAC lining would be accomplished as part of such an improvement project.

Terrestrial Habitat

The canal runs through four terrestrial plant communities—creosotebush scrub, wash woodland, sand dune, and wetlands. At its maximum impact, the preferred alternative would eliminate an estimated 587 acres of desert scrub habitat and 916 acres of sand dune habitat. Project mitigation plans would consist of acre-for-acre replacement of lost habitat. Selection of replacement habitat would be based on ecological equivalency.

This acreage estimate is considered maximum probable impact. After final design of project facilities and determination of staging areas, access roads, and other uses, total acreage will be adjusted based on results of 1993 U.S. Fish and Wildlife Service habitat surveys and in accordance with the Reclamation environmental commitment plan.

Special Status Species

Special status species affected by the project include the federally endangered Yuma clapper rail and the California black rail, birds that depend on marsh habitat. Also included are the flat-tailed horned lizard, the Colorado fringe-toed lizard, and the Andrew's dune scarab beetle, whose habitat is found in the sparsely vegetated desert landscape along the canal.

The preferred alternative avoids a significant effect on the Yuma clapper rail and the California black rail by not lining the canal between Drops 3 and 4. The project mitigation plans would prevent significant impact to other special status species upstream from Drop 3.

Large Mammal Escape

Although there is no documented population of mule deer in the AAC project area, the possibility exists that large mammals could occasionally drink from the canal or cross it. The parallel canal would have concrete sideslopes of 1-1/2 horizontal to 1 vertical and faster velocities than the present canal, which could pose a drowning risk to large mammals. This risk would be mitigated by continuous escape ridges slipformed on the concrete lining. Deflector systems, such as cables with visible buoys, would be installed and maintained upstream of all drop structures to direct large mammals to escape ridges.

Canal Fishery

The canal contains game and nongamefish. The fishery is dominated by channel catfish (about 90 percent) and also contains populations of largemouth bass, sunfish, and flathead catfish. Other species are common carp, threadfin shad, and striped bass. Channel catfish, bass, and sunfish provide recreational fishing, which is permitted.

The preferred alternative would reduce canal bank vegetation that provides food and cover, particularly for shoreline gamefish. The flow velocity also would inhibit spawning. These changes would cause the number of fish in the canal to decline. Mitigation for the changes, aimed at maintaining the recreational fishery, would consist of installing artificial reefs in the lined canal. These artificial reefs would provide cover for hatchling fish and habitat for aquatic organisms on which the hatchlings feed. Alternative mitigation methods would be stocking fish and providing fishery habitat in regulating reservoirs.

Cultural Resources

From Pilot Knob to Drop 4, the AAC occupies land that contains remnants of cultural activity from prehistoric times to recent historical times. The Pilot Knob area, adjacent to the AAC near Yuma, is one of the most significant and sensitive areas of cultural resources in the Colorado Desert and has been designated the Pilot Knob Area of Critical Environmental Concern (ACEC), administered by BLM. Scattered archeological sites also lie along the canal route.

The preferred alternative would avoid the Pilot Knob ACEC. Additional class III archeological surveys would be made prior to construction, and the cultural resources identified would be avoided or professionally recovered and/or documented.

Recreation

Construction activities along the canal would pose minor limitations to off-road recreationists in the Sand Hills area. This impact would be controlled through an interim recreation management plan to be developed with BLM. The potential reduction in gamefish caused by the concrete lining would be mitigated by installing artificial reefs in the lined canal, a measure aimed at maintaining fishing along the canal.

Land Ownership and Use

The preferred alternative would use approximately 1,503 acres of previously disturbed land. The parallel canal would be constructed on Federal land previously set aside for canal construction and operation. The project may require acquisition of land for mitigation.

Sand and Gravel Supplies

The preferred alternative would require approximately 185,000 cubic yards of sand and gravel, in an area in which gravel supplies are not plentiful. Gravel would come from established quarry areas in Imperial County, and possibly from a new source on the Fort Yuma Indian Reservation. Federal, State, and county regulations would be followed.

Transportation

Construction workers and their materials would reach the jobsite via Interstate 8 (I-8) and various local paved and unpaved roads between El Centro and Yuma. Traffic on I-8 and most of the local roads is below capacity, so construction traffic would not significantly affect local transportation.

Hydroelectric Power

Because of reduced diversions, the preferred alternative would reduce hydroelectric power generation along the AAC by approximately 220,000 kilowatthours (kWh) per year, and along the Colorado River at Parker, Davis, and Hoover Dams by a combined amount of approximately 5 million kWh per year.

Project Operating Energy Requirements

The preferred alternative would not require energy to operate.

Public Safety

Public contact with the canal occurs through fishing and swimming in the canal and visitation. Even though the canal is posted against swimming, numerous drownings occur. Most of the drownings take place when illegal aliens attempt to cross the international boundary.

The preferred alternative would make swimming more hazardous due to increased waterflow velocity. Also, the concrete lining eventually would become slippery at and below the water surface because of accumulated silt and aquatic vegetation. This slipperiness would make climbing out of the canal difficult, but its effect would be mitigated by placement of escape ridges on the canal lining. In

addition, signs would be posted on both sides of the canal to warn people of the dangerous waters.

Employment and Income During Construction

The Imperial County unemployment rate has varied from 19.9 percent to over 30 percent during the last decade. This includes workers from Mexicali who work in the Imperial Valley. Construction of the proposed project would provide employment for local citizens and for construction workers from outside of the area. Under the preferred alternative, contractor manpower requirements are estimated at 415 work years, of which about 75 percent are expected to be filled locally.

Local Community Structure

Under the preferred alternative, the number of construction workers and family members arriving from outside the area is expected to be 200. Compared to the populations of El Centro (31,650) and Yuma (about 49,000) and to the Imperial County population of 115,700, the construction arrivals would be small in number and are not expected to have a significant effect on the structure and utilities of local communities. Because of the short duration of the construction period and the mild climate, many workers will bring mobile homes and travel trailers.

Immigration From Mexico

The preferred alternative would not have a significant effect on the operations of the Immigration and Naturalization Services' Border Patrol (Border Patrol). The Border Patrol would need to increase its surveillance activities during active project construction.

Growth Inducement

The preferred alternative would not induce growth in the Imperial Valley, where the project would be constructed, or in the southern California coastal area, which contemplates use of the water to meet existing needs.

Indian Trust Assets

During the environmental impact statement process, Reclamation representatives met and corresponded with the Quechan Indian Tribe (Tribe) regarding the project, the alternatives, and potential impacts to Indian trust assets.

Two potentially affected assets were identified: construction workers may need to cross reservation lands, and the Tribe would like to sell gravel for use in project construction. The Tribe was receptive to negotiating an agreement to allow workers to cross reservation lands. A final agreement to allow workers to cross reservation lands would be reached after the final environmental impact statement is filed and a record of decision issued. Reclamation is receptive to purchasing gravel from the Tribe; however, this gravel would have to be tested for suitability by the contractor.

Table S-2 presents a comparison of the principal differences among alternatives. Table S-3 summarizes proposed mitigation measures and their estimated costs for the preferred alternative.

Table S-2.—Summary of principal environmental aspects for All-American Canal

RESOURCE CATEGORY	PARALLEL CANAL ALTERNATIVE		DROP 3 ALTERNATIVE	
	POTENTIAL PROJECT IMPACT	NET IMPACT AFTER MITIGATION	POTENTIAL PROJECT IMPACT	NET IMPACT AFTER MITIGATION
GROUND WATER	Water table would drop to precanal levels under 23 miles of canal.	Same.	Water table would drop to precanal levels under 24.6 miles of canal.	Same.
WATER QUALITY	Turbidity during construction. No permanent change in canal water quality. Unmeasurable increase in salinity of Colorado River.	Same.	Turbidity and possible pH change during construction. No permanent change in canal water quality. Unmeasurable increase in salinity of Colorado River.	Same.
WETLANDS ALONG THE ALL-AMERICAN CANAL	123 acres of scattered habitat along canal would be lost.	No net loss of habitat value.	123 acres of scattered habitat along canal would be lost.	No net loss of habitat value.
SURFACE WATER AND WETLANDS ALONG THE COLORADO RIVER	Lower Colorado River and backwaters: 1/2-inch reduction in water level. 4-1/2-acre reduction in water surface area.	No net loss of habitat value.	Lower Colorado River and backwaters: 1/2-inch reduction in water level 4-1/2-acre reduction in water surface area.	No net loss of habitat value.
TERRESTRIAL HABITAT	Acres of habitat lost: 587 desert scrub 916 sand dune.	No net loss of habitat value.	Acres of habitat lost: 134 desert scrub 153 sand dune.	No net loss of habitat value.
SPECIAL STATUS SPECIES	Loss of habitat for flat-tailed horned lizard and rare plants.	No net loss of habitat for flat-tailed horned lizard or rare plants. Reduction of rare plants.	Minor impacts during construction.	No impact.
CANAL FISHERY	Species and numbers of fish would be greatly reduced.	Numbers would be reduced, but gamefish would be maintained.	Species and numbers of fish would be greatly reduced.	Numbers would be reduced, but gamefish would be maintained.
CULTURAL RESOURCES	Potential disturbance of some archeological sites.	No significant impact.	Potential disturbance of some archeological sites.	No significant impact.
HYDROELECTRIC POWER	Annual power loss: AAC - 220,000 kWh[1] Colorado River - 5.1 MkWh[2]	Same.	Annual power loss: AAC - 168,000 kWh Colorado River - 5.0 MkWh.	Same.
EMPLOYMENT AND INCOME DURING CONSTRUCTION	415 contractor work years. Economic impact - $40 million to local economy.	Same.	420 contractor work years. Economic impact - $50 million to local economy.	Same.
PROJECT ENERGY OPERATING REQUIREMENTS	No impact.	Same.	No impact.	Same.

[1] kWh = kilowatthour
[2] MkWh = million kilowatthours

Table S-2.—Summary of principal environmental aspects for All-American Canal (continued)

DROP 4 ALTERNATIVE		WELL FIELD ALTERNATIVE		NO FEDERAL ACTION
POTENTIAL PROJECT IMPACT	NET IMPACT AFTER MITIGATION	POTENTIAL PROJECT IMPACT	NET IMPACT AFTER MITIGATION	
Water table would drop to precanal levels under 29.9 miles of canal.	Same.	Water table would drop to precanal levels under 17 miles of canal.	Same.	No impact.
Turbidity and possible pH change during construction. No permanent change in canal water. Unmeasurable increase in salinity of Colorado River.	Same.	Potential slight increase in salinity of canal water. No change in salinity of Colorado River.	Same.	No impact.
1,518 acres in wetlands complex along canal would be lost.	No net loss of habitat value.	No impact.	No impact.	No impact.
Lower Colorado River and backwaters: 1/2-inch reduction in water level. 4-1/2-acre reduction in water surface area.	No net loss of habitat value.	Lower Colorado River and backwaters: 1/2-inch reduction in water level. 4-1/2-acre reduction in water surface area.	No net loss of habitat value.	No impact.
Acres of habitat lost: 183 desert scrub 153 sand dune.	No net loss of habitat value.	Acres of habitat lost: 5 desert scrub 1 sand dune.	No net loss of habitat value.	No impact.
Minor impacts during construction. Impacts to Yuma clapper rail and California black rail.	No impact.	No significant impact.	No significant impact.	No impact.
Species and numbers of fish would be greatly reduced.	Numbers would be reduced, but gamefish would be maintained.	No impact.	No impact.	No impact.
Potential disturbance of some archeological sites.	No significant impact.	No significant impact.	No significant impact.	No impact.
Annual power loss: AAC - 267,000 kWh Colorado River - 5.2 MkWh.	Same.	Annual power loss: AAC - 105,000 kWh Colorado River - 5.1 MkWh.	Same.	No impact.
440 contractor work years. Economic impact - $56 million to local economy.	Same.	14.9 contractor work years. Economic impact - $1.3 million to local economy.	Same.	No impact.
No impact.	Same.	Increased power demand of 10.7 MkWh per year.	Same.	No impact.

Table S-3.—Estimated costs of mitigation commitments for the preferred alternative

Mitigation commitment	Cost
Lower Colorado River backwater restoration fund	[1]$100,000
Wetlands mitigation	[2]150,000
One-to-one replacement of disturbed flat-tailed horned lizard habitat and sand dune habitat. Purchase of up to approximately 1,503 acres[3] at $500 per acre	[4]751,500
Installation of tire reefs to replace lost shoreline canal fishery habitat	[2]250,000
Large mammal/human escape ridges	[5] ___
Archeological surveys	[2]100,000
Stockpiling and recontouring of surface soils	[6]60,000
Develop interim recreation plan	[7]5,000
Total capital costs	$1,416,500
Mitigation annual operation and maintenance	[2]$46,000

[1] From chapter III, "Wetlands Along the Colorado River."
[2] From Engineering Appendix to the draft environmental impact statement/environmental impact report.
[3] Maximum probable impact estimate, from chapter III, "Special Status Species."
[4] Assumed price of $500 per acre for undeveloped land in Imperial Valley. Replacement lands would be acquired in accordance with section 203(a)(2) of Public Law 100-675 (attachment A of the FEIS/FEIR). In addition, acreage may be reduced based on actual construction impacts.
[5] Cost of incorporating this measure is included in the cost of constructing the canal lining.
[6] U.S. Fish and Wildlife Service estimate for Coachella Canal Lining Project. Assumed to be approximately accurate for the All-American Canal Lining Project.
[7] Bureau of Reclamation estimates. Implementation costs are included in the cost of constructing the canal lining.

CONSULTATION AND COORDINATION

Development of the canal lining alternatives and mitigation measures has been coordinated with the California water agencies affected, Federal and State agencies having responsibility for natural resources, the Quechan Indian Tribe, and the general public. Numerous working sessions and meetings occurred among interested agencies, and public meetings were held in the project area. Through the United States Section of the International Boundary and Water Commission, the United States has held consultations with Mexico regarding the lining project as stipulated in Commission Minute No. 242, Point 6, pursuant to the 1944 Water Treaty between the United States and Mexico.

Coachella Canal Lining Project

Riverside and Imperial Counties
California

Final Environmental Impact Statement/
Final Environmental Impact Report

Volume I

State Clearinghouse No. 1990020408

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United States Department of the Interior

Bureau of Reclamation
Lower Colorado Region

Coachella Valley Water District

SUMMARY

This Final Environmental Impact Statement/Final Environmental Impact Report (EIS/EIR) evaluates the environmental effects of a proposed project to line 33.2 miles[1] of the Coachella Canal (canal) in the southern California desert, east of the Salton Sea. This Final EIS/EIR incorporates revisions and responses to public and agency comments received during the 60-day review period for the Revised and Updated Draft EIS/EIR. That review period extended from September 22, 2000 through November 21, 2000, and the comments and responses to those comments are contained in Volume II of this Final EIS/EIR. A public hearing on the Revised and Updated Draft EIS/EIR was held on Wednesday, October 25, 2000, at the Coachella Valley Water District. Transcripts from that public hearing are also provided in Final EIS/EIR Volume II.

The previous (original) Draft EIS/EIR for this project was circulated for public review in the spring of 1994, and 20 comment letters were received. The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and Coachella Valley Water District (CVWD) were the federal and State lead agencies, respectively, for the previous Draft EIS/EIR, and they are also the lead agencies for this Final EIS/EIR. Because funding to construct the proposed canal lining project was recently appropriated by the State of California, Reclamation and CVWD, in coordination with other State and regional water resource agencies, prepared a Revised and Updated Draft EIS/EIR and recirculated it for public review. The purposes of preparing and circulating that revised draft document, as opposed to simply proceeding with a Final EIS/EIR based on the previous (1994) Draft EIS/EIR, were to (1) incorporate updated information on the proposed project's physical, human, and regulatory environment, (2) address comments received during the 1994 public review process, and (3) provide an opportunity for public review and comment on the Revised and Updated Draft EIS/EIR.

BACKGROUND

The Coachella Canal delivers approximately 330,000 acre-feet of Colorado River water each year to CVWD, situated on the north end of the Salton Sea. The canal loses approximately 32,350 acre-feet of water per year by seepage through the earthen sections from siphon 7 to siphon 32. The canal begins at a turnout on the All-American Canal (AAC) near the international boundary with Mexico and runs through the desert, east of the Salton Sea, before it enters the irrigated area of CVWD. The

[1] A previous (1994) Draft EIS/EIR for the Coachella Canal Lining Project incorrectly identified the total length of unlined canal sections as 33.4 miles.

canal was excavated through desert soils in the 1940s and was placed in operation as a partially unlined canal in 1948.

The first 49-mile section of the canal, which runs through the sandy soil of the East Mesa (as shown on Figure 1-1 in Chapter 1), had especially high leakage, so a new concrete-lined canal to replace it was completed in 1980 to conserve water pursuant to Title I of the Colorado River Basin Salinity Control Act (Public Law [P.L.] 93-320). The new canal, parallel to the existing canal, was connected to existing concrete structures. The last 37 miles of the canal were lined when the canal was originally constructed.

The proposed project lies along a section of the existing unlined canal between siphons 7 and 14 and 15 and 32. (Siphons are buried pipes by which the canal flow passes under desert washes and runoff channels.) This section of unlined canal was constructed in a mixture of gravel and clay soils. The rate of seepage from this section was not as high as in the first 49 miles, so lining of this reach was deferred. In 1991, the portion of the canal between siphons 14 and 15 was lined to test alternative canal lining methods. The lining of the remaining 33.2-mile portion of the canal between siphons 7 and 14 and 15 and 32 (also referred to as the "unlined canal") is the subject of this EIS/EIR. The length of the unlined canal does not include the lengths of the pipe siphons (wash crossings), which are not proposed for replacement.

PURPOSE AND NEED

The purpose of this federal action is to conserve 30,850 acre-feet[2] annually of water presently being lost as seepage from the earthen reaches of the Coachella Canal. A specific quantity of conserved water would be assigned to the Department of the Interior to facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act[3] (P.L. 100-675, November 17, 1988). Remaining quantities of conserved water would be distributed to southern California to meet present water demand and to assist the State in attaining the goals of California's Colorado River Water Use Plan.

[2] An acre-foot of water is the volume of a one-foot depth of water on an acre of ground, approximately 326,000 gallons. This is the amount of water an average family of four uses in and around the home in two years.

[3] Conserved water would not be made available for transfer under the San Luis Rey Indian Water Rights Settlement Act until the separate environmental documentation for changes in the point of delivery has been completed and approved by the Secretary of the Interior.

Construction of the project was authorized by the Congress when the President of the United States in November 1988 signed P.L. 100-675, which expressly provides for this project to be accomplished without federal financing.

CANAL SEEPAGE

At present, an estimated 32,350 acre-feet of water seeps annually from the 33.2-mile unlined portion of the Coachella Canal under study. The seepage through the canal would continue at a rate of 1,500 acre-feet per year after canal lining. Thus, seepage reduction would equal approximately 30,850 acre-feet per year. It is possible that 4,500 acre-feet per year could be provided to the San Luis Rey Settlement parties if approved by the Secretary of the Interior. This would reduce the total conserved water to approximately 26,350 acre-feet per year after lining. The remainder of the conserved water could be made available to California's Colorado River water contractors and as a source of mitigation water for canal lining impacts to marsh/aquatic and desert riparian habitat along the canal.

The rate of seepage varies along the canal, depending on the type of material in which the canal was constructed (e.g., sand and gravel is highly permeable and clay is relatively impermeable). In some areas, the canal was excavated entirely in clay; in others, the canal was excavated through several feet of gravel and sand into clay; and elsewhere, the canal was excavated entirely in sand and gravel. Most of the canal seepage occurs where the canal was excavated through sand and gravel.

Along the first 15 miles of the canal downstream from siphon 7, the canal was excavated mostly in clay, with intermittent zones of gravel and sand contained in depressions in the clay formation. Seepage from this segment of canal is relatively low.

Along the next 16 miles, the canal was excavated mostly in gravel and sand deposits (a broad alluvial fan). Seepage from this segment is much greater than from the first segment of the unlined canal. This portion of the canal is upslope from the Salt Creek area and part of the Frink Springs/Imperial Hot Mineral Spa area. This area includes marsh/aquatic and desert riparian vegetation which is supported by canal seepage and natural springs.

Along the remaining four miles of the unlined canal, the canal was excavated mostly in sandstone deposits. Seepage in this area is relatively low.

HYDROLOGIC EFFECTS OF SEEPAGE

Prior to construction of the canal, the only surface manifestations of groundwater were springs and artesian wells downslope from where the canal is now located. This water originates from beneath layers of clay that confine and pressurize groundwater. The uppermost clay layer generally lies tens of feet below the ground surface at the canal and becomes gradually shallower until it reaches the ground surface a mile or two downslope from the canal.

Since construction of the canal, seepage has produced shallow groundwater under the canal and under the land to the west of the canal, on top of the clay layer that confines the artesian groundwater below. This has created a perched groundwater table.

This seepage-dependent water table drains toward the Salton Sea because the top of the clay, like the ground surface, slopes toward the Salton Sea. At some distance downslope from the canal, because of the downslope thinning of the overlying alluvium, the seepage-dependent perched water table eventually surfaces and has induced the growth of phreatophytes (plants that extract their moisture requirements directly from the groundwater). Seepage also manifests as scattered wet soil and surface trickles downslope from the canal. Also, a portion of the water discharged from shallow wells (mostly privately operated) is canal seepage. Most of these effects occur along the 16-mile portion of the canal (siphons 18 to 29) that was constructed in gravelly sand.

A small amount of surfacing seepage water is used by local residents and resorts for landscaping and garden maintenance and for agricultural uses such as aquaculture farms for rearing fish.

The seepage water used by local citizens is subject to recovery by the Federal Government, and the present local users have no legal rights to its continued use. (However, CVWD could deliver domestic water at standard rates to affected groundwater users within the district's service area.) The Federal Government owns the Coachella Canal, and Colorado River water is delivered to CVWD under a contract between CVWD and the Secretary of the Interior (Secretary). The terms of the contract do not permit these uses of canal seepage.

ALTERNATIVE PLANS

It was originally anticipated that the 34.6 miles of unlined canal between siphons 7 and 32 would be replaced with a new parallel canal, as was done along the first 49 miles of the canal.

In 1987, the idea was proposed to line the canal underwater with a sheet of polyvinylchloride plastic covered by a three-inch-thick concrete lining. The idea has now been developed to the degree that it is considered a viable option, one that could be constructed with less land disturbance than the parallel canal. This innovation triggered the current proposal to line the canal. More recently, another method was proposed, namely to divert canal water around each individual section of the canal through temporary pipes and then dry out the section and line it by conventional means.

Based on these lining methods, the following array of alternatives was formulated:

- Conventional Lining Alternative
- Underwater Lining Alternative
- Parallel Canal Alternative
- No Action Alternative

The Conventional Lining Alternative was selected as the preferred alternative.

The underwater lining method was field tested in the Coachella Canal In-Place Lining Prototype Project along the 1.4-mile section of the Coachella Canal between siphons 14 and 15. The results of the test were used to prepare plans and cost estimates for lining the Coachella Canal under water. The test also produced information on the effect of the lining process on canal water quality and seepage.

Each of the lining methods proposed could be used for the project, alone or in combination. CVWD would continue to operate and maintain the canal during and after it is lined. The mitigation program would also require operation and maintenance support.

USE OF CONSERVED WATER

Conserved water would, in effect, be left in the Colorado River system. The water would then be available for use in California under the Secretary's water delivery contracts in which California's apportionment to the use of Colorado River water is allocated. For the purposes of analysis in this EIS/EIR, it is assumed that this water would be diverted by MWD at Lake Havasu in accordance with a proposed Quantification Settlement Agreement and the Federal Secretarial Implementation Agreement for which separate CEQA and NEPA analyses, respectively, are pending. P.L. 100-675

provides that four California agencies, Palo Verde Irrigation District (PVID), Imperial Irrigation District (IID), CVWD, and/or Metropolitan Water District of Southern California (MWD), may fund project construction; however, the State of California is providing funding for the Coachella Canal Lining Project under California Water Code §12560 et seq. With implementation of a proposed Quantification Settlement Agreement among CVWD, MWD, and IID, approximately 21,500 acre-feet per year would be made available to MWD, and 4,500 acre-feet per year would be made available for facilitating implementation of the San Luis Rey Indian Water Rights Settlement Act. The remaining 4,850 acre-feet of conserved water are expected to be managed by CVWD for environmental mitigation purposes. Conserved water would not be made available for transfer under the San Luis Rey Indian Water Rights Settlement Act until the separate environmental documentation for changes in the point of delivery has been completed and approved by the Secretary of the Interior.

The federal approval of transfers and exchanges of the conserved Coachella Canal water among California's Colorado River contractors will be made through the Secretary's approval of an Implementation Agreement. NEPA compliance for that federal approval will be carried out prior to agency action.

HYROLOGIC EFFECTS OF CANAL LINING

Lining the canal would reduce the amount of seepage water which contributes to the shallow groundwater which is downslope from the canal. This would reduce the amount of water available to seepage-induced vegetation along the canal and would reduce the flow of certain springs and wells.

Lining the canal, without mitigation, would reduce the amount of water in Salt Creek, which discharges into the east side of the Salton Sea. This would not be considered a significant impact to surface water resources, but it would contribute to significant impacts to biological resources unless mitigated. Without mitigation, it is anticipated that after lining the flow of Salt Creek at Highway 111 may occur only during the winter months because of high spring and summer consumption by vegetation in the upstream tributary areas along the creek bottom. Mitigation measures are provided in this EIS/EIR to account for potential impacts to biological resources that would result from reductions in Salt Creek flows.

In the Frink Springs and Hot Mineral Spa areas, shallow wells that have static water elevations above the subsurface layer of the (prehistoric Lake Cahuilla) lakebed clay would potentially go dry after

canal lining. Deep artesian wells would not be affected because the near-surface lakebed clay extends under the canal and prevents canal seepage from supplementing the artesian aquifer below. What is now called Frink Springs appeared on railroad survey maps from the 1850s, and the initial well in the Hot Mineral Spa area was dug when the canal was under construction (i.e., before canal seepage entered the local perched groundwater table), indicating that these features are not seepage dependent.

COMPARISON OF ALTERNATIVES

Table S-1 presents a comparison of the physical differences and cost variations among the alternatives. The construction cost does not include the cost of environmental mitigation measures.

Table S-1. Summary of Physical Properties and Costs

Dimension	Existing canal	Conventional lining	Underwater lining	Parallel canal
Length of canal to be lined (miles)	33.2	33.2	33.2	32.5
Excavation volume (million cubic yards)	–	0.4	2.3	9.9
Concrete volume (cubic yards)	–	97,500	175,500	121,400
Sand and gravel volume (cubic yards)	–	105,000	520,000	120,000
Canal water width, average (feet)	66	43	80	43
Water depth, maximum (feet)	6.0	11.2	9.0	11.2
Side Slopes[1]	2:1	1.5:1	2.5:1	1.5:1
Water volume[2] (acre-feet)	1,180	1,131	1,679	1,131
Water velocity[2] (feet per second)	1.5 to 2.0	1.4 to 2.9	0.8 to 2.0	1.4 to 2.9
Water conserved[3] (acre-feet per year)	–	30,850	29,850	30,850
Construction cost[4] (millions of dollars)	–	61.8	103.8	79.1

[1] Horizontal distance to vertical distance.

[2] At typical waterflow (500 cubic feet per second).

[3] Does not include deduction for water that may be required to mitigate surface water and biological resource impacts.

[4] January 2001 dollars. Does not include cost of environmental mitigation.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Without mitigation, the proposed canal lining alternatives would result in potentially significant impacts related to biological resources (including marsh/aquatic, desert riparian, and terrestrial habitat and special status species), large mammal escape, canal fisheries, cultural resources, and air

quality. With the exception of air quality impacts associated with each of the action alternatives and cultural resource impacts associated with the Parallel Canal Alternative, all impacts would be reduced to less than significant levels through the incorporation of mitigation measures. Construction-related pollutant emissions associated with the Conventional Lining, Underwater Lining, and Parallel Canal alternatives would exceed CEQA significance thresholds; however, prevailing winds would disperse these pollutants over the uninhabited Chocolate Mountains Aerial Gunnery Range. Accordingly, these pollutants would not cause significant effects. Pending consultation with the State Historic Preservation Officer, historical resource impacts to the canal associated with the Parallel Canal Alternative may be significant and unmitigable. Each environmental issue area addressed in this EIS/EIR is summarized below with respect to the proposed project. (See also Table 2-7 in Chapter 2.0, which provides a matrix comparison of the alternatives and their respective impacts). Where one of the specific canal lining alternatives would have a noticeably different effect on an environmental resource than the other alternatives, each alternative and its effects are addressed individually. There are significant effects of delivery to, or use of, water in the MWD service area.

Geographic Setting, Geologic Resources, and Seismicity

None of the alternatives would significantly affect geologic resources or expose people to geologic hazards. Lining the canal with concrete would not make it more susceptible to cause flooding in a seismic event.

Surface Water

The proposed project would not create significant surface water impacts; however, mitigation measures are provided under "Marsh/Aquatic and Desert Riparian Habitat Along Coachella Canal" to maintain the flow levels in Salt Creek.

Coachella Canal

For the Conventional Lining and Parallel Canal alternatives, water volume in the 33.2-mile segment of the canal would be reduced from 1,180 acre-feet to 1,131 acre-feet under typical flow conditions of 500 cubic feet per second (ft^3/s). The Underwater Lining Alternative would increase water volume in the canal to 1,679 acre-feet. The resulting impacts would be less than significant.

Surface Seeps and Flows

Seepage from the unlined portion of the Coachella Canal is estimated at approximately 32,350 acre-feet per year. The seepage water causes moist soil, surface trickles, and pools downslope from the canal in a few locations. Some of the water is used by landowners along the canal for landscaping and other purposes. If the canal was lined, seepage from the canal would be reduced by approximately 30,850 acre-feet per year (Conventional Lining and Parallel Canal alternatives) or 29,850 acre-feet per year (Underwater Lining Alternative). As a result, the shallow (perched) groundwater table would diminish in most locations. The seeps and rivulets supported exclusively by seepage from the canal would no longer have canal seepage as a source, and, as discussed previously, the discharge of wells and springs producing a percentage of seepage water would decrease. This would affect local biological resources (discussed below). Non-seepage supported seeps and flows would remain. Landowners who use seepage-dependent flows do not have a legal right to the water; accordingly, the loss of these flows would not constitute a significant impact. Landowners could, however, contract directly with CVWD to purchase domestic water for landscaping and irrigation to offset their loss.

Salt Creek

As discussed earlier in this chapter, the canal lining project has the potential to alter surface flows in Salt Creek. To mitigate this loss of flows and the resulting effects on biological resources, water would be provided, either from the canal or another source as authorized by P.L. 100-675, to maintain flows in Salt Creek at pre-canal-lining levels (i.e., 623 acre-feet per year, based on mean annual flows from 1996 through 1999, as measured by the U.S. Geological Survey near State Highway 111). This measure is described under "Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal."

Colorado River

Based on the technical appendix prepared by Reclamation for the 1994 All-American Canal Lining EIS, the proposed project would reduce the average flow of the lower Colorado River by approximately one-third of one percent, and it would reduce the level of the river downstream from Blythe, California by approximately one-tenth of an inch. More recent analysis completed by Reclamation for the "Final Biological Assessment for Proposed Surplus Water Criteria, Secretarial Implementation Agreements for California Water Plan Components and Conservation Measures on the Lower Colorado River (Lake Mead to Southerly International Boundary)" (Reclamation 2000c)

confirmed the inconsequential nature of this reduction in flow. Based on the data used for the analysis in the Biological Assessment, a 26,000-acre-foot reduction in flow was calculated to reduce surface water elevation in the Colorado River between 0.0 inch and 0.19 inch at various locations between Parker Dam and Imperial Dam. This change would not be significant to the resources along the river, but the change is included among the cumulative impacts discussed in Chapter 4.0

Salton Sea

Lining the canal would not measurably affect water levels at the Salton Sea because flows from Salt Creek would be maintained at their current levels (as described above), and little to no seepage-dependent groundwater flows reach the Salton Sea from the project area.

Groundwater

In general, the canal-fed shallow groundwater in the area of the unlined canal would gradually diminish after lining. This would not constitute a significant impact to groundwater resources, although it would contribute to biological resource impacts, including a reduction in the amount of water available to seepage-induced vegetation (see "Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal," below).

The effect on wells and springs downslope from the canal would depend on the amount of canal seepage that enters the groundwater system. Where the upper clay layer extends up under the canal, the seepage is trapped in a perched aquifer above the clay layer, and the seepage is prevented from mixing with the deep groundwater below the clay layer. Under these conditions, lining the canal would not affect the flow of deep springs or wells downslope from the canal. However, where the upper clay layer does not extend up under the canal, seepage may mix with the deeper groundwater and may be a portion of the water which flows from springs or discharges from wells. For the reasons given above, the reduction of groundwater recharge associated with the canal lining project would not be significant.

Water Quality

The proposed project would have no significant impacts on the quality of water in the canal, the Salton Sea, or in the Colorado River.

Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal

Without mitigation, the proposed project would have significant impacts on phreatophytes (plants that thrive on a high groundwater table). As mitigated, impacts would be less than significant.

In the vicinity of the Coachella Canal, phreatophyte habitat includes marsh/aquatic (wetland) and desert riparian vegetation types. Lining the Coachella Canal would reduce the amount of seepage from the canal that flows underground and downslope and supports seepage-induced aquatic/marsh and desert riparian vegetation. This would result in a range of impacts that include the following: loss of marsh/aquatic and some desert riparian types in areas that go dry; transition of more mesic- to xerically adapted desert riparian types in some areas that go dry or in areas where the groundwater level drops due to seepage reduction but is still supplied by natural groundwater sources; and transition of desert riparian types to upland types in areas with no groundwater supplies from either source.

The previous (1994) Draft EIS/EIR assessed project impacts to wetlands habitat along the Coachella Canal. The estimates of potential vegetation loss were based on an analysis of the growth of marsh/aquatic and desert riparian vegetation after the canal was first put into operation. In preparing the Revised and Updated Draft EIS/EIR, the initial vegetation assessments were updated using 1998 infra-red satellite images, supplemented by 1998 true color satellite images. Also, a field assessment of changes in vegetation communities and structural type was conducted in August 2000. The extent of vegetation in the project area was further updated in this Final EIS/EIR as a result of input from resource agencies and the Center for Natural Lands Management and based on additional field verification conducted in October and November 2000.

The updated vegetation mapping showed that there are 456 acres of marsh/aquatic and 7,421 acres of desert riparian habitat in the project area. The marsh/aquatic habitat is particularly important for the endangered Yuma clapper rail and the California black rail. Of the desert riparian habitat, approximately 71 percent consists of stands of salt cedar, and an additional 18 percent consists of salt cedar mixed with native vegetation. Of more value to wildlife, however, are the areas with native vegetation, and these include screwbean mesquite, cottonwood-willow, California fan palm, and honey mesquite.

Without mitigation, the loss of seepage-dependent marsh/aquatic and desert riparian habitat would represent a significant environmental impact. Lining the canal would potentially (without mitigation) cause the loss of 122 acres of marsh/aquatic habitat and 4,576 acres of desert riparian

habitat. Some vegetation, however, is supported by both canal seepage and artesian groundwater discharge not connected with the canal. In these areas, it is predicted that an additional 1,339 acres of desert riparian habitat would survive but would be less vigorous.

Impacts to marsh/aquatic and desert riparian habitat would be either avoided through the provision of water to sustain the existing vegetation or through mitigation on an acre-for-acre basis, based on ecological equivalency. In this manner, impacts to 105 acres of the 122 acres of potentially affected marsh/aquatic habitat would be avoided, and 17 acres of new marsh/aquatic habitat would be created as mitigation. Restoration or creation of desert riparian habitat would occur at a 1:1 ratio for native vegetation communities, while salt cedar and mixed salt cedar/native vegetation habitat would be mitigated at a lower ratio reflecting the low wildlife value associated with salt cedar. As mitigated, impacts to marsh/aquatic and desert riparian habitat would be less than significant.

Terrestrial Habitat

Without mitigation, project construction would have a significant effect on terrestrial habitat. As mitigated, impacts would be less than significant.

If the Conventional Lining Alternative is selected, the installation of bypass pipelines along the canal would generally degrade and, to some extent, crush vegetation in a 65-foot-wide corridor along the canal. Of approximately 29,000 acres of undisturbed terrestrial habitat in the project area, construction of the Conventional Lining Alternative would affect approximately 246 acres of previously undisturbed terrestrial habitat; construction of the Underwater Lining Alternative would affect approximately 177 acres; and construction of a parallel canal would affect approximately 768 acres. Individual trees and/or valuable habitat would be avoided as much as practicable. Project mitigation would consist of terrain restoration, replantings, and stockpiling and redistributing topsoil in areas where blading is required. Impacts to mature vegetation would be mitigated by replacing trees at a 2:1 ratio. As mitigated, impacts would be reduced to less than significant levels.

Special Status Species

Several species of sensitive, unique, and protected plants and animals may occur in the project area. As used in this EIS/EIR, the term "Special Status Species" refers to species that are federally listed as, or are a candidate for listing as, threatened or endangered; are otherwise provided federal protection; and/or are listed by or are otherwise afforded protection by the State of California. Special status species that may occur within the project area include:

- federally and State-listed endangered desert pupfish;
- federally listed endangered and State-listed threatened Yuma clapper rail;
- State-listed threatened California black rail;
- federally and State-listed endangered southwestern willow flycatcher;
- federally and State-listed endangered least Bell's vireo;
- federally and State-listed threatened desert tortoise;
- federal special protection species flat-tailed horned lizard;
- federal and State candidate for listing Palm Springs round-tailed ground squirrel;
- State special concern species LeConte's thrasher;
- State special concern species burrowing owl;
- State special concern species Palm Springs pocket mouse; and
- State special plant species fairyduster.

The federally and State-listed endangered razorback sucker (*Xyrauchen texanus*) has not been recorded as occurring in the Coachella Canal; however, it is also addressed in this EIS/EIR due to concerns expressed by California Department of Fish and Game (DFG). Bighorn sheep may occasionally migrate down from the Chocolate and Orocopia Mountains to use the project area as a water source. These are not, however, the federally listed endangered and state-listed threatened Peninsular bighorn sheep (*Ovis canadensis cremnobates*), as had been reported in previous NEPA/CEQA documentation for the proposed project.

Without mitigation, impacts to some of these species (e.g., desert pupfish, Yuma clapper rail, California black rail) could occur through the loss of canal seepage-dependent habitat. As mitigated, impacts to these species would be avoided. Project construction could also result in impacts to species potentially present in areas that would be affected directly by project construction (e.g., desert tortoise, burrowing owl, Palm Springs pocket mouse, fairyduster). Impacts to these species would either (1) be less than significant due to the low likelihood of these species occurring in the project area, the limited number of individuals that would be affected in comparison to the species' regional population, and in consideration of the respective species' sensitivity, or (2) be avoided or mitigated to less than significant levels. For example, the potential to encounter desert tortoise along the canal is considered low, but potential impacts to this species would be mitigated through pre-construction surveys, relocation of tortoises to outside of the construction area, and creation of replacement burrows for any tortoise burrows located within the construction footprint.

Large Mammal Escape

The proposed project would reduce the drowning hazard for large mammals by providing escape ridges along the canal's side slopes and by providing escape ramps in areas of high wildlife visitation.

Large mammals such as mule deer and bighorn sheep may use the canal as a water source. Adding a smooth concrete lining to the canal could increase the drowning hazard for large mammals which may drink from it; accordingly, each of the canal lining alternatives would include the provision of slip-formed escape ridges in the concrete lining. In addition to the escape ridges, in areas of high wildlife visitation, such as at siphon 20, escape ramps would be added to the canal. The escape ridges, extending out approximately 1.5 inches in parallel, horizontal rows every 18 inches, would allow large mammals to approach and exit the waterline with less hazard of drowning than exists under current conditions. The effectiveness of escape ridges was demonstrated in a test of the Coachella Canal In-Place Prototype Lining Project (conducted between siphons 14 and 15). That project entailed a canal side slope of 2.5-to-1 (horizontal to vertical), and the Underwater Lining Alternative would create a similar 2.5-to-1 canal side slope. The Conventional Lining and Parallel Canal alternatives, would result in a steeper 1.5-to-1 canal side slope. Post-construction monitoring of another Reclamation canal— the concrete-lined Towoac Canal near Cortez, Colorado— indicated that deer can safely traverse a canal with 1.5-to-1 side slopes. As a precautionary measure, however, post-lining monitoring for the Conventional Lining and Parallel Canal alternatives would be conducted to ensure that large mammals can enter and exit the canal area safely. If warranted by testing or monitoring results, additional escape ramps or other escape measures would be added to the canal. As mitigated, impacts to large mammals would be less than significant.

Canal Fishery

Without mitigation, the proposed project would cause significant impacts to the canal fishery. As mitigated, impacts would be less than significant.

The canal contains game and nongame fish. The fishery is dominated by channel catfish and also contains populations of largemouth bass, sunfish, and flathead catfish. Other species are common carp, threadfin shad, and striped bass. Channel catfish, bass, and sunfish provide recreational fishing. The canal has also been stocked with triploid grass carp, an exotic species that have been introduced to keep the canal cleaned of aquatic weeds.

The canal lining alternatives would eliminate canal bank vegetation, which provides food and cover, particularly for shoreline gamefish. These changes would cause the number of fish in the canal to decline. Mitigation for the changes, aimed at maintaining the fishery, would consist of installing artificial reefs in the lined canal, or other measures that would similarly increase the ability of the lined canal to support fish populations. The reefs would provide cover for hatchling fish and habitat for aquatic organisms on which they feed, thus mitigating impacts to less than significant levels.

Cultural Resources

Without mitigation, cultural resource impacts associated with the project alternatives could represent a significant impact. Impacts associated with the Conventional Lining and Underwater Lining alternatives would be mitigated to less than significant levels. Construction of the Parallel Canal Alternative, which would essentially entail abandoning and replacing the existing canal, could (pending consultation with the State Historic Preservation Officer) constitute an unmitigable impact to the canal, which is potentially a historical resource.

The canal runs parallel to, and as close as one-quarter mile from, the shoreline of the ancient Lake Cahuilla, placing it directly within an archaeologically sensitive region. The remains of prehistoric fishing camps and other signs of temporary use are present in the area. Additionally, the Salt Creek-Dos Palmas Springs area has been used by the Cahuilla Indians for ceremonial purposes, including cremations.

The proposed project could cause significant impacts to archaeological resources that may be located in the area affected by project construction. Class III archaeological surveys of land affected by construction would be made prior to construction. Potentially significant impacts to the cultural resources identified would be mitigated by avoiding or professionally recovering these resources. Avoidance would be more feasible with the Conventional Lining and Underwater Lining alternatives, based on the degree of flexibility associated with bypass pipeline location, than it would for the Parallel Canal Alternative, which would entail substantial excavation. Surveys and any necessary recovery of archaeological resources would be conducted in compliance with Section 106 of the National Historic Preservation Act and, if Native American burial sites are encountered, the Native American Graves Protection and Repatriation Act. With this mitigation, impacts to archaeological resources would be mitigated to less than significant levels.

Based on the Coachella Canal's age (51 years) and the importance it played in the development of the Coachella Valley, it is potentially a historical resource. As a result, actions that affect the canal,

such as lining it with concrete; may (pending consultation with the State Historic Preservation Officer) constitute a significant historical resource impact. For the Conventional Lining and Underwater Lining alternatives, this impact could be mitigated through appropriate documentation of the existing canal prior to construction (e.g., an Historic American Engineering Record). The Parallel Canal Alternative, which would entail abandoning the existing canal and replacing it with new canal sections constructed along a parallel alignment, could constitute an unmitigable impact to the historical resource values of the canal.

Indian Trust Assets

Indian Trust Assets are legal interests in property held in trust by the United States for Indian Tribes and individuals. There are two Indian Trust Assets that either occur in the vicinity of the Coachella Canal or that were evaluated to determine if they would be affected by the proposed project: (1) the Torres-Martinez Indian Reservation and (2) facilitation of implementation of the San Luis Rey Indian Water Rights Settlement Act (P.L. 100-675 Title I).

The proposed project would have no effect on the Torres-Martinez Indian Reservation. With regard to the San Luis Rey Indian Water Rights Settlement, the proposed project would be beneficial because it would provide 4,500 acre-feet of water each year to facilitate implementation of the settlement.

Recreation

Without mitigation, project construction could restrict access to the Bradshaw Trail, a recreational trail maintained by the U.S. Department of the Interior, Bureau of Land Management (BLM). This impact would be mitigated to less than significant levels by maintaining access to the trail during construction. There would be no other significant recreational resource impacts associated with the project alternatives.

Land Ownership and Use

The proposed project would not cause significant land ownership or use impacts. With the exception of the Parallel Canal Alternative where as much as 31 acres would need to be acquired, the canal lining alternatives would not require any additional land for construction; however, project or biological mitigation could entail acquisition of privately owned land in or near the BLM-designated Dos Palmas Area of Critical Environmental Concern. Property owners would be compensated for

the fair market value of their property in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and applicable State law. Accordingly, while ownership patterns in the area may change, this change would not constitute a significant environmental impact.

Sand and Gravel Supplies

Impacts to sand and gravel resources would not be significant.

The canal lining alternatives would require between 105,000 and 520,000 cubic yards of gravel for construction. Gravel would be obtained from local sources and the project would not substantially reduce the quantity of sand and gravel available for other projects in the region.

Impacts associated with the development of new sand and gravel resources, if needed, would be subject to supplemental environmental documentation, and quarry operators would be required to obtain appropriate permits. This would mitigate potential impacts to biological and cultural resources that may be affected by project-related sand and gravel extraction.

Transportation

The proposed project would include the development and implementation of a traffic control plan as part of project design. With the implementation of this plan, transportation impacts would be less than significant. Travelers on the local road network may experience some delays associated with project construction, but these would not be of sufficient frequency or duration to represent a significant transportation impact. There would be no noticeable long-term increase in traffic associated with maintaining the lined canal.

Air Quality

Air quality impacts would be significant without mitigation. As mitigated, impacts would exceed emission thresholds established by the South Coast Air Quality Management District and would be considered significant under CEQA. Mitigation would, however, reduce emissions to less than federal Clean Air Act *de minimis* levels, with the exception of oxides of nitrogen (NO_x) emissions associated with the Parallel Canal Alternative. Accordingly, Reclamation would need to complete a Clean Air Act General Conformity determination prior to approving the Parallel Canal Alternative

Impacts to these facilities would result in decreased releases from Parker Dam by the amount of water diverted upstream at Lake Havasu, if approved. This incremental reduction in flows would not substantially affect hydroelectric power generation, and it would not constitute a significant impact.

Public Safety

The proposed project would have less than significant impacts during construction. This assessment of construction safety effects takes into account that standard construction safety measures, such as restricting public access to the construction site, would be implemented, as would a traffic control plan in all construction areas. In the long term, the proposed project would improve safety because escape ladders would be added every 750 feet along the canal and because escape ridges and strategically placed escape ramps (described under "Large Mammal Escape") would also materially reduce drowning hazards at the canal.

Socioeconomics Aspects

The proposed project would result in short-term, beneficial impacts to the local economy. There would be no significant, adverse socioeconomic impacts associated with any of the alternatives.

Local Community Structure

Under each canal lining alternative, 210 or fewer construction contractors and management workers (including family members) would be expected to arrive from outside the area. Compared to the populations of cities in the Coachella Valley and the Imperial Valley, the arrivals would be small in number and are not expected to have a significant effect on the structure and utilities of local communities.

Because of the short duration of the construction period, many workers would bring mobile homes and travel trailers. The occupancy of resorts and trailer parks in the vicinity of the project would increase during construction.

Employment and Income

The canal lining alternatives would have a beneficial impact on the local economy. The estimated total economic benefit to the local area would be $24.5 million for the Conventional Lining

Alternative, $45.8 million for the Underwater Lining Alternative, and $31.5 million for the Parallel Canal Alternative.

Immigration from Mexico

The Immigration and Naturalization Service Border Patrol (Border Patrol) maintains surveillance for transport of illegal immigrants along the canal. The canal lining alternatives would not have a significant effect on the ease of surveillance.

Minority and Low-Income Populations

The effects of project construction (e.g., noise, air quality, traffic) would not be disproportionately focused on minority or low-income populations, and the proposed project would be in compliance with the requirements of Executive Order 12898, "Environmental Justice."

Farming

The proposed project would affect aquaculture farming; however, aquaculture operators are among the unauthorized users of the canal seepage water.

Growth Inducement

The proposed project would not induce growth in the Coachella Valley or Imperial Valley, near the area in which the project would be constructed, or on the southern California coastal plain, where the conserved water would assist in maintaining existing diversions to this region.

CONSULTATION AND COORDINATION

Development of the canal lining alternatives, impact assessments, and mitigation measures were coordinated with the California water agencies affected, federal and State agencies having responsibility for natural resources, the Torres Martinez Desert Cahuilla Indian community, other Native American tribal organizations, and the general public. As part of the previous (1994) Draft EIS/EIR preparation process, numerous working sessions and meetings were held among interested agencies, and public meetings were held in the project area. Additional meetings with resource agencies, including the U.S. Fish and Wildlife Service (FWS), California Department of Fish and Game (DFG), Bureau of Land Management (BLM), and California Department of Parks and

Recreation, were held during preparation of the Revised and Updated Draft EIS/EIR and this Final EIS/EIR. Informal consultation with the FWS pursuant to Section 7 of the federal Endangered Species Act is ongoing. Additionally, contacts with Native American tribal organizations have also been re-initiated for this project.

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FINAL

ENVIRONMENTAL IMPACT REPORT (EIR)

PROPOSED
WATER CONSERVATION PROGRAM
AND
INITIAL WATER TRANSFER

IMPERIAL IRRIGATION DISTRICT

California State Clearinghouse No. 86012903

OCTOBER 1986

CHAPTER 2

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

This Environmental Impact Report (EIR) has been prepared by the Imperial Irrigation District pursuant to Section 21151 of the California Environmental Quality Act (CEQA). The EIR addresses both the impacts of an expanded water conservation program proposed by the IID and the initial transfer of 100,000 AF/year of conserved water. The alternatives being considered for these proposals are the "no-program" alternative and the "no-initial-transfer" alternative.

2.1 PROJECT BACKGROUND

The IID was organized in 1911 to deliver Colorado River water to lands within the Imperial Valley, California, for agriculture, domestic, industrial, and other beneficial uses. Water flows through the Imperial Valley in a complex system of delivery canals, laterals, and drains. Agricultural drainage water flows into the New and Alamo Rivers and directly to the Salton Sea, which is a sink for all drainage in the Imperial Valley. The IID currently serves approximately 500,000 acres of agricultural land with a baseline water demand of about 2.77 million AF/year. The District has present perfected rights to 2.6 million AF/year. Under the California Seven-Party Agreement, the IID has a right to beneficial use of a portion of the 3.85 million AF/year of Colorado River water available to California's agricultural agencies in accordance with the priorities established in that agreement.

Past and present water conservation programs implemented by the District have resulted in the conservation of an estimated 138,000 AF/year of water through a series of structural, operational, administrative, and educational programs, including canal lining, seepage recovery systems, regulatory reservoirs, and administrative actions.

2.2 PROGRAM DESCRIPTION

The IID proposes to implement an expanded water conservation program designed to conserve up to 496,000 AF/year of water through a series of conservation projects and measures. Under this program, the District is considering the potential transfer of up to 250,000 AF/year of conserved water to other water agencies outside the IID that are capable of receiving the water through the existing Colorado River Aqueduct. The initial transfer of 100,000 AF/year would be the first step in this process and would provide payments to the IID to permit implementation of the proposed conservation program.

In addition to the previous conservation efforts (138,000 AF/year), the proposed expanded conservation program would conserve an additional 358,000 AF/year of water through the following measures:

(1) Concrete lining an additional 550 miles of lateral canals.

(2) Concrete lining the All-American Canal from Pilot Knob Check to Drop No. 1, the East Highline Canal, the Vail Canal, and Rositas Canal.

(3) Constructing up to 150 reservoirs of varying sizes that are dispersed throughout the IID.

(4) Installing improved flow-monitoring structures at approximately 1,500 metering and recording stations throughout the District to measure flow at key points in the system.

(5) Replacing approximately 2,000 old gates in the District's lateral system that often leak.

(6) Constructing operational discharge recovery systems made up of cross canals located at the end of each lateral.

(7) Automating the IID's facilities using existing microwave communications systems, local microcomputers at the head of each lateral, and associated monitoring devices.

(8) Establishing a land leveling program (i.e., farm grading for better distribution of irrigation water) to augment current private programs.

(9) Establishing a tailwater pumpback program for reuse of on-farm tailwater on a farm-by-farm basis.

(10) Installing salinity control through a reverse-osmosis 270-mgd capacity desalination plant with a brine stream of approximately 27 mgd (concentration of approximately 10,000 mg/L total dissolved solids); or other measures, if needed, to mitigate against higher salinity.

(11) Miscellaneous projects.

In addition to the foregoing measures, three components have been identified that, although not directly conserving water, are essential to the total program:

(1) Power offset measures
(2) Groundwater reserve facilities
(3) Environmental mitigation projects

The amounts of additional water projected to be conserved through the program described above are given in Table 2-1.

Table 2-1 - Potential Water to be Conserved

Method	Estimated Amount Conserved (AF/year)
Canal Lining	
All-American Canal: Pilot Knob to Drop No. 1	51,000
East Highline Canal	46,000
Vail Canal	2,000
Rositas Canal	2,000
Laterals	35,000
Subtotal	136,000
Reservoirs	35,000
Improved flow-monitoring structures	36,000
Nonleak gates	14,000
Recovery of operational discharge	30,000
System automation	27,000
Land leveling	20,000
On-farm tailwater recovery systems	20,000
Desalination plant	30,000
Miscellaneous methods	10,000
Total	358,000

Source: Parsons, 1985a.

It is anticipated that program implementation could begin in 1987 and that the initial transfer of water could begin in 1987-1988. The program described above is estimated to be accomplished over a 12- to 14-year period at a current estimated capital cost of $600 million, exclusive of additional capital cost required for environmental mitigation. Revenue received for transfers of conserved water would finance water conservation improvements and measures, fund environmental projects and mitigation studies, and assist in maintaining reasonable water rates within the District. A more detailed project description, including a preliminary implementation schedule, is presented in DEIR Chapter 2.

2.3 SIGNIFICANT ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES

The first 100,000 AF/year of water transferred would not have any significant environmental effect because this water has already been conserved and is not entering the IID's system. A discussion follows of the degree to which the conservation of greater amounts of water may have significant environmental impacts.

Adverse and beneficial environmental impacts predicted to occur as a direct or indirect result of the conservation program are discussed in DEIR Chapter 4. The following subsections present a summary discussion of (1) significant beneficial impacts, and (2) significant adverse impacts and mitigation measures.

2.3.1 SIGNIFICANT BENEFICIAL IMPACTS

The significant beneficial impacts that will result from the expanded conservation program are primarily economic and will result in increased water availability and improved quality:

(1) Water conservation, to the extent reasonable, will enable the District to ensure fulfillment of the mandate of California laws and the state constitution with respect to making beneficial use of water.

(2) Water conservation will ensure that the IID's water availability is increased by conserving 500,000 AF/year, transferring only 250,000 AF/year, and developing a groundwater reserve for use in high demand years. This additional water could be available to support Imperial Valley growth.

(3) Reduction in the current level of the Salton Sea will reduce penalty payments by the IID to landowners impacted by the existing high sea level.

(4) Stimulation of the regional economy will occur through the local expenditure of $300 million on construction and $20 million/year on operations and maintenance (O&M) expenditures.

(5) Water rights will be preserved through the conservation of 358,000 AF/year of water.

(6) Providing concrete lining and other feasible and cost-effective improvements to delivery systems and water drainage, including improved flow-monitoring devices, reduced mechanical eradication of hydrilla (aquatic vegetation), and installation of salinity control measures - all designed to enhance water conservation and irrigation practices - will improve and reduce farm production costs in the Imperial Valley.

(7) An outside source of funding for the transfer of up to 250,000 AF/year of conserved water will be obtained in order to finance the expanding Water Conservation Program.

Overall, there will be a regional economic benefit from local expenditures made for the Water Conservation Program. These expenditures, plus the cost savings realized through the measures listed above, will have a direct beneficial impact on the economy of the Imperial Valley. In addition to the benefits just discussed, additional expenditures can be expected to be made for environmental mitigation measures.

The benefits just enumerated do not take credit for what may be potentially one of the most important economic benefits - saving the Salton Sea. The IID intends to participate in a comprehensive study of the Salton Sea with the objective of preserving this resource. If a solution for the declining value of the sea results from the proposed District study, property values around the sea would significantly increase, businesses would expand, and county tax revenues would increase accordingly.

2.3.2 POTENTIAL SIGNIFICANT ADVERSE IMPACTS AND MITIGATION MEASURES

Table 2-2 lists the significant environmental impacts and mitigation measures for the proposed programs. Not all proposed mitigation measures are feasible, guaranteed, or even possible because the IID may need approval from state and federal agencies, which may or may not be granted. The IID recognizes that several mitigation measures could, if implemented, reduce impacts to an insignificant level. A discussion is given in FEIR Table 5-1 (see insert for DEIR pages 5-2 and 5-3).

Table 2-2 - Potential Significant Adverse Impacts and Mitigation Measures

Impact	Mitigation Measures
WATER RESOURCES	
1. Lower elevation and higher salinity of the Salton Sea. This is a significant adverse impact.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved.

Table 2-2 (Contd)

Impact	Mitigation Measures
1. (Contd)	This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in and support a task force currently being organized by the California Secretary of Resources to examine solutions to the impacts.
2. Increased salinity and decreased flows in New and Alamo Rivers and drains. Decreased potential for beneficial use of this water. This is a significant adverse impact.	Effects on terrestrial and aquatic biota will be mitigated (see discussion for Impacts 7 and 14 in this table). Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in a study to determine how to mitigate the impacts effectively.
3. Large increase in salinity of Alamo River near the international border (potential location of brine discharge) if the desalination plant is constructed and the brine stream is disposed of in the Alamo River. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Use alternative means to dispose of brine such as land disposal.

Table 2-2 (Contd)

Impact	Mitigation Measures
4. Increased pollutant concentrations (e.g., pesticides herbicides, and other agricultural chemicals) in the New River at the outlet by as much as 20%, and increased pollutant concentrations in the Alamo River by as much as 50%, at some locations, assuming present pollutant load. This is a significant adverse impact.	Mitigation measures will be developed by the California Regional Water Quality Control Board (CRWQCB) (Colorado River Basin Region) when SB 1745 is implemented, in addition to possible authorization of funds for further studies and cleanup. The IID will participate in studies addressing mitigation for the New and Alamo Rivers. This impact will not be mitigated to an acceptable level unless there is action by others as described.
5. Potential contamination of groundwater by land disposal of desalination brine. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Locate or design disposal areas to minimize impacts to aquifers, as required by waste discharge orders of CRWQCB.
6. Increased salinity (of up to 10 mg/L) of irrigation water from the Colorado River prior to construction and operation of the planned desalination plant. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	The desalination plant is the currently defined mitigation measure; however, continuing studies may define other, more cost-effective alternatives.
TERRESTRIAL BIOLOGY	
7. Loss and degradation of wetlands/riparian habitat with change in species composition and abundance. Includes impacts to Yuma	a. Assist in maintaining an adequate amount of the existing habitat with drainage water and/or fresh water.

Table 2-2 (Contd)

Impact	Mitigation Measures
clapper rail and black rail habitats. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	b. Offset by enhancing existing habitat elsewhere or creating new replacement habitat. c. Assist in maintaining a Yuma clapper rail enhancement program.
8. Damage to wetlands/riparian habitats with stress to wildlife due to construction and operational activities. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Restrict construction disturbance to as small an area as possible, avoiding sensitive areas. b. Regulate traffic and noise in sensitive areas. c. Use standard dust-control practices. d. After considering sensitive habitats during site selection (see mitigations for Impact 9 in this table), restrict operational activities to minimize stress to wildlife.
9. Displacement of wetlands/ riparian habitats due to facilities placement and land disposal of brine. Destruction of Yuma clapper rail habitat and displacement of Yuma clapper rail (endangered species) and black rail. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Prohibit construction in sensitive habitats. b. Offset by enhancing existing habitat elsewhere or creating new replacement habitat. c. Assist in a Yuma clapper rail enhancement program. d. Locate or design disposal area(s) to minimize impacts to sensitive areas, as required by waste discharge orders of CRWQCB.
10. Wildlife mortality. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Restrict traffic to light wildlife-use areas and use adequate caution. b. Construct burro deer escape structures in lined canals, where required, to facilitate escape. Construct ramps or roads across canals at burro deer crossings. Provide a source

Table 2-2 (Contd)

Impact	Mitigation Measures
10. (Contd)	of water for burro deer and other wildlife, e.g., passive water collection devices using perforated tile water collection designs such as those currently in use in the Imperial Valley. c. Restrict construction areas and traffic from sensitive habitats. d. Use bird deterrents to exclude birds from brine ponds, if constructed. Construct ponds in low-use bird areas.
11. Increased uptake of pollutants into food chain through New and Alamo River wetlands and riparian habitats. This is a significant adverse impact.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in a study to determine how to mitigate this adverse environmental impact effectively.
12. Change in species composition and abundance, toxicity, and/or mortality due to increased salinity in Alamo River. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Dilute sensitive habitats with drainage water and/or fresh water.

Table 2-2 (Contd)

Impact	Mitigation Measures
13. Reduction in migratory bird-use areas within Imperial and Riverside Counties, which are part of the Pacific flyway. This is a significant adverse impact but will be mitigated to an insignificant level.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in a study to determine how to effectively mitigate this adverse environmental impact. Given that solutions are developed for the problem of river pollution and higher Salton Sea salinity, the water quality impacts of the IID's Water Conservation Program will be eliminated, along with impacts to the Pacific flyway.
14. Decrease in terrestrial biota use of the Salton Sea aquatic and riparian habitats. This is a significant adverse impact but will not be mitigated to an insignificant level by the mitigation measures adopted.	Although wetlands/riparian habitats in rivers, wildlife refuges, canals, and drains will be enhanced (see mitigation for Impact 7 in this table), this impact to Salton Sea habitats will not be mitigated to an acceptable level unless there is action by others as described in item 1, above. It should be noted, however, that the IID is committed to participate in and support a task force currently being organized by the California Secretary of Resources to examine solutions to the impacts.

Table 2-2 (Contd)

Impact	Mitigation Measures
AQUATIC BIOLOGY	
15. Accelerated loss of biota and fishery in the Salton Sea, including the desert pupfish (endangered species). This is a significant adverse impact but will not be mitigated to an insignificant level by the mitigation measures adopted.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in and support a task force currently being organized by the California Secretary of Resource to examine solutions to the impacts.
16. Change in canal aquatic species composition and abundance. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Create up to 10 backwater areas along the East Highline Canal and up to 5 along the All-American Canal. b. Use standard construction practice to reduce turbidity.
17. Increased uptake of pollutants into the aquatic food chains of the New and Alamo Rivers. This is a significant adverse impact.	Mitigation measures will be developed by the California Regional Water Quality Control Board (CRWQCB) (Colorado River Basin Region) when SB 1745 is implemented, in addition to possible authorization of funds for further studies and cleanup. The IID will participate in studies addressing mitigation for the New and Alamo Rivers. This impact will not be mitigated to an acceptable level unless there is action by others as described.

Table 2-2 (Contd)

Impact	Mitigation Measures
SOCIOECONOMICS	
18. Accelerated loss in recreational value of the Salton Sea. This is a significant adverse impact.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in and support a task force currently being organized by the California Secretary of Resources to examine solutions to the impacts.
19. Accelerated loss in resort and property values near the Salton Sea. This is a significant adverse impact.	Because the IID does not have the economic ability, authority, or jurisdiction to carry out mitigation for this impact, all concerned federal, state, and local agencies must be involved. This impact will not be mitigated to an acceptable level unless there is action by others as described. It should be noted, however, that the IID is committed to participate in and support a task force currently being organized by the California Secretary of Resources to examine solutions to the impacts.

Table 2-2 (Contd)

Impact	Mitigation Measures
SOILS	
20. Soil erosion and deposition from water action during construction. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Plan proper drainage to prevent erosion due to runoff from compacted, barren, and disturbed soil surfaces.
21. Soil erosion and deposition from wind action during construction. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Minimize soil erosion due to wind action from offroad vehicle use in construction areas by limiting all vehicle traffic and construction activity to the authorized ROW and through paving, oiling, graveling, or watering. b. Cover stockpiles of excavated materials. c. Prevent erosion due to wind action during major land leveling operations by watering soil surfaces periodically. d. Minimize grading activities during dry windy conditions.
GEOLOGY AND SEISMICITY	
22. Changes to existing physiography and topography during construction. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Conduct all construction grading to meet minimum requirements of the Uniform Building Code or local ordinances.
23. Increased risk of seismic ground-motion-induced damage to canal system. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Use existing or conduct detailed geologic investigations of active fault zones. b. Use geologic report to site and design facilities. Map all foundation excavations for critical

Table 2-2 (Contd)

Impact	Mitigation Measures
23. (Contd)	structures by a California engineering geologist. c. Complete emergency repair plans to mitigate damage to canal system in the event of an earthquake-induced rupture. Include plans to cut off water to canal system to minimize spillage.
INFRASTRUCTURE	
24. Permanent increase in electric power demand and loss of capacity to generate hydropower. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Construct new and/or retrofit existing hydropower facilities. b. Purchase additional power outside the IID.
25. Potential threat to public safety from falling into lined canals. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	Construct escape structures (see mitigation measure b for Impact 10 in this table).
CULTURAL RESOURCES AND PALEONTOLOGY	
26. Loss or disturbance of cultural resources. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Compile inventory of all known resources in areas potentially affected and delineate areas that have been surveyed to federal standards [66- to 98-ft (20- to 30-m) transect intervals].

Table 2-2 (Contd)

Impact	Mitigation Measures
26. (Contd)	b. Conduct intensive surface survey of all areas in item 26a that have not been adequately studied, and evaluate significance of visible sites and the potential for buried sites. c. Where avoidance of significant resources is not feasible, prepare mitigation plan, obtain concurrence of state/federal agencies, and consult with appropriate Native American communities. d. Implement mitigation plan, which may involve mitigation by scientific data recovery, i.e., excavation, analysis, and report. e. Provide archaeological monitoring during subsurface construction activities in sensitive areas as defined in item b, above. If cultural resources are encountered, they will be evaluated and effects mitigated as provided in the mitigation plan.
27. Loss of fossils and associated scientific data. This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measure adopted.	Monitor construction in highly important areas. If fossils are found in any area during construction, stop construction until qualified paleontologist has examined remains, determined their importance, made recommendations regarding further mitigation, and initiated/completed one or more of the following measures: remove fossils, conduct no further mitigation, survey/monitor immediate area.

Table 2-2 (Contd)

Impact	Mitigation Measures
AIR QUALITY AND NOISE	
28. Long-term increase in noise in vicinity of desalination plant (if constructed). This is a significant adverse impact but will be mitigated to an insignificant level with the mitigation measures adopted.	a. Use low-noise-producing electrical motors, pumps, and equipment as much as feasible in the desalination plant complex. b. Shield equipment, as necessary, using barriers and enclosures.

2.4 UNRESOLVED ISSUES

Although the IID is committed to the implementation of its expanded Water Conservation Program using sound environmental procedures, there are significant adverse environmental impacts that the District cannot solve alone. These impacts fall into two general categories:

(1) Salton Sea

Although the IID is committed to participate in and support an interagency task force to examine solutions to the Salton Sea problem, any study will require the support of all concerned governmental agencies. Without a solution being implemented, the decline of the sea will continue with or without implementation of an expanded water conservation program. The Salton Sea's fishery and other associated recreational uses would be reduced at an accelerated rate.

(2) New and Alamo River

The discharges from agricultural, domestic, and industrial sources, in particular those from Mexico, will become increasingly damaging to the New and Alamo Rivers as the District's conservation program reduces drain flows and their dilution effects. The loss of habitat and biota will be mitigated to an acceptable level by the District; however, the aesthetic value may be diminished. In addition, the uptake of pollutants by aquatic biota and wetland vegetation would increase, and more pollutants would enter the food chains of the New and Alamo Rivers.

The District believes that there is a real possibility, through joint efforts with other agencies, that all or a major part of the Salton Sea can be stabilized at an elevation and salinity that would preserve the fishery.

To this end, the District is committed to participate in and support an interagency study to determine ways that the competing demands on the Salton Sea may be balanced and managed to maximize the benefits. This study would be coordinated with other ongoing efforts and would focus on legal, environmental, institutional, fiscal, and technological issues.

The loss of the Salton Sea's fishery may be delayed to some extent if (1) a fish hatchery were established and operated, and (2) if the Salton Sea's fishery were managed as a put-and-take fishery. These measures would counteract the reduced fish reproduction caused by high salinity. The normal lead agency for implementing this mitigating measure is the California Department of Fish and Game. This measure could be implemented, if it is found to be feasible by the Salton Sea task force. Although this is a temporary solution, it may be useful until a more permanent solution is found.

Increased pollutant uptake by the food chain is another consequence of reduced flows. The principal concern is with the New River, which carries a large amount of pollutants from Mexico. Not all of these pollutants have been identified, much less quantified. This problem has been recognized; however, the solution has been evasive because of funding problems, unresolved international issues, and questions of priority. Mitigation measures are currently being developed by the CRWQCB (Colorado River Basin Region). Bill and bond issue funds (pending) are also possible means for further study and cleanup. To create a better understanding of the nature of the pollution and an assessment of the public health risks, the IID would be willing to be one of the participants in a comprehensive water quality analysis of the New and Alamo Rivers if funds are received for the transfer of water. With this better understanding, an appropriate solution can be developed. If this pollution problem is ultimately solved, the impacts from pollutant uptake would be greatly mitigated.

The foregoing discussion concentrates on mitigating measures that can be implemented in coordination with other agencies and organizations if funds are received from the transfer of water. The District has proposed specific actions that others may take to mitigate significant adverse impacts and has made specific commitments about its own role and contribution.

2.5 CUMULATIVE IMPACTS

The analysis of cumulative impacts made full use of the available data, including the Imperial County General Plan (1985). In particular, the Water Requirements and Availability Study (WRAS) (which was incorporated in toto by reference in the DEIR) made extensive use of the county's planning documents to define

current urban land use, develop future growth trends, and make population projections. Use of the County General Plan was essential to the development of projected demands that would be made on the IID. All of the data available in the county's planning documents was, therefore, available and used to arrive at cumulative impacts of the IID's Water Conservation Program.

In addition to local planning data, the California State Clearinghouse computer was searched in March 1986 for notices filed in accordance with CEQA for the period 1984 through 1986 (to date) to identify projects that could generate cumulative impacts in association with the IID's expanded Water Conservation Program. Projects in Imperial County and eastern Riverside County were included in the review. From that search, 22 projects were identified: four projects were for residential and/or commercial developments, three for recreational vehicle parks, seven utility expansion projects, five industrial developments, two geothermal projects, and one freeway interchange modification.

All of these projects are within the framework established by local plans and policies, which were taken into account when projections of water demand were formulated (Parsons, 1985a). No significant cumulative impacts at a program or regional level other than those identified as deriving from the expanded water conservation plan have been identified.

Any projects of significant scope with the potential to create localized cumulative impacts will be included in each focused EIR prepared for the IID's Water Conservation Program. The projects listed and discussed above include all that were identified for this program EIR and focused EIR for the initial transfer of 100,000 AF/year of conserved water.

2.6 PROGRAM PLANNING AND IMPLEMENTATION

Further planning for and implementation of the expanded water conservation program will be a dynamic process. This will be evidenced by continuing refinement and modification to program elements, schedules and environmental mitigation measures brought about by additional technical studies and planning, incorporation of environmental mitigation measures, and consultations with other agencies, concerned individuals, and organizations.

During 1985, the District intensified its water conservation planning activities in order to synthesize the program's definition to the point where the cumulative range of the program's environmental impacts could be reasonably addressed. This activity resulted in several planning reports being published: the IID's current Water Conservation Plan, the Water Requirements and Availability Study (WRAS), and the Water Transfer Study (WTS). Collectively, these three reports provided the necessary program framework and identified a number of projects and measures that could be considered for implementation by the IID's Board of Directors.

During 1986, the program EIR and the focused EIR on the initial transfer will be completed. In addition, the District plans to prepare detailed implementation plans to facilitate budgeting and program execution. These plans will identify project details, schedules, applicable environmental criteria and permit activities, design, procurement, construction, commissioning and startup, and cash flow requirements.

Numerous activities and approvals are required and will be accomplished prior to implementing the specific projects and measures that are included in the Program Implementation Plans. The District's Board of Directors will ensure that:

(1) A CEQA review is conducted for each project or water conservation measure.

(2) All necessary approvals and permits are obtained from the appropriate governmental and regulatory agencies.

(3) The necessary funds are available.

(4) Each specific project or water conservation measure is approved by the IID's Board of Directors before implementation.

Final
Environmental Impact Report

for

Modified East Lowline and Trifolium Interceptors,
and Completion Projects

Volume I

Imperial Irrigation District
May 1994

Executive Summary

The Draft Environmental Impact Report (DEIR) for the East Lowline and Trifolium Interceptors, and Completion Projects was prepared for public review in accordance with CEQA and was circulated through the State Clearinghouse to the appropriate agencies. Copies of the DEIR were also made available at local libraries in the Imperial Valley and at the Imperial Irrigation District (IID) Public Information Office. The DEIR was released for public review in February 1993. This Final Environmental Impact Report (EIR) represents the completion of the draft document, and has been prepared in accordance with the California Environmental Quality Act.

Background (Chapters 1 and 2)

The Imperial Irrigation District (IID) is located in the Imperial Valley in the southeast corner of California. The Imperial Valley is part of the arid Colorado Desert, one of the six major divisions of the Sonoran Desert, which extends through portions of Mexico and southern Arizona. The valley is in the Salton Trough, an area of very flat terrain.

IID was formed in 1911 under the California Irrigation District Act to deliver Colorado River water to lands within Imperial Valley for agricultural, domestic, industrial, and other beneficial uses. On December 1, 1932, IID entered into a water delivery contract with the Secretary of the Interior for delivery of Colorado River water for potable and irrigation purposes.

Today, IID is one of the largest irrigation districts in the United States, serving primarily agricultural customers with Colorado River water delivered at Imperial Dam. IID Colorado River water deliveries measured at the Drop 1 hydroelectric power plant on the All American Canal vary from 2.6 to 3.0 million acre-feet annually.

On September 7, 1988, the State Water Resources Control Board (SWRCB) issued Order WR 88-20 directing IID to implement IID's conservation plan by conserving 100,000 acre-feet of water per year. To provide funding for IID's conservation program, IID entered into a Water Conservation Agreement with the Metropolitan Water District of Southern California (MWD) on December 22, 1988, and a subsequent Approval Agreement among the Coachella Valley Water District, Palo Verde Irrigation District, IID, and MWD on December 19, 1989.

MWD distributes water to 27 member agencies from San Diego County to Ventura County, up to 1.3 million acre-feet of which is received from the Colorado River at Lake Havasu through the Colorado River Aqueduct. MWD also obtains water from northern California via the California Department of Water Resources. MWD has delivered as much as 2.6 million acre-feet of water from the Colorado River and northern California in a year to serve some 15 million people, primarily for municipal and industrial uses.

The 1988 Water Conservation Agreement between IID and MWD and the subsequent Approval Agreement provide for conservation projects in the Imperial Valley to save an estimated 106,110 acre-feet of water annually. The water conserved would help offset required reductions in MWD diversions of Colorado River water due to anticipated increases in Arizona and Nevada diversions. Planning by IID and MWD to identify efficient and cost-effective projects that will reliably meet the SWRCB's water conservation requirements has been a continued focus of this program. MWD will fund the construction, operation, and maintenance of the selected projects at an estimated cost of $222 million (1988 dollars). In accordance with the two agreements, the conserved water will be made available to MWD for delivery to its service area through the Colorado River Aqueduct.

IID has completed the necessary California Environmental Quality Act (CEQA) documentation and has either fully implemented or is in the process of fully implementing (planning, designing, and constructing) 14 water conservation projects covered under the IID/MWD Water Conservation Agreement. Because of concerns raised by the Regional Water Quality Control Board about water quality impacts (particularly with regard to the California Inland Surface Waters Plan selenium performance goal of 5 μg/L for water in agricultural drains) resulting from implementation of the remaining proposed water conservation projects, IID has prepared this Environmental Impact Report (EIR) addressing both the proposed projects and the cumulative impacts of the IID/MWD water conservation program.

The goal of the water conservation program is to save approximately 106,110 acre-feet per year. The DEIR assumed the previously approved 14 projects would conserve approximately 64,000 acre-feet per year under full implementation. In December 1993, the water conservation savings of these yet to be fully implemented projects were determined to be 72,870 acre-feet per year. After further analysis based on updated verification procedures and methods, IID now estimates the anticipated water savings under full implementation of these projects would be approximately 85,265 acre-feet per year. Thus for the purposes of this EIR, this is considered the existing condition, and it is assumed that approximately 21,100 acre-feet per year of conservation is required to meet the water conservation goal of 106,110 acre-feet.

Verification following full implementation of these previously approved 14 projects may determine slightly more or less than 85,265 acre-feet per year will be saved. In any event, any combination of the projects addressed in this EIR would be implemented to achieve the total water conservation goal. As such, depending on the actual remaining amount to be conserved, the impacts of the projects compared to the No Project Alternative or existing condition could be slightly more or less than described in Chapter 4 of this EIR. Following full implementation of the previous 14 projects and the projects addressed in this EIR, it is possible, due to improvements in verification measurement, that the water conserved pursuant to the Water Conservation Agreement and Approval Agreement may be slightly more or less than the water conservation program goal. Thus, the cumulative impacts may be slightly more or less than discussed in Chapter 6.

Revisions to the DEIR contained in this Final EIR were made in response to comments received during the public review period. These revisions include the following:

- Modifications of the projects to avoid or minimize potential environmental impacts.
- Inclusion of more detailed project descriptions.
- Revision of Salton Sea elevation and salinity models and incorporation of results from additional analysis on the potential effect of water conservation on Salton Sea resources.
- Incorporation of water quality and biological data of the Imperial Valley area released by the U.S. Geological Survey after the close of the DEIR public comment period.
- Revision of significance threshold for impacts to aquatic resources and impacts to water quality.

IID's Irrigation Drainage System (Chapters 2 and 3)

Irrigation drainage within IID is carried away from agricultural fields through a network of over 1,400 miles of surface drains. These surface drains discharge into either the Alamo River, the New River, or directly to the Salton Sea. Over 99 percent of the Alamo River inflow is IID irrigation drainage. Roughly two-thirds of the inflow into the New River consists of IID drainage, with the remainder flowing from Mexico across the international boundary. Both the New and Alamo Rivers discharge to the Salton Sea. The Salton Sea itself occupies the lowest elevations of the geologic closed basin consisting of the Imperial and Coachella Valleys. In 1924 and 1928 Presidential Orders withdrew all federal lands below an elevation of 220 feet below sea level "for the purpose of creating a reservoir in the Salton Sea for storage of waste and seepage water from irrigated land in Imperial Valley." Since there is no surface or subsurface flow outlet from the Salton Sea, the only outflow consists of evaporation. Salts carried into the Sea by agricultural drainage, desert washes, and creeks are left behind to concentrate. The salinity of the Salton Sea has been increasing at a rate of approximately 1 to 2 percent per year.

Types of Water in IID Irrigation Drains (Chapters 2 and 3)

IID's surface drainage system carries a blend of operational discharge, tailwater, tile water, canal seepage, and rainfall. Since IID receives approximately 2 to 3 inches of rain per year, the surface drains typically carry negligible amounts of rainwater. The remaining types of water carried by irrigation drains are:

- **Operational discharge:** Colorado River water discharged from main canals or laterals directly to the surface drains.

- **Tailwater:** Colorado River water applied to the field in excess of the soil infiltration rate. The excess flows off the tail end of the field into the surface drains.

- **Tile water:** Colorado River water applied to the field which was percolated beyond the root zone, leaching accumulated salts. This water is collected in subsurface drains called tile drains and is discharged to the surface drains.

- **Canal Seepage:** Colorado River water that has percolated into the earth below the canal. Only a fraction of this water (2 percent) is assumed to reach the surface drains.

Tile water and canal seepage are the poorest quality of these water sources entering the surface drains. The analysis contained in this EIR has determined that tile water and canal seepage on average are 4.9 times more salty (measured as total concentration of dissolved solids, or TDS) than Colorado River water delivered to IID farms. Tailwater accumulates salts (an increase of approximately 10 percent in TDS) as it flows over fields. Operational discharge is essentially the same quality as Colorado River water at Imperial Dam. The relative amounts of operational discharge, tailwater, tile water, and canal seepage that blend in the surface drains determine the water quality characteristics of drainwater. The projects addressed in this EIR would tend to slightly increase the salinity of the blend of irrigation drainwater, but would reduce the loading of salt mass to IID's drainage system and ultimately the Salton Sea.

Description of the Proposed Projects (Chapter 2)

The water conservation projects analyzed in this EIR consist of the Modified East Lowline Interceptor, the Trifolium Interceptor, and five completion projects. A combination of these projects will be implemented to conserve approximately 21,100 acre-feet per year. Each project is briefly described below.

Modified East Lowline Interceptor

A concrete-lined canal would intercept the lower reaches of 12 irrigation lateral canals on the east side of the Alamo River to collect operational discharge and return these flows for use elsewhere in the irrigation system. A minor amount of tailwater and tile water would also be conserved by this project. The area served by the Modified East Lowline Interceptor would be approximately 30,860 acres; the interceptor would conserve an estimated 6,590 acre-feet of water per year.

Trifolium Interceptor

A concrete-lined canal would intercept the lower reaches of 15 irrigation lateral canals on the west side of the New River to collect operational discharge and return these flows for use elsewhere in the irrigation system. A minor amount of tailwater and tile water would also be conserved by this project. The area served by the Trifolium Interceptor would cover approximately 31,845 acres; the interceptor would conserve approximately 8,380 acre-feet annually.

Completion Projects

In combination with the Modified East Lowline and/or Trifolium Interceptors, IID is proposing to undertake a combination of completion projects to achieve the approximately 21,100 acre-feet of conservation needed to meet the terms of the IID/MWD Agreement. The completion projects consist of additional lateral interceptor systems, canal/lateral concrete lining, seepage recovery along the East Highline Canal, land retirement in areas that are affected by flash floods in the southwest portion of IID, and a regulating in-line reservoir along the East Highline Canal.

Water Quality Constituents of Concern (Chapter 3)

In 1986-87 and 1988-90, studies were conducted by the U.S. Geological Survey and the U.S. Fish and Wildlife Service to investigate the potential for contaminants to occur in irrigation drainage in the Imperial Valley and the potential effect of these contaminants, if any, on biota of the Imperial Valley. The initial study identified selenium, boron, and organochlorine pesticides as constituents of concern.

Selenium

The sole source of selenium in the Imperial Valley is imported Colorado River water. Colorado River at Imperial Dam contains selenium at a concentration of 2 μg/L. The selenium is carried with the water as it flows through IID's irrigation system and is applied to agricultural fields. Evapotranspiration removes the water and concentrates the selenium as well as other salts in or below the root zone (evaporative concentration). This concentrated water is collected in the tile drains and discharged to the surface drains where it blends with tailwater and operational discharge. Tile water selenium concentrations were found to range from 2 μg/L to 300 μg/L, depending on the location and recent irrigation activities. Analysis for this EIR determined that blended concentrations for irrigation drains averaged just over 6 μg/L. Due to fluctuating amounts of operational discharge, tailwater, and tile water entering surface drains as a result of variable irrigation practices, analysis for this EIR has determined selenium concentrations in the surface drains could vary from 2 μg/L to 26 μg/L. Selenium in the Alamo River was measured in 1988-89 to be approximately 7.9 μg/L at its outlet to the Salton Sea and 4.2 μg/L for the New River outlet to the Salton Sea.

Data from the 1988-90 study indicate that over 85 percent of the selenium imported into the Imperial Valley stays in solution and is discharged to the Salton Sea. In the Salton Sea, selenium is removed from the water column through microbial processes and is deposited onto the sediment of the Salton Sea. This selenium deposited into the sediment enters the food chain of Imperial Valley through benthic feeding organisms, primarily pileworms, and bioaccumulates at higher trophic levels. While uptake of selenium directly from the water column by biota is a potential pathway, the primary pathway into Imperial Valley biota is Salton Sea sediment. Selenium is an essential element for all life, but diets containing elevated amounts can cause reproduction impairment, teratogenic effects, and death in avian wildlife.

Boron

Like selenium, boron is imported into Imperial Valley in Colorado River water. Although data suggest that some sources of boron exist in IID, the evaporative concentration is the primary factor in determining boron concentrations in IID drainwater. Boron is conserved in the water column as it enters the Salton Sea where its increasing concentration parallels that of TDS. Boron concentrations could potentially cause abnormal development in water birds.

Organochloride Pesticides

DDT and its metabolites, particularly DDE, are present in agricultural fields of Imperial Valley from past use. DDT and DDE are attached to soil particles and are mobilized by irrigation tailwater and are thus carried into the surface drainage system. A second mechanism of mobilization is resuspension of drain and river bottom sediment by turbulent or scouring flow. DDT and DDE has been associated with eggshell thinning and reduced reproductive success in birds. Sources of biological uptake of DDT and DDE in the Imperial Valley are primarily agricultural fields, irrigation drains, and the New and Alamo Rivers.

Environmental Resources and Impacts (Chapters 3, 4, and 5)

Table S-1 describes the environmental impacts of the proposed Modified East Lowline Interceptor, Trifolium Interceptor, and completion projects. Below is a brief summary of existing resources of Imperial Valley and potential effects of the projects.

Water Resources

Colorado River Water. The projects would reduce the amount of Colorado River water diverted by IID by approximately 21,100 acre-feet per year, which is less than 1 percent of its annual diversions. The projects would have an insignificant impact on the quantity and quality of Colorado River water diverted by IID.

Irrigation Drains. Water quantity and quality of IID irrigation drains are heavily dependent on irrigation activities of adjacent farms which vary on a daily and seasonal basis. During periods of low irrigation activity, flow in the drains is minimal if any and would consist of a minor amount of tile water and canal seepage. Conversely, during periods of high irrigation activity, irrigation drains can carry substantial flows from tailwater, operational discharge, and increased amounts of tile water. Irrigation drain lengths vary from 1 to several miles long. Lateral canal operational discharge from the end of each lateral typically enters the drain within a mile or less of that drain's terminus. The upper reach of a typical irrigation drain would tend to be dry at times; the lower reach would be less likely to be dry. Potential significant effects of the projects would occur only in that portion of the irrigation drain downstream of the lateral operational discharge.

Because all selenium comes into IID via the Colorado River and evaporative concentration is the primary cause of increased TDS concentrations (including selenium and boron) in irrigation drainwater, a regression analysis was used to relate TDS levels to concentrations of selenium and boron.

Under current conditions, selenium concentration in agricultural drains that would be affected by the proposed projects range from 6.3 μg/L to 6.5 μg/L. These concentrations exceed the SWRCB's California Inland Surface Water Plan performance goal of 5 μg/L selenium in agricultural drains. It is anticipated that even without implementation of the proposed project, selenium concentrations in IID drains would continue to exceed this performance goal in the future. Implementation of the projects would cause an increase of selenium concentrations in irrigation drainwater, with post project concentrations ranging from 6.5 μg/L to 7.2 μg/L. Because the existing selenium concentration in surface water drains exceeds the Inland Surface Waters Plan selenium performance goal of 5 μg/L for water in agricultural drains, this project's minor increase in selenium concentration would be considered a significant and unavoidable impact. At this time, no technically proven and cost-effective method of lowering selenium drainwater concentrations is available.

Similar to selenium, evaporative concentration of Colorado River water is the principal process controlling boron concentrations in tile water. Boron concentrations are expected to increase no more than 7.5 percent in irrigation drainwater with implementation of the projects. This projected increase would not cause violation of water quality criteria set by the SWRCB and therefore is an insignificant impact to water quality.

The projects would conserve a minor amount of tailwater which would effectively reduce the amount of DDT and DDE entering the irrigation drain system. The conservation of operational discharge would reduce the occurrence of scouring flows that could resuspend sediments containing DDT and DDE. The projects would have a slight beneficial effect in reducing the mobility of organochloride pesticides.

TDS concentrations would increase 7 to ten percent which is within annual variability and is insignificant.

Alamo River. The reduction of irrigation drainwater inflow from these proposed projects into the Alamo River is approximately 1.6 percent of that river's average annual discharge to the Salton Sea. This flow reduction is considered to have an insignificant impact.

Selenium concentration in the Alamo River is expected to increase from 7.8 μg/L to 7.9 μg/L. Although this increase is below laboratory detection limits (1 μg/L), the existing selenium concentration in the Alamo River exceeds the Inland Surface Waters Plan selenium performance goal of 5 μg/L. As such, this minor increase in selenium concentration would be considered a significant and unavoidable impact. At this time no technically proven and cost-effective drainwater solution to lowering selenium concentrations is available. Boron concentrations would increase from 681 μg/L to 685 μg/L, an insignificant increase.

TDS concentrations would increase from 2,279 mg/L to 2,305 mg/L which is well within the annual variability and is insignificant.

New River. The reduction of irrigation drainwater inflow into the New River is approximately 2.2 percent of that river's average annual discharge to the Salton Sea. This flow reduction is an insignificant impact.

Selenium concentration in the New River is expected to increase from 4.1 μg/L to 4.2 μg/L. This increase is below laboratory detection limits (1 μg/L) with the post-project concentration below the Inland Surface Waters Plan selenium performance goal of 5 μg/L. This minor increase in selenium concentration is insignificant. Boron concentrations would increase from 775 μg/L to 785 μg/L, an insignificant increase.

TDS concentrations would increase from 2,696 mg/L to 2,743 mg/L, which is well within the annual variability and is insignificant.

Salton Sea. Any combination of the projects would have combined effects on the water quantity and quality of the Salton Sea. Inflow to the Salton Sea is highly variable and consists of irrigation drainage, treated and untreated municipal and industrial effluent, rainfall and runoff from the watershed, and minor amounts of groundwater inflow. Outflow is highly variable and consists only of evaporation. Evaporation is a function of variable climatic conditions such as temperature, cloud cover, and wind. From 1986 through 1993 the Salton Sea has ranged from 226.6 feet below sea level to 228.5 feet below sea level. Annual variance in elevation is slightly more than 1 foot. Salinity has been continually rising at a rate of 1 to 2 percent per year due to evaporative concentration. Salton Sea salinity in 1993 was approximately 44,000 mg/L.

Because of the extent of variability of recorded inflow and evaporation, it is not possible to predict exactly what the future elevation and salinity of the Salton Sea would be in any given year. Thus only a range of possible elevations and salinities can be projected. For the purpose of comparisons in this EIR, results of average conditions through the year 2040 were assumed. Without implementation of the projects, under

average conditions, salinity of the Salton Sea is anticipated to reach 50,000 mg/L by the year 2000. At this salinity threshold reproduction of pileworms is threatened and would disrupt major food-chain relationships and lead to a decline in fish populations.

The conservation of approximately 21,100 acre-feet of water by a combination of the projects would reduce inflow to the Salton Sea by about 1.7 percent under average conditions. Under average conditions this could result in an elevation difference of less than 1 foot (9.6 inches) compared to the No Project alternative through the year 2040. This small effect on Salton Sea water elevation is well within experienced variability and is considered insignificant; thus, no mitigation would be required.

With conservation of approximately 21,100 acre-feet per year, under average conditions TDS concentrations of the Salton Sea would reach 50,000 mg/L about 3 to 6 months earlier than otherwise and is an insignificant impact.

The project would actually reduce the loading of salts and pesticides to be released into the Salton Sea. The estimated combined reduction in loading would be approximately 19,146 tons per year. Because selenium in the Salton Sea selectively becomes associated with the sediments, it may be expected that the concentration in the water column will remain approximately as it is today, about 1 μg/L, after the project is completed. Total selenium load to the sea would decline by about 0.032 ton because of reduced drain flows. The selenium that enters the Salton Sea would continue to accumulate in the sediments under current processes, but at a slightly reduced rate. The overall reduction in loading of salts and pesticides would be a beneficial impact of the project.

Aquatic Resources

Irrigation Drains. Expected changes in TDS, selenium, and boron levels shown are not expected to have a significant impact on fish or other aquatic resources. It should be noted that the only area of the drains affected is that area downstream of the lateral discharge point. The magnitude of changes in selenium concentration is not sufficient to result in additional biological impact to those species potentially present and thus the impact would be insignificant and no mitigation would be required.

Boron concentrations in the drains are expected to increase, but the post-project concentrations should be less than 1 mg/L, the level in water considered safe for aquatic organisms. Thus the increase would be an insignificant impact.

The projected increase in TDS would not substantially change the fish or invertebrate populations of the drains. The resident aquatic organisms are adapted to variable salinities, resulting from agricultural practices that vary throughout the year. The increase is within current variability and has an insignificant impact on aquatic resources; no mitigation is required.

Changes in pesticide concentrations were not estimated. Considering the fact that pesticide input would be reduced, any expected reduction would be a beneficial impact of the project.

Total flow in the irrigation drains would decline about 10 to 15 percent compared to existing conditions. This flow reduction would be within the range of existing conditions, where flows are affected by seasonal variation, irrigation practices, and operational discharges. Additionally, the change in drain flows would occur only in the lower portion of the drain, downstream of the lateral discharge and before the confluence with the New or Alamo River. Near the river, backwater generally influences the water level elevations and would effectively mask any changes in drain water volumes. Thus the reduction in irrigation drain flow has an insignificant impact on aquatic resources and no mitigation is required.

New and Alamo Rivers. Based on the toxicity of the constituents of concern, the expected increases in selenium, boron, and salinity, along with expected decreases in flow within the New and Alamo Rivers, would be minor and would be insignificant impacts of the project. Expected decreases in pesticide concentrations would be a beneficial impact.

Salton Sea. Any combination of the projects could have combined effects on the aquatic resources of the Salton Sea. Implementation of the projects would reduce average inflow to the Salton Sea by less than 2 percent. Changes in Salton Sea elevation and salinity attributable to a less than 2 percent decrease in annual average inflows would be within the range of the intra-annual cycle of rise and fall that currently occurs due to seasonal precipitation, seasonal irrigation practices, and seasonal evaporation. Under average conditions, this could result in an elevation difference of less than 1 foot (9.6 inches) compared to the No Project Alternative. This small effect on Salton Sea water elevation is within the range of intra-annual variation and is considered insignificant; thus, no mitigation would be required. TDS concentrations of the Salton Sea would reach 50,000 mg/L about 3 to 6 months earlier than otherwise and is an insignificant impact.

Selenium concentrations in the Salton Sea water column would remain at the same levels as under existing conditions, but the areal loading of selenium to Salton Sea sediments would be reduced. The reduction in selenium loading would be an important beneficial impact of the projects because Salton Sea sediments are the primary food-chain pathway for selenium in biota of the Imperial Valley.

Desert Pupfish. The Trifolium 12 Drain sustains a population of desert pupfish and is affected by the Trifolium Interceptor. The proposed interceptor would capture between approximately 6 to 12 percent of the flows. Average monthly flows vary by more than 200 percent during a typical year, reflecting seasonal irrigation practices. Capturing 6 to 12 percent of the flows would be expected to have a negligible effect on habitat conditions in this drain. No significant impact on desert pupfish would be expected from this proposed project; therefore, no mitigation would be required. No other drains affected by the projects support desert pupfish populations.

Desert pupfish populations are also located in the Salton Sea at the ends of irrigation drains that discharge directly to the Salton Sea and shoreline pools created by wave-deposited rows of barnacle shells, referred to as barnacle bars. These shoreline habitats for desert pupfish will continue to exist as they have with the historical variation of Salton Sea elevation. Since the projected change in elevation is within the range of intra-annual variation, the impact to desert pupfish in the Salton Sea is considered insignificant; thus, no mitigation would be required.

Vegetation

Drainwater flows could be reduced by up to approximately 15 percent compared to existing conditions. Drain vegetation is subject to significant flow alterations under existing conditions due to irrigation practices, lateral canal operations, and routine drain maintenance activities. Flows fluctuate substantially during annual irrigation cycles, and the opportunistic plants respond to changes rapidly. The projected reduction in flows would not be expected to cause a noticeable change in drain vegetation. At least 85 percent of the existing drain flows will remain after project implementation. The remaining flow coupled with capillary effects and the presence of a perched water table would continue to support water-dependent vegetation. Because no change in existing vegetation composition would be expected, this impact is considered insignificant and no mitigation would be required.

Installation of seepage recovery systems has the potential to affect water-dependent vegetation that may be supported by surface or subsurface water leaking from the canal. The East Highline Seepage Recovery Project was designed such that impacts to riparian vegetation supported by East Highline Canal seepage would be avoided. IID identified two methods of seepage recovery that essentially avoid potential impacts by allowing canal water to pass through the root zone of existing vegetation before recovery in the collector system. No impact on existing vegetation or tree cover would be expected, and no mitigation would be necessary.

The Canal/Lateral Concrete Lining project would remove vegetation from the existing canals that remains after maintenance activities. Concrete lining would be placed on the inner faces of the canal slopes. After construction, ruderal vegetation would reestablish on the outboard slopes of the canals. Normally, canal maintenance activities periodically remove or reduce vegetation cover from the canal, which significantly reduces the canal's habitat value. No significant impact on overall habitat value would be expected from vegetation removal due to lining, and no mitigation would be required.

The Water Conservation/Flood Control project would affect portions of the proposed project area that are currently farmed. Impacts to the western part of the project area dominated by creosote bush scrub or salt cedar would not occur solely due to cessation of agriculture practices. However, fallow fields may provide a seed source for weeds that could invade the surrounding native plant communities. Invasion of weedy species

could displace existing native plants, prevent establishment of native plants, and potentially cause displacement of wildlife or reduce habitat value through loss of forage, cover, nest sites, and other changes to the habitat. To mitigate this potential impact, IID will implement standard erosion control measures as part of this project to reduce weed invasion, which would restore the land to natural conditions. No other mitigation would be required.

The East Highline In-Line Reservoir project would require grading of the existing bank slopes to allow construction of higher embankments on each side of the canal. Existing riparian vegetation would be removed during grading; however, this strip of riparian vegetation on the embankment would be expected to reestablish in one or two growing seasons from water or windborne seed sources. The more important riparian vegetation community associated with the East Highline Canal occurs on the canal's east side, where the outboard slope merges with the adjacent natural desert community of creosote bush scrub. The existing access road and dredge spoil pile paralleling the canal provide a working strip for raising the proposed canal embankment. Construction in this corridor would require cutting only a few trees and shrubs that cannot be avoided. Vegetation adjacent to the access road would be cleared, but the more dense and valuable stands of mesquite and cottonwood would be avoided by embankment construction. There would be no significant impact due to construction of the East Highline In-Line Reservoir.

Wildlife

Direct Impacts. The Imperial Valley supports a wide variety of wildlife that has become dependent on agricultural activities of the area. Burrowing owls, typically using ground squirrel holes in the embankments of laterals and drains, are the only special-status species that could be directly affected by project construction. IID would implement its standard measures to avoid impacts to burrowing owls as it routinely does for existing concrete lining and drain maintenance activities. After construction, burrowing owls may return to the construction area and occupy burrows of ground squirrels as these rodents establish burrows in the newly constructed interceptor embankments. Interceptor construction would increase the amount of potentially suitable habitat in the project area because new interceptor embankments would become habitat available to burrowing rodents and subsequently used by burrowing owls. With standard IID mitigation measures, project construction would not significantly affect burrowing owls. The projects would provide a net increase in burrowing owl habitat.

Indirect Impacts. Since the projects would not significantly affect existing vegetation, including wetlands, wildlife dependent on various vegetation habitats would not be significantly affected. Any combination of the projects would have combined effects on the fishery of the Salton Sea, which would affect piscivorous birds that feed on the Salton Sea fishery. Implementation of the projects would reduce average inflow to the Salton Sea by less than 2 percent. Changes in Salton Sea elevation and salinity attributable to a less than 2 percent decrease in annual average inflows would be within the

range of the intra-annual cycle of rise and fall that normally occurs due to seasonal precipitation, irrigation practices, evaporation and other factors. Under average conditions, TDS concentrations in the Salton Sea would reach 50,000 mg/L about 3 to 6 months earlier than otherwise and is an insignificant impact.

Constituents of Concern. Selenium concentration in surface drains and the Alamo River would be expected to increase but remain below 8 μg/L. This concentration is within the range (2 to 13 μg/L) that would cause food-chain organisms to begin to contain enough selenium to impair reproduction in nesting birds that are feeding exclusively in that section of the drain. Thus, the projects would not be expected to significantly change the existing effect of current exposure to selenium.

Over 85 percent of the selenium that enters IID's surface drainage system remains in the water column until it reaches the Salton Sea, where it becomes deposited into Salton Sea sediments. Uptake of selenium from benthic organisms of the Salton Sea, mostly pileworms, is the primary pathway of selenium into biota of the Imperial Valley. Pileworms are an important component of the food chains for fish in the Salton Sea, and two generalized food chains seem to be most prominent: (1) phytoplankton → zooplankton → pileworm → forage fish → predatory fish → fish-eating bird, and (2) a shorter chain: phytoplankton → zooplankton → pileworm → water bird. Biological samples in the Imperial Valley reveal that selenium concentration at the highest trophic level of the Salton Sea food chain is approximately twice that of drain and river food chains. The project would reduce the amount of selenium loading to the Salton Sea, which would be a beneficial impact. The projects would not have a significant effect on the current process of uptake of selenium into Salton Sea biota, therefore no mitigation is necessary.

Boron concentrations in the drains are below known effect levels for birds, and salinity is in the range in which effects could occur if fresher drinking water is not available for ducklings or other sensitive birds. Boron concentrations would be expected to increase but remain below proposed criteria for the protection of aquatic organisms and waterfowl. The increase in salinity of the irrigation drainwater would be within current variability. Thus changes in boron and TDS concentrations are an insignificant impact. Reductions in the pesticide concentrations in the drains would be a beneficial impact.

Soils

Soil erosion is not expected to be a significant impact because standard construction practices would be implemented to reduce the potential for erosion. Once the construction is completed, there would not be an increased potential for erosion. Operation of the project would reduce the amount of tailwater, which would directly reduce the amount of soil being removed from the fields. In addition, natural vegetation would be allowed to grow on the retired land, further reducing the potential for soil erosion.

Land Use

The projects would not significantly affect current land uses.

Air Quality

The projects would not significantly affect air quality.

Socioeconomics

Project-related construction activities would create short-term, temporary construction jobs in the local area. Because there is a pool of unemployed people in Imperial County, the creation of construction jobs, even if on a short-term basis only, would be considered a beneficial impact. The actual operation of the Modified East Lowline Interceptor, Trifolium Interceptor, and completion projects evaluated in this EIR is expected to create between one and two new jobs, which would likely be filled by the local employment base.

Recreational use of the Salton Sea has been decreasing over the last decade. This decrease may be the result of a number of factors including a decrease in the fishery resource, a perception of the sea and fish as polluted, the changing level of the sea, and economic factors. Any combination of the projects could have combined effects on the aquatic resources of the Salton Sea. Implementation of the projects would reduce average inflow to the Salton Sea by less than 2 percent. Changes in Salton Sea elevation and salinity attributable to a less than 2 percent decrease in annual average inflows would be within the range of the intra-annual cycle of rise and fall that normally occurs due to seasonal precipitation, seasonal irrigation practices, and seasonal evaporation. Under average conditions, this could result in an elevation difference of less than 1 foot (9.6 inches) compared to the No Project alternative. This small effect on Salton Sea water elevation is well within experienced variability and is considered insignificant; thus, no mitigation would be required. TDS concentrations in the Salton Sea would reach 50,000 mg/L about 3 to 6 months earlier than otherwise and is an insignificant impact.

Infrastructure

The projects would not significantly affect the infrastructure of Imperial Valley.

Transportation

The projects would not significantly affect transportation in the Imperial Valley.

Cumulative Impacts (Chapter 6)

In addition to the Modified East Lowline Interceptor, Trifolium Interceptor, and Completion Projects, other closely related past, present, and future projects identified as the cumulative impact baseline are the 14 water conservation projects already approved and implemented under the 1988 IID/MWD agreement. Results of the cumulative impact analysis contained in this EIR address impacts of the complete water conservation program which would conserve 106,110 acre-feet per year.

Water Resources

Colorado River Water. The water conservation program would reduce the amount of Colorado River water diverted by IID by approximately 106,110 acre-feet per year, which is approximately 4 percent of its annual diversions. Colorado River water quality would not be significantly affected.

Irrigation Drains. Under pre-program conditions, selenium concentration in agricultural drains that are affected by the water conservation program was approximately 6.2 μg/L. This concentration exceeds SWRCB's California Inland Surface Water Plan performance goal of 5 μg/L selenium in agricultural drains. Even without implementation of the water conservation program, selenium concentrations in IID drains would continue to exceed this performance goal. Implementation of the water conservation program would cause an increase of selenium concentrations in irrigation drainwater, with post program concentrations ranging from 6.5 μg/L to 7.2 μg/L. Because the existing selenium concentration in surface water drains exceeds the Inland Surface Waters Plan selenium performance goal of 5 μg/L for water in agricultural drains, the program's minor increase in selenium concentration would be considered a significant and unavoidable impact. However, this increase in selenium concentration is below levels believed to cause adverse effects to aquatic and wildlife resources. At this time, no technically proven and cost-effective method of lowering drainwater selenium concentrations is available.

It is estimated that the program would conserve over 32,000 acre-feet per year of tailwater which would effectively reduce the amount of DDT and DDE entering the irrigation drain system. The conservation of operational discharge would reduce the occurrence of scouring flows that could resuspend sediments containing DDT and DDE. The program would have a beneficial effect in reducing the mobility of organochloride pesticides.

Alamo River. The reduction of irrigation drainwater inflow into the Alamo River is approximately 6 percent of that river's average annual discharge to the Salton Sea. This flow reduction is an insignificant impact.

Selenium concentration in the Alamo River is expected to increase from 7.5 μg/L to 7.9 μg/L. The pre-program selenium concentration in the Alamo River exceeds the Inland Surface Waters Plan selenium performance goal of 5 μg/L. As such this minor

increase in selenium concentration would be considered a significant and unavoidable impact. However, this increase is below levels believed to cause adverse effects to aquatic and wildlife resources. At this time no technically proven and cost-effective method of lowering drainwater selenium concentrations is available.

TDS concentrations would increase from 2,194 mg/L to 2,305 mg/L which is well within the annual variability and is insignificant.

New River. The reduction of irrigation drainwater inflow into the New River is less than 4 percent of that river's average annual discharge to the Salton Sea. This flow reduction is an insignificant impact.

Selenium concentration in the New River is expected to increase from 4.0 μg/L to 4.2 μg/L. The post-program concentration is below the Inland Surface Waters Plan selenium performance goal of 5 μg/L. This minor increase in selenium concentration is insignificant.

TDS concentrations would increase from 2,627 mg/L to 2,743 mg/L which is well within the annual variability and is insignificant.

Salton Sea. The water conservation program would have a cumulative effect on the water quantity and quality of the Salton Sea. Because of the extent of variability of recorded inflow and evaporation, it is not possible to predict exactly what the future elevation and salinity of the Salton Sea would be in any given year; only a range of possible elevations and salinities can be projected. For the purpose of comparisons in this EIR, results of average conditions through the year 2040 were assumed.

The water conservation program would, under average conditions, cause the elevation of the Salton Sea to be approximately 4 feet lower than it would be without the program. This effect on Salton Sea water elevation in itself is not significant; thus, no mitigation would be required. The decline in elevation would be a benefit to landholders who own land currently inundated by this 4-foot margin, much of which was previously farmed.

Under average conditions, the Salton Sea salinity would reach the 50,000 mg/L threshold approximately 5 years earlier than it would have without the water conservation program. The future of the Salton Sea into the 21st century and onward under pre-program conditions would not be significantly different than under post-program conditions. Considering the scale of human activities in the Imperial, Mexicali, and Coachella Valleys and the magnitude, momentum, and inevitability of natural events occurring at the Salton Sea, this cumulative effect of the water conservation program is not considered to significantly affect the future of the Salton Sea.

The program would cumulatively reduce the loading of salts and pesticides to be released into the Salton Sea. The estimated combined reduction in dissolved solid loading would be approximately 91,000 tons per year. Total selenium load to the

Salton Sea would decline by about 0.25 ton per year. The areal loading of selenium to Salton Sea sediments would improve in the short term. However, as the surface area of the Salton Sea is reduced with the declining elevation, areal loading would return to approximately the pre-program rate over the long term.

Aquatic Resources

Under average conditions, the Salton Sea salinity would reach the 50,000 mg/L threshold approximately 5 years earlier than without the water conservation program. The future of the Salton Sea into the 21st century and onward under pre-program conditions would not be significantly different than under post-program conditions. Considering the scale of human activities in the Imperial, Mexicali, and Coachella Valleys and the magnitude, momentum, and inevitability of natural events occurring at the Salton Sea, this cumulative effect of the water conservation program is not considered to significantly affect the future of the Salton Sea.

Desert pupfish habitat along Salton Sea shoreline pools, barnacle bars, and irrigation drain outlets to the Salton Sea would not be affected by the changing elevation of the Salton Sea. Existing habitat would migrate with the changing shoreline as it has in the past.

Vegetation

Vegetation along the Salton Sea shoreline is dependent on fresh water from irrigation drains, creeks, and rivers such as the New and Alamo River. It is anticipated that as these water courses extend to a receding shoreline of the Salton Sea, the existing vegetation will remain and new acreage of wetland vegetation would be created on the exposed sediments. A beneficial impact to vegetation due to the water conservation program is expected.

Wildlife

Since the water conservation program would not significantly affect existing vegetation, including wetlands, wildlife dependent on various vegetation habitats would not be significantly affected by the water conservation program. The program would, under average conditions, cause the Salton Sea salinity to reach the 50,000 mg/L threshold approximately 5 years earlier than without the water conservation program. This would adversely affect the fishery of the Salton Sea, which is utilized by piscivorous birds. The future of the Salton Sea into the 21st century and onward under pre-program conditions would not be significantly different than under post-program conditions. Considering the scale of human activities in the Imperial, Mexicali, and Coachella Valleys and the magnitude, momentum, and inevitability of natural events occurring at the Salton Sea, this cumulative effect of the water conservation program is not considered to significantly affect the future of the Salton Sea.

The water conservation program would reduce the amount of selenium loading to the Salton Sea, which would be a beneficial impact. The water conservation program would not have a significant effect on the current process of uptake of selenium into Salton Sea biota; therefore, no mitigation is necessary.

In summary, no significant cumulative effect to wildlife of the Imperial Valley is expected due to the water conservation program.

Air Quality

The projected change in elevation of the Salton Sea under average conditions due to the water conservation program would expose approximately 8,900 acres of Salton Sea sediment. This increase is approximately 2 percent of the existing dust emission sources in the Imperial Valley, most of which consists of the more than 450,000 acres of agricultural land. In contrast to agricultural fields, which are subject to mechanical dust entrainment processes such as tillage, the exposed Salton Sea sediments are less likely to become airborne. Trace elements in Salton Sea sediments resemble regional background levels except for selenium, which has elevated levels. A worst-case analysis has concluded that the concentration of selenium that could occur in the air from exposed Salton Sea sediments would be several orders of magnitude below the threshold concentration associated with adverse health effects. Thus the water conservation program would have no significant effect on air quality.

Growth-Inducing Impacts (Chapter 7)

No growth-inducing impacts were found.

CEQA-Required Impact Conclusions (Chapter 8)

Unavoidable Adverse Impacts

The only unavoidable adverse impact that would result from implementation of the projects would be the slight increase in selenium concentrations in the irrigation drains and the Alamo River. Although this increase is considered significant to water quality, it would not result in significant impacts to wildlife and habitats dependent on these water resources.

Short-Term Uses Versus Long-Term Productivity

Short-term beneficial uses are minimal because the overall objectives and the design of the projects are for the long-term beneficial uses of the environment. Immediate benefits would be limited to improvements in the fiscal condition of IID. Factors that would increase the long-term productivity of the Imperial Valley as a result of these projects include the creation of potential riparian vegetation, as well as reduced loading of constituents of concern in the Salton Sea and other surface waters.

Irreversible Environmental Changes

The overall effect of the proposed project is to strengthen IID's commitment to and investment in a modern, efficient irrigation system dedicated to serving all water demands within its boundaries. With or without the implementation of the project, significant irreversible changes are expected to occur to the Salton Sea.

Effects Found Not to be Significant (Chapter 9)

Geology and seismicity, public health and safety, cultural and paleontological resources, visual resources, and noise were effects found not to be significant.

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects[a]	No Project	Cumulative Impacts
Water Resources	Minor increase in concentration of selenium in drains and Alamo River. (Significant and unavoidable) Minor increase in concentration of TDS in drains and Alamo River. (Insignificant) Reduction in volume of flows in drains and Alamo River. (Insignificant) Reduction of TDS and selenium loads to Salton Sea. (Beneficial)	Minor increase in concentration of selenium in drains. (Significant and unavoidable) Minor increase in concentration of selenium in the New River. (Insignificant) Minor increase in concentration of TDS in drains and New River. (Insignificant) Reduction in volumes of flows in drains and New River. (Insignificant) Reduction of TDS and selenium loads to Salton Sea. (Beneficial)	Minor increase in concentration of selenium in drains affected by Additional Lateral Interceptors and East Highline In-Line Reservoir. (Significant and unavoidable) Minor increase in concentration of selenium in Alamo River. (Significant and unavoidable) Minor increase in concentration of selenium in New River. (Insignificant) Minor increase in concentration of TDS in drains and rivers. (Insignificant) TDS and selenium concentrations in drains affected by East Highline Seepage Recovery and Water Conservation/Flood Control projects would remain about the same as current levels. (Insignificant) Reduction in volume of flows in drains and rivers. (Insignificant) Reduction of TDS and selenium loading to Salton Sea. (Beneficial)	Minor increase in concentration of selenium in drains and Alamo River. (Significant and unavoidable). Minor increase in concentration of selenium in the New River. (Insignificant) Minor increase in concentration of TDS in drains and rivers. (Insignificant) Reduction in volume of flows in drains and rivers. (Insignificant) Reduction of TDS and selenium loading to Salton Sea. (Beneficial) Less than 1-foot difference in Salton Sea elevation compared to No Project Alternative through the year 2040. (Insignificant) Salton Sea salinity would reach 50,000 mg/L approximately 3 to 6 months earlier than under the No Project Alternative. Range of potential salinities in future years not substantially different from that of the No Project Alternative. (Insignificant)	Does not provide opportunity to increase efficiency of Colorado River water use. Inconsistent with SWRCB Order WR 88-20. Over 3-foot reduction in Salton Sea elevation through the year 2040. Salton Sea salinity would reach 50,000 mg/L approximately in the year 2000. Selenium concentrations in drains and Alamo River would continue to exceed 5 µg/L.	Minor increase in concentration of selenium in drains and Alamo River. (Significant and unavoidable) Minor increase in concentration of selenium in the New River. (Insignificant) Minor increase in concentration of TDS in drains and rivers. (Insignificant) Reduction in volume of flows in drains and rivers. (Insignificant) Reduction of TDS and selenium loading to Salton Sea. (Beneficial) Elevation of Salton Sea approximately 4 feet lower than it would be without the program through the year 2040. (Insignificant) Salton Sea salinity would reach 50,000 mg/L approximately 5 years earlier than without the program. Long-term future of Salton Sea is unaffected. (Insignificant)

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects[a]	No Project	Cumulative Impacts
Aquatic Biology	Impacts to water resources (above) not sufficient to result in biological impacts to species that are potentially present. (Insignificant) Short-term beneficial impact due to reduced areal loading of selenium to Salton Sea sediments. Long-term rate of bioaccumulation remains approximately the same as current. (Insignificant) Reduction of pesticide mobilization into drains and rivers. (Beneficial)	Impacts to water resources (above) not sufficient to result in biological impacts to species that are potentially present. (Insignificant) Short-term beneficial impact due to reduced areal loading of selenium to Salton Sea sediments. Long-term rate of bioaccumulation remains approximately the same as current. (Insignificant) Reduction of pesticide mobilization into drains and rivers. (Beneficial)	Impacts to water resources (above) not sufficient to result in biological impacts to species that are potentially present. (Insignificant) Short-term beneficial impact due to reduced areal loading of selenium to Salton Sea sediments. Long-term rate of bioaccumulation remains approximately the same as current. (Insignificant) Reduction of pesticide mobilization into drains and rivers. (Beneficial)	Salinity of Salton Sea reaches 50,000 mg/L 3 to 6 months earlier than under the No Project Alternative. Range of potential salinities in future years not substantially different than range under No Project Alternative. No measurable effect on near-shore desert pupfish habitat. (Insignificant) Reduction of pesticide mobilization into rivers. (Beneficial)	Salton Sea salinity reaches 50,000 mg/L approximately in the year 2000. Pileworm reproduction threatened, major food-chain relationships disrupted. Significant decline in currently common fish species.	Salton Sea salinity would reach 50,000 mg/L approximately 5 years earlier than without the program. Long-term future of Salton Sea is unaffected. (Insignificant) Change in Salton Sea elevation due to the program would have no measurable effect on near-shore desert pupfish habitat. (Insignificant) Short-term beneficial impact due to reduced areal loading of selenium to Salton Sea sediments. Long-term rate of selenium accumulation into biota remains approximately the same as pre-program. (Insignificant) Reduction of pesticide mobilization into drains, rivers, and Salton Sea. (Beneficial)

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects*	No Project	Cumulative Impacts
Vegetation	Minor reduction in flows but no change in vegetation. (No impact) Marsh vegetation in Mayflower Drain unaffected by flow changes. (Insignificant)	Minor reduction in flows but no change in vegetation. (No impact) Marsh vegetation in Trifolium 12 Drain unaffected by flow change. (Insignificant)	Land retirement in the Water Conservation/Flood Control area could allow establishment of invasive weeds, which may provide seeds to invade the surrounding native plant communities. To mitigate, IID plans to implement standard erosion control measures to reduce weed invasion and to allow the land to revegetate itself to natural conditions. (Insignificant) Construction of the East Highline In-Line Reservoir would cause a temporary loss of small amounts of riparian shrubs on the in- and outboard slopes of the canal. Shrubs would re-establish in 2 years. (Insignificant) East Highline Seepage Recovery project designed to allow continued use of seepage water by existing riparian vegetation. (No impact) Reduced flow volume in Dixie No. 5 Drain of the Fern Interceptor and Martin Drain of the Wistaria Interceptor that supports cattails, possibly providing habitat for rails and other special status species. No change in marsh habitat. (Insignificant)	No substantial combined effect. (Insignificant)	Expected decline of Salton Sea shoreline would expose currently inundated areas of the Salton Sea including the Salton Sea NWR. Net gain of wetland acreage expected in areas of freshwater inflow.	Gradual 4-foot decline in Salton Sea shoreline would allow salt-tolerant plants to establish along shoreline. Approximately 1,500 acres of currently inundated Salton Sea NWR to be exposed. Net gain of wetland acres expected in areas of freshwater inflow.

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects*	No Project	Cumulative Impacts
Wildlife	Increases in selenium concentrations in drains and rivers would not change existing effects on wildlife due to current selenium concentrations. (Insignificant) Construction period disturbance of farm fields, pastures, canals, and drains. Areas used by raptors, songbirds, other avian wildlife foraging in fields. No direct construction impacts or nesting disturbed or lost. (Insignificant) The project would affect burrowing owl habitat. Surveys and standard IID construction practices would avoid or minimize potential temporary impacts. (Insignificant) Construction of interceptor embankments would create a net increase in the amount of potentially suitable burrowing owl habitat. (Beneficial)	Increases in selenium concentrations in drains and rivers would not change existing effects on wildlife due to current selenium concentrations. (Insignificant) Construction period disturbance of farm fields, pastures, canals, and drains. Areas used by raptors, songbirds, other avian wildlife foraging in fields. No direct construction impacts or nesting disturbed or lost. (Insignificant) The project would affect burrowing owl habitat. Surveys and standard IID construction practices would avoid or minimize potential temporary impacts. (Insignificant) Construction of interceptor embankments would create a net increase in the amount of potentially suitable burrowing owl habitat. (Beneficial)	Increases in selenium concentrations in drains and rivers would not change existing effects on wildlife due to current selenium concentrations. (Insignificant) Construction period disturbance of farm fields, pastures, canals, and drains. Areas used by raptors, songbirds, other avian wildlife foraging in fields. No direct construction impacts or nesting disturbed or lost. (Insignificant) The project would affect burrowing owl habitat. Surveys and standard IID construction practices would avoid or minimize potential temporary impacts. (Insignificant) Construction of interceptor embankments would create a net increase in the amount of potentially suitable burrowing owl habitat. (Beneficial) Fallowing of up to 900 acres of agricultural land that is controlled of weeds and erosion will eventually return to native habitat. (Significant Beneficial)	Indirect impact to avian species habitat at the Salton Sea. Changes in drainflow quantity and quality nearly immeasurable. Change in elevation under average conditions from No Project condition is less than 1 foot and within the range of existing variation. Salinity of Salton Sea reaches 50,000 mg/L 3 to 6 months earlier than under No Project Alternatives. Range of potential salinities in future years not substantially different range from the No Project Alternative. (Insignificant) Increases in selenium concentrations in rivers would not change effects of current selenium concentrations. (Insignificant) Potential for increased wetland habitat associated with Salton Sea level decline. (Beneficial) Effects on burrowing owl are additive, depending on the combination of projects. (Beneficial)	Most existing food sources of piscivorous birds within the Salton Sea would eventually disappear as salinity increases. With the loss of food, it is expected that the current bird population levels could not be maintained.	Impacts to piscivorous birds similar to those of No Project Alternative except that Salton Sea fishery decline would begin 5 years earlier than otherwise. Long-term future of Salton Sea fishery is unaffected. (Insignificant) New nesting areas created due to exposure of areas adjacent to Salton Sea NWR. Additional habitat created at areas of freshwater inflow at Salton Sea. (Beneficial)

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects[a]	No Project	Cumulative Impacts
Soils	During construction, removal of vegetation, excavation, and regrading could result in increased erosion. Standard erosion control practices would be used during construction. (Insignificant)	During construction, removal of vegetation, excavation, and regrading could result in increased erosion. Standard erosion control practices would be used during construction. (Insignificant)	During construction, removal of vegetation, excavation, and regrading could result in increased erosion. Standard erosion control practices would be used during construction. (Insignificant)	No substantial combined effect. (Insignificant)	Soils would remain as described in Chapter 3, Environmental Setting.	No cumulative effect.
Land Use	Up to 56 acres of agricultural land would be removed from production. (Insignificant)	Up to 104 acres of agricultural land would be removed from production. (Insignificant)	Agricultural land would be removed from production due to construction of additional lateral systems and reservoirs. Agricultural land would be temporarily disturbed during construction of the additional lateral intercceptors. The amount of affected agricultural land would range from 0.5 acre (Thistle Interceptor) to 46 acres (Holt Interceptor). The Water Conservation/Flood Control project would permanently retire between 450 and 900 acres of agricultural land. (Insignificant)	The amount of agricultural land removed from production as a result of all the combined projects is small compared to the more than 500,000 acres of irrigated agricultural land in Imperial County. (Insignificant)	Land use would remain as described in Chapter 3, Environmental Setting.	No cumulative effect.

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects[a]	No Project	Cumulative Impacts
Air Quality	Approximately 300 tons of fugitive dust would be generated during the 8-month construction period, less than 0.07 percent of countywide total. (Insignificant)	Approximately 552 tons of fugitive dust would be generated during 6- to 8-month construction period, less than 0.13 percent of countywide total. (Insignificant)	Fugitive dust would be generated during construction of completion projects. The amount of fugitive dust emissions ranges from 12 tons (Thistle Interceptor) to 2,592 tons (Canal/Lateral Concrete Lining). These emissions represent between 0.003 percent and 0.21 percent of countywide total for an equivalent construction period. Other exhaust emissions would be minimal. There are no sources of operational emissions involved in any of the projects. (Insignificant)	Highest concentration of selenium that could occur in airborne dust (0.0033 $\mu g/m^3$) would be less than the threshold concentration associated with adverse health effects (11.0 $\mu g/m^3$). Other constituents (e.g., alkali salts, pesticide residues) are below existing background levels. (Insignificant)	Air Quality would remain as described in Chapter 3, Environmental Setting.	Exposure of approximately 8,900 acres of Salton Sea sediment results in 2 percent increase in amount of potential dust sources in Imperial County. (Insignificant)
Socioeconomics						
Employment	Short-term construction jobs would be created over an 8-month period. (Beneficial)	Short-term construction jobs would be created over a 6- to 8-month period. (Beneficial)	Short-term construction jobs would be created over a 3- to 24-month period. (Beneficial)	Creation of one or two new permanent positions at IID. (Beneficial)	IID would have to lay off approximately 170 employees involved with the construction of previously approved water conservation projects.	No cumulative effect.
Recreation	Over the long term, recreational use of the Salton Sea is expected to decrease. (Insignificant)	Over the long term, recreational use of the Salton Sea is expected to decrease. (Insignificant)	Over the long term, recreational use of the Salton Sea is expected to decrease. (Insignificant)		Recreational use of the Salton Sea would be expected to continue to decrease as aquatic and avian biological resources diminish.	No cumulative effect.

Table S-1
Summary of Impacts

Issue	Modified East Lowline Interceptor	Trifolium Interceptor	Completion Projects	Combined Effects[a]	No Project	Cumulative Impacts
Infrastructure						
Energy	Electricity and petroleum-derived fuels would be used during construction. The Modified East Lowline Interceptor would have no pumps. (Insignificant)	Electricity and petroleum-derived fuels would be used during construction. The Trifolium Interceptor would require three to four electric-powered pumps. (Insignificant)	Electricity and petroleum-derived fuels would be used during construction of the completion projects. Electric pumps would be required for the additional lateral interceptor systems and the East Highline Seepage Recovery project. Energy required for these projects would be negligible. (Insignificant)	No substantial combined effect. (Insignificant)	Energy would remain as described in Chapter 3, Environmental Setting.	No cumulative effect.
Public Utilities and Services	No impact.	No impact.	No impact.	No combined impact.	Public utilities and services would remain as described in Chapter 3, Environmental Setting.	No cumulative effect.
Transportation	During construction, there could be short-term localized road blockages. (Insignificant)	During construction, there could be short-term localized road blockages. (Insignificant)	During construction, there could be short-term localized road blockages. (Insignificant)	No substantial combined effect. (Insignificant)	Transportation would remain as described in Chapter 3, Environmental Setting.	No cumulative effect.

[a]Combined effects that would occur when any combination of projects is implemented to conserve approximately 21,100 acre-feet of water per year.

NOTICE OF PREPARATION
PROGRAM ENVIRONMENTAL IMPACT REPORT
FOR THE COLORADO RIVER WATER
QUANTIFICATION SETTLEMENT AGREEMENT

INTRODUCTION

The Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), The Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA) have entered into an agreement to be Co-Lead Agencies (CLA) for the preparation of a Program Environmental Impact Report (PEIR) in accordance with the California Environmental Quality Act (CEQA).

The program location includes much of southern California. The region of influence (ROI) comprises the areas that receive Colorado River water; i.e., the IID, CVWD, Palo Verde Irrigation District (PVID), and MWD service areas. Figure 1 (below) shows the locations of these service areas. The service areas include all or part of Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial counties. The ROI also includes the Lower Colorado River and the areas of conveyance and distribution of Colorado River water by these agencies.

As required by Section 15082 of the CEQA Guidelines, the CLA is submitting this Notice of Preparation (NOP) to responsible agencies, trustee agencies, other key agencies, private organizations, and individuals. The Draft PEIR is scheduled for release in late Summer 2000. Availability of the Draft PEIR for public review and comment will be announced and noticed in the local media.

The CLA is seeking comments on the scope of issues and the extent of analysis that should be evaluated in the PEIR. Pursuant to CEQA Section 21080.4(a), responsible and trustee agencies are asked to provide in writing the scope and content of the environmental information that is germane to their statutory responsibilities, as these agencies will need to use the PEIR prepared by the CLA when considering permits or other approvals for the project.

DESCRIPTION OF THE PROPOSED PROJECT

The PEIR will assess the environmental impacts associated with the implementation of the proposed Colorado River Water Quantification Settlement Agreement (Agreement) for the apportionment of Colorado River water among four water agencies in southern California: CVWD, IID, MWD and SDCWA. The implementation of the Agreement involves a series of water transfers, water exchanges, water conservation measures and other changes identified in the Agreement.

Nine program components are necessary to be implemented in order to accomplish the changes required in the Agreement. These nine components are listed below. The PEIR will address the aggregate impacts of the implementation of each of the nine program components. Separate

environmental analysis has either been completed or is under preparation for many of the program components. The PEIR will also address the project-specific impacts of those components not addressed in a separate environmental document.

- IID/SDCWA Conservation and Transfer Project (up to 300,000 acre-feet per year)
- Coachella Canal Lining Project – Conservation and Transfer
- IID/CVWD 1st 50,000 acre-feet per year; 2nd 50,000 acre-feet per year (MWD Option)
- MWD/CVWD 35,000 Acre-foot per Year State Project Water Transfer and Colorado River Water Exchange
- 1988 MWD/IID Water Conservation and Transfer Agreement
- 1989 MWD/IID/CVWD/PVID Approval Agreement Amendment
- All American Canal Lining Project – Conservation and Transfer
- IID and CVWD Priority 3 Water Diversion Caps
- Sharing Miscellaneous and Indian Present Perfected Rights Obligations.

Several parallel actions are also associated with the Quantification Settlement Agreement.

- The California's Colorado River Water Use Plan (Plan) is a planning document outlining the overall plans and policies for California to reduce its use of the Colorado River water;
- The State Water Resources Control Board and the Secretary of Interior must take certain actions and issue certain approvals in or to implement the Agreement.
- The U.S. Bureau of Reclamation is addressing the direct and indirect environmental impacts of these approvals in a Program Environmental Analysis under the National Environmental Policy Act.

ALTERNATIVES

The PEIR will evaluate feasible program alternatives that meet program objectives and reduce potentially significant impacts of implementing the Quantification Settlement Agreement. Also, the No Project Alternative, which involves no implementation of activities contemplated by the Agreement, will be evaluated.

POTENTIAL ENVIRONMENTAL EFFECTS

The PEIR will consider program-level impacts, i.e., combined impacts of implementing all program components. Project-specific environmental impacts attributable to individual program components have been or will be evaluated in project-specific CEQA reviews. The Program may have significant environmental impacts on the following resources: air quality, biological resources, cultural resources, hazards and hazardous materials, hydrology/water quality, utilities/service systems, and noise. The attached Initial Study provides further detail on the types of impacts that may occur.

RESPONSES TO NOTICE

In responding to this NOP, responsible agencies, trustee agencies and other agencies having jurisdiction over the Program or natural resources that may be affected by the Program are requested to provide specific detail as to the scope and content of the environmental information related to that agency's statutory responsibilities that should be included in the Draft PEIR. Responding agencies should identify a contact person for their agency.

Responses to this notice must be received no later than July 6, 2000. Please send your written comments to:

Colorado River Water Quantification Settlement Agreement
c/o Science Applications International Corporation
Attention: Robert Thomson
816 State St., Suite 500
Santa Barbara, CA 93101

Figure 1. California Service Areas and Major Facilities of Entities Using Colorado River Water

Environmental Checklist

1. Program Title:

Colorado River Water Quantification Settlement Agreement (Agreement)

2. Lead Agency Name and Address:

Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), The Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA) have entered into an agreement to be Co-Lead Agencies (CLA).

3. Contact Person and Phone Number:

All inquiries are to be directed to:

Colorado River Water Quantification Settlement Agreement
c/o Robert D. Thomson
Science Applications International Corporation
816 State St. Suite 500
Santa Barbara, CA 93101
(805) 966-0811

4. Program Location:

The Agreement would be implemented through a number of specific agreements and actions. These are collectively referred as the "Program" and are described in section 8. The Program location includes much of southern California. The region of influence (ROI) comprises the areas that receive Colorado River water; i.e., the IID, CVWD, Palo Verde Irrigation District (PVID), MWD, and SDCWA service areas. Figure 1 (below) shows the locations of these service areas. The service areas include all or part of Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial counties. The ROI also includes the Lower Colorado River and the areas of conveyance and distribution of Colorado River water by these agencies.

5. Program Sponsor's Name and Point of Contact:

Coachella Valley Water District (CVWD), Steve Robbins

Imperial Irrigation District (IID), John Eckhardt

The Metropolitan Water District of Southern California (MWD), Laura Simonek

San Diego County Water Authority (SDCWA), Larry Purcell

6. General Plan Designation:

Not applicable

7. Zoning:

Not applicable

8. Description of Program:

The proposed Agreement consists of detailed implementation components that are the outcome of the October 15, 1999 Key Terms for Quantification Settlement. The Key Terms identify a wide scope of activities that include:

- Further quantification of certain existing entitlements to use of California's apportionment of Colorado River water.
- Modification of agreements with respect to existing water management programs.

- Implementation of new water management programs, including facility improvements, groundwater conjunctive use, water conservation programs, transfers and exchanges.
- Support for improved reservoir management and operations.

The Program evaluated in this Initial Study is the implementation of the Agreement through specific Program components and agreements. No site-specific facilities or construction would occur solely as a result of this Program. The following actions would occur under the terms of the Agreement:

- IID's Colorado River basic share would be voluntarily capped at 3.1 million acre-feet of the 3.85 million acre-feet per year available under the first three priorities of the California agencies water delivery contracts. That figure constitutes the baseline from which IID would transfer water to other entities, including the SDCWA.
- CVWD's Colorado River basic share would be voluntarily capped at 330,000 acre-feet per year. CVWD would be able to acquire additional water up to an annual total of 456,000 acre-feet per year.
- MWD's basic annual share of Colorado River water, in combination with related water transactions and other supplies, would allow a full Colorado River Aqueduct supply of 1.25 million acre-feet per year to be maintained.
- SDCWA would make available to MWD the 130,000 to 200,000 acre-feet of water per year that would be transferred from IID to SDCWA each year. In return, MWD would make an equivalent amount of water available to SDCWA.

The Agreement also provides for CVWD, IID, and MWD to forebear the use of 16,000 acre-feet of water annually that will be made available to facilitate the implementation of the San Luis Rey Indian Rights Settlement. This water, as well as the additional supply for MWD would come from conserved water resulting from the lining of the All American and Coachella canals.

Summaries of the water budgets that would be available under the Agreement are included in tables 1 through 3.

The following lists specific actions (Program components) that are to be addressed at a programmatic level.

IID/SDCWA Conservation and Transfer (up to 300,000 acre-feet per year)

This consists of the conservation by IID of up to 300,000 acre-feet per year of agricultural irrigation water and the subsequent transfer of up to 200,000 acre-feet per year of the conserved water to SDCWA.. Provided that the conserved water is made available to MWD, MWD would deliver an equal amount of exchange water to SDCWA. The Agreement also calls for an additional 100,000 acre-feet per year to be made available to CVWD, with an MWD option on this latter quantity of water should CVWD reduce its use of this water or waive its opportunity for this water.

Coachella Canal Lining - Conservation and Transfer

This action involves the conventional lining of 33.4 miles of existing canal, running roughly parallel and ranging from 5 to 15 miles to the east of the Salton Sea. It is estimated to conserve 26,000 acre-feet per year.

IID/CVWD /MWD Conservation and Transfer (up to 100,000 acre-feet)

After the proposed transfer of 200,000 acre-feet of conserved water from IID to SDCWA annually, CVWD has the right to acquire up to the next 50,000 acre-feet of conserved water from IID. This water would be conserved in annual increments of 3,000, 4,000, or 5,000 acre-feet.

This water would be delivered to CVWD at Imperial Dam, and the water would be conveyed through the All American and Coachella canals to CVWD's service area. After the proposed transfer of 200,000 acre-feet of conserved water from IID to SDCWA annually, and the subsequent transfer to CVWD of up to the next 50,000 acre-feet per year of conserved water from IID, CVWD has the right to acquire a second increment of up to 50,000 acre-feet per year of conserved water from IID. This water would be conserved in annual increments of 3,000, 4,000, or 5,000 acre-feet per year.

MWD/CVWD 35,000 Acre-foot per Year State Water Project Transfer and Colorado River Water Exchange

MWD will transfer 35,000 acre-feet per year of its State Water Project entitlement to CVWD for the duration of the Quantification Period in accordance with the Monterey Agreement. The transfer would be implemented through an

exchange for Colorado River water. Specifically, CVWD would deliver its 35,000 acre-feet of State Water Project

Table 1. IID Water Budget

Water Budget	Budget Cap and Adjustments
3.1 MAF	Priority 3 Water Use Cap
< 100 –110 KAF >[1]	To MWD Per 1988 Agreement
< 130 –200 KAF >	To SDCWA
< 67.7 KAF >	To MWD: All American Canal Lining Project[2]
< 50 KAF >	To CVWD
< 50 KAF >	To CVWD through year 45
< 11.5 KAF >	For Miscellaneous/Indian PPRs if no Priorities 6 or 7 water is available
2.61 – 2.69 MAF	Adjusted Budget

[1] < > indicates a transfer to others

[2] Less 11.4 KAF for SLR, IID has call rights on the remainder during surplus years

Priorities 6 and 7 (when available)

<38 KAF>	To MWD
63 KAF	IID Use
<119KAF>	To CVWD

Balance in accord with existing priority system

Table 2. CVWD Water Budget

Water Budget	Budget Cap and Adjustments
330 KAF	Priority 3 Water Use Cap
< 26 KAF >	To MWD: Coachella Canal Lining Project[1]
20 KAF	From MWD- Approval Agreement
50 KAF	From IID
50 KAF	From IID, then MWD after year 45
35 KAF	From MWD
< 3 KAF >	For Miscellaneous/Indian PPRs if no Priorities 6 or 7 water is available
456 KAF	Adjusted Budget

[1] Less 4.5 KAF for SLR.

Priorities 6 and 7 (when available)

<38 KAF>	To MWD
<63 KAF>	For IID
119 KAF	CVWD Use

Balance in accord with existing priority system

Table 3. MWD Water Budget

Water Budget	Budget and Adjustments
550 KAF	Priority 4 Water Use Cap
130-200 KAF	IID / SDCWA Transfer & MWD / SDCWA Exchange
100-110 KAF	From IID- 1988 Agreement
< 20 KAF >	To CVWD-Approval Agreement
56.2 KAF	From IID: All American Canal Lining Project
21.5 KAF	From CVWD: Coachella Canal Lining Project
< 35 KAF >	To CVWD
< 31.5+KAF >	For Miscellaneous / Indian PPRs if no Priority 6 water or under use of Priority 1, 2 and 3b
771-851 KAF	Priority 4, Transfers and Other Adjustments
662 KAF	When available, Priority 5 and surplus water
38 KAF	From IID / CVWD- when Priority 6 water available
+ KAF	Under use of Priorities 1and 2

entitlement transfer water to MWD at Devil Canyon Afterbay annually. In exchange, MWD would reduce its use of Colorado River water by 35,000 acre-feet per year to permit such water to be diverted by CVWD at Imperial Dam for delivery through the Coachella Canal, and/or to be discharged from the Colorado River Aqueduct into the Whitewater River.

1988 MWD/IID Water Conservation and Transfer Agreement

The 1988 Agreement provides for implementation of conservation projects in the Imperial Valley and is generating 109,460 acre-feet of conserved water per year. MWD has funded the construction, operation, maintenance and indirect costs of the conservation program. In return, MWD diverts additional water from the Colorado River for delivery through the Colorado River Aqueduct. The program includes structural and non-structural conservation measures. The term of this agreement currently extends for a minimum of 35 years after full implementation of the conservation program, which was determined to have occurred in October 1998. Under the Key Terms of the Quantification Settlement Agreement, the term of this agreement will be extended to the latter of December 31, 2041 or 270 days beyond the term of the Quantification Period. The environmental impacts of the MWD/IID agreement and the specific conservation projects associated with this agreement previously have been assessed (IID 1986, 1989, 1990, 1994). Construction of the program is complete and in the operation and maintenance phase. It is therefore considered a part of baseline conditions for purposes of the environmental analysis to be performed for the Quantification Settlement Agreement. No additional environmental review is required at this time.

1989 MWD/IID/CVWD/PVID Approval Agreement Amendment

The Approval Agreement executed by IID, CVWD, MWD and the Palo Verde Irrigation District (PVID) represents the agreement of CVWD and PVID to not divert the water conserved by IID for MWD. Under the Key Terms, the provisions of the Approval Agreement addressing circumstances under which MWD might reduce its use of conserved water would be amended such that MWD would annually make available to CVWD, without charge at Imperial Dam, 20,000 acre-feet of the water conserved under the MWD/IID Water Conservation Program. Also, as a condition precedent for the Quantification Period, PVID would be released from its obligations under the Approval Agreement in exchange for its waiver of any rights to conserved water from the lining of the All American Canal and Coachella Canal, and expansion of use on the PVID Mesa, and any rights to Priority 6 water described in the Key Terms.

All American Canal Lining - Conservation and Transfer

The objective is to reduce the seepage from a 23 mile reach of the existing canal, located in southern Imperial County, from the vicinity of Pilot Knob to Drop 3 by constructing a concrete-lined canal parallel to the existing canal. This is estimated to conserve 67,700 acre-feet per year.

IID and CVWD Priority 3 Caps

Subject to the inadvertent overrun provisions, IID's and CVWD's consumptive use entitlements under their respective shares of Priority 3 water will be capped at 3.1 million acre-feet, and 330,000 acre-feet per year, respectively. These totals are less the conserved water made available by IID for use by others, and less conserved water made available from IID and CVWD, respectively, from lining portions of the All American and Coachella Canals. The measurements shall be at Imperial Dam.

Sharing Miscellaneous and Indian Present Perfected Rights Obligations

Certain entitlements to use of Colorado River water were recognized as being "perfected" as of the effective date of the Boulder Canyon Project Act (June 25, 1929) by the Supreme Court of the United States in 1964. Some of the "Present Perfected Rights" (PPRs) were not encompassed by the priority system to use of Colorado River water contained in the California Seven Party Agreement (non-encompassed PPRs) executed in 1931. The proposal is that in any year during the quantification period, IID and CVWD would agree to not consumptively use 14,500 acre-feet of water under Priority 6, 7, or 3, that is consumptively used by holders of non-encompassed PPRs. IID and CVWD would reduce their consumption by 11,500 acre-feet and 3,000 acre-feet respectively. Should total consumptive use under the non-encompassed PPRs be less than 14,500 acre-feet, then for the difference between 14,500 acre-feet and the amount of actual consumptive use by the non-encompassed PPRs, IID and CVWD could consumptively use 75 percent and 25 percent respectively. MWD would agree to not consumptively use an amount equal to the amount of non-encompassed PPR consumptive use that exceeds 14,500 acre-feet.

9. Surrounding Land Uses and Setting:

Land uses within the ROI include urban development with major centers in metropolitan Los Angeles, Orange, Riverside, Ventura, San Bernardino, and San Diego counties. Other key land uses include agriculture along the Colorado River and in the Coachella, Imperial, and Palo Verde valleys. Large amounts of land also are much less developed and are in private ownership or are owned by federal and state governments.

10. Other Agencies:

Certain actions and approvals from the Secretary of the Interior are anticipated. Other federal approvals may be required to implement other Program components. At this time, it is not expected that any state agency would have approval authority over the proposed Program, but some have been identified as responsible or trustee agencies for specific elements undergoing separate environmental review.

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by the Program, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agricultural Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☒ Hazards and Hazardous Materials	☒ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☒ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☒ Utilities/Service Systems	☒ Mandatory Findings of Significance	

Environmental Determination

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared. ☐

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☒

I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the project, nothing further is required. ☐

June 6, 2000

Coachella Valley Water District

June 6, 2000

The Metropolitan Water District of

Southern California

J R Eckhardt — June 6, 2000
Imperial Irrigation District

Lawrence Purcell — June 6, 2000
San Diego County Water Authority

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion:
Visual resources within the ROI include intensive urbanized areas within metropolitan Los Angeles, Orange, Riverside, Ventura, San Bernardino, and San Diego counties. There are also major agricultural areas along the Colorado River and within the Coachella and Palo Verde Valleys of Riverside County, and the Imperial Valley of Imperial County. Less developed and open space areas occur on the hillside and mountains of all counties and in the deserts of Riverside, San Bernardino, Los Angeles, and Imperial Counties. Therefore, the visual resources are locally oriented and vary according to the type of land use and the degree of open space and the existence of prominent topographic features such as mountains, ridgelines, and other unique features. Areas of greatest concern for visual resources revolve around changes to prominent topographic features that alter the character of the overall landscape and changes to water bodies that are considered visually sensitive. The focus is on potential impacts to these features along scenic highways and other sensitive visual resources in wilderness or other natural areas.

Some of the projects associated with the Agreement (especially the anticipated conjunctive use/groundwater banking project) involve development of well fields, pipelines, and other support structures, which generally do not require extensive grading or other landform modification. Impacts generally are expected to be low since it is not expected that major topographic features would be substantially changed. Some localized, short-term impacts may result from the installation of pipelines and other facilities, but these are expected to be less than significant.

II. AGRICULTURAL RESOURCES - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model prepared by the California Department of Conservation as an optional model to use in assessing impacts on agricultural farmland. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program in the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c. Involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland, to non-agricultural use?	☐	☐	☒	☐

Discussion: A total of 1,278,210 acres in the Program area are classified as prime farmland based on the county soil surveys (USDA-NRCS 2000). Additional acreage of unique farmland and farmland of statewide importance also occur in the Program area (USDI 1988). The Coachella Valley is a major agricultural area, as are Imperial County and San Diego County; however, the most recent Farmland Conversion Report prepared by the California Department of Conservation indicates that the seven-county southern California region trails only the San Joaquin Valley in the amount of agricultural land converted to urban uses during the 1994 to 1996 study period. This continues a long-term trend driven by California's population growth and market preferences for relatively low-density development. In that vein, Riverside, San Diego, and San Bernardino were the top three counties in the amount of agricultural land converted during the 1994 to 1996 study period. The total amount of prime farmland in southern California converted to non-agricultural uses was approximately 3,256 acres, which accounts for less than one tenth of one percent of agricultural lands in Riverside, Imperial, San Bernardino, Los Angeles, San Diego and Riverside Counties. At opposite ends of the spectrum, Riverside and Imperial Counties accounted for approximately 42 percent and 6 percent, respectively, of this loss of agricultural land in southern California (California Department of Conservation 1998a).

Key to the Agreement is voluntary conservation and transfer of IID agricultural irrigation water to CVWD, SDCWA and MWD. It is anticipated that a portion or all of the conserved water transferred from the IID would be moved through the existing Colorado River Aqueduct and the Coachella Canal. (Water would be transferred to SDCWA and MWD via the Colorado River Aqueduct and water transferred to CVWD would be transferred via the Coachella Canal.) Most of the conserved agricultural water would be transferred to MWD and SDCWA to replace surplus and apportioned but unused Colorado River water that would no longer be available.

It is anticipated that the IID would receive sufficient Colorado River water each year, even with the proposed transfers to the MWD, SDCWA, and CVWD to sustain the existing level of agricultural productivity, and it is anticipated that the Program would make a less than considerable contribution to farmland conversion in the Imperial Valley. The Program does not affect the Yuma Project-Reservation Division. It is anticipated that the water supply for agriculture in San Diego County would not change due to implementation of the Program; therefore, no impact to agriculture in San Diego would occur. There may be temporary reductions in agricultural land use due to land fallowing associated with dry year and reserve building water transfers. It is anticipated that the area affected by fallowing would be small and would primarily occur in the Palo Verde Valley.

III. AIR QUALITY - Where available, the significance criteria established by the applicable air quality management or pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emission which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

The main pollutants of concern within the region include ozone (O_3), volatile organic compounds (VOCs), nitrogen oxides (NO_x), and particulate matter less than 10 microns in diameter (PM_{10}). At present, the region primarily affected by implementation of the Program does not attain the national and/or state ambient air quality standards for O_3 and PM_{10}. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3 formation.

Implementation of various Program components could affect five distinct air basins in southern California. Air quality within this broad region is under the jurisdiction of the following six air pollution control districts:

- Ventura County Air Pollution Control District (VCAPCD), which includes the County of Ventura.
- South Coast Air Quality Management District (SCAQMD), including the non-desert portions of Los Angeles and San Bernardino Counties, all but the eastern portion of Riverside County, and all of Orange County.
- Mojave Desert Air Quality Management District (MDAQMD), which includes the northern portion of San Bernardino County and the eastern portion of Riverside County.
- Imperial County Air Pollution Control District (ICAPCD), which includes all of Imperial County.
- San Diego County Air Pollution Control District (SDCAPCD), which includes all of San Diego County.

Implementation of the Program could potentially produce the following impacts to air quality within the southern California region:

- Pumping of water to different locations would require additional power, some of which would be provided by fossil fuel-fired electrical generating facilities within the region. Air pollutant emissions from these facilities would be regulated by regional air pollution control agencies through the air permit process.
- Fugitive dust emissions could be generated during construction of facilities associated with the implementation of the Program. Decreased surface elevation of any open water body also could result in increased fugitive dust emissions and increased odors.

IV. BIOLOGICAL RESOURCES – Would the project:

a. Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b. Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Adversely impact federally protected wetlands(including, but not limited to, marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☒	☐	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Discussion:

The seven-county area that is affected by the Agreement includes many important biological resource locations. These include such general locations as the Mojave Desert, Coachella Valley, Salton Sea, and various national, state, and local parks, forests, and preserves. Within these broad areas are habitats for thousands of species of plants and animals, many of which are considered sensitive due to declining populations.

Impacts to biological resources may result from the implementation of certain Program components or from indirect land use changes supported by Program implementation. The impacts of such changes are not always unidirectional; changes that adversely impact one set of species may be beneficial to another set of species. Raising or lowering the water level of a lake, for example, may favor some species of waterfowl at the expense of other species. For a Program as geographically wide-ranging and multi-faceted as this one, potential impacts are difficult to specifically predict and summarize. However, any proposed new construction would be subject to a project specific environmental review process before being approved.

Since the Program includes relatively minimal new construction, and since it is not expected to change regional development patterns and land use trends, it would have a de minimus effect on biological resources of the region as a whole. However, local changes in water use, water storage, and water transportation may cause local impacts to plant and wildlife populations that may be locally significant. Potential impacts to biological resources due to potential reduced water elevation on the lower Colorado River are being addressed in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP).

V. CULTURAL RESOURCES – Would the project:

a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☒	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☒	☐	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Discussion:

Humans have been living within the seven counties covered under the Agreement for over 10,000 years. The analysis of cultural resources, including both prehistoric and historic sites, can provide valuable information on the cultural heritage of both local and regional populations. Prehistoric sites range from small lithic scatters left behind by early stone-tool makers to the remains of large village sites found along the coast. Historic resources include small adobe homes as well as large historic districts encompassing numerous structures and acres of land, as well as architectural structures.

In general, highly urbanized areas are less likely to contain intact prehistoric resources because of the extensive impacts caused by historic and modern development. Urban areas are often, however, located adjacent to important resources such as springs, estuaries, etc. that attracted Native American settlement. Therefore, urban development is often located in areas of high prehistoric archaeological site sensitivity. Buried archaeological sites with portions that are relatively unaffected by previous development have been commonly encountered during urban construction. Urbanized areas, however, would have a higher likelihood of containing historic resources than rural or non-developed areas.

Agricultural land has been less impacted by historic and modern development and, therefore, has a higher likelihood of containing relatively intact cultural resources despite the ground disturbances associated with plowing and other agricultural activities. In addition, coastal areas, including those within San Diego, Orange, Los Angeles, and Ventura Counties, have a high probability of containing Native American archaeological sites because many Native American communities congregated along the coast to take advantage of the rich marine resources.

There is the possibility that both structural and non-structural Program components could affect significant prehistoric and historic resources. Structural components , especially those involving construction-related activities and ground disturbance, could impact a buried prehistoric archaeological site. Some non-structural components also have the potential to impact significant cultural resources.

VI. GEOLOGY AND SOILS - Would the project:

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) 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? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b. Would the project result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) creating substantial risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems, where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Discussion:

The main geologic hazard in the seven counties is from earthquakes. Other natural hazards include floods, landslides and other earth movements. The Program area, particularly along the San Andreas, Imperial, and San Jacinto faults, is seismically active (USDI 1988). The surface geologic materials near these major faults are predominately hard rock, but there is a significant amount of softer materials that can amplify shaking and lead to increased damage from an earthquake (California Department of Conservation 2000).

Soil surface textures range from clay to sand in the Program area, with a majority of the slopes ranging from nearly level to gently sloping. Susceptibility of the soils to wind and water erosion ranges from low to very high. The county with the lowest average erodibility potential due to water is Riverside (Coachella Valley) and that with the lowest in average wind erosion potential is Imperial. Soil salinity ranges from low to high, but the averages for most of the counties are in the very slightly to slightly saline range. The counties with the most saline soils are Imperial, San Bernardino, and San Diego. The variety of soil textures and other characteristics is a result of the broad range of surficial geologic formations from which the soils are derived (USDI 1988).

There are approximately 385,000 acres of hydric soils in the seven counties, based on the county soil surveys. Hydric soils are one of the major components of wetlands (USDI 1988).

Geologic hazards would not be materially increased by implementation of the Program. Infrastructure improvements (including existing or future irrigation canal lining) could be damaged during an earthquake, but the effects of these hazards would be less than considerable when compared with likely conditions without implementation of the Program. Implementation of the Program should not lead to considerable impacts to soils.

VII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b. Create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☒	☐	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Is the project located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. For a project within the vicinity of a private air strip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h. Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion:

Industries and other entities in the seven-county area use a wide variety of hazardous materials ranging from fuels and solvents to radioactive materials. A wide variety of fuels, chemicals, and other hazardous materials are also transported via roadways and railways.

The various components of the Program could require the use of hazardous materials, such as lubricating oils, fuels, and chemicals associated with well drilling and water treatment. Accidents associated with the use of these materials could cause significant impacts.

VIII. HYDROLOGY AND WATER QUALITY - Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f. Otherwise substantially degrade water quality?	☒	☐	☐	☐
g. Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐		☒
h. Place within a 100-year floodplain structures which would impede or redirect flood flows?	☐	☐	☐	☒
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion:

The Colorado River is the principal water resource in the arid Southwest. The watershed is divided into the Upper and Lower Basins, defined in the 1922 Colorado River Compact. The dividing point is at Lee Ferry, Arizona, approximately 17 miles downstream of Glen Canyon Dam. The unregulated flow of the river varies widely from year to year depending on the location and timing of precipitation throughout the watershed. To cope with its extreme variability, reservoirs have been constructed with a combined usable capacity of approximately 60 million af. California's annual use of Colorado River water has varied from 4.5 to 5.2 million af over the last ten years.

The Colorado River Delta begins at Laguna Dam on the Colorado River and extends west and north into the Imperial and Coachella valleys as far north as Indio, California, and extends south into the Yuma Valley in Arizona, and includes the Mexicali Valley in Mexico southward to the Gulf of California. Within this area there is a highly transmissive aquifer that extends westward into the East Mesa in Imperial County, southward into the Yuma Valley and into the eastern portion of the Mexicali Valley. The regional aquifer does not extend into the Imperial Valley or the western Mexicali Valley because the sequence of clay layers becomes thicker towards the west. For the same reason the regional aquifer does not extend to the Salton Sea or into northern Imperial County. Recharge to this aquifer consists of flow in the Colorado River below Laguna Dam, intermittent flow in the Colorado River below Morelos Dam, irrigation with Colorado River water on lands in the Bard Valley in California, rainfall frontal runoff from the Cargo Muchacho Mountain Range, Yuma Valley in Arizona, and the Mexicali Valley, and irrigation conveyance facilities including the All American Canal.

The only major drainage course to the east of the Salton Sea is Salt Creek. Salt Creek discharge to the Salton Sea is approximately 1,000 af per year (USGS Gauging Station 10254050). This flow consists of seepage from the Coachella Canal and runoff from springs and wells that tap from the aquifer of the Salt Creek watershed. Surface runoff from the watershed is sporadic and infrequent. Residents in the area use seepage from the Coachella Canal for irrigation of landscaping and vegetable gardens. Domestic water comes from withdrawals from the Coachella Valley aquifer that is piped into the area by the CVWD.

The agricultural area of the Imperial Valley consists of low permeability lakebed sediments. To prevent water logging and salinization, much of the irrigated area is underlain with subsurface tile drains that collect shallow groundwater and discharge it to the surface drainage system that flows to the Salton Sea. Alternatively, it is discharged directly to the Salton Sea. Although current inflow to the Salton Sea is approximately 1.3 million af per year consisting mostly of agricultural drainage from Imperial Irrigation District, CVWD and Mexico, there has historically been a substantial variation in this figure based on numerous factors.

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The agricultural area of the Lower Coachella Valley sits atop a vast aquifer from which as much as 170,000 af are withdrawn annually (Coachella Valley Water District 1999). The CVWD estimates that overdraft from this aquifer is as much as 125,000 af per year. As a result of the overdraft, Salton Sea water is intruding into the aquifer beneath the Lower Coachella Valley (TetraTech 1999).

The potential upper range of the cumulative change in Colorado River flow between Parker and Imperial dams due to Program implementation is listed in tables 1 through 3. The upper range of the potential reduced flow below Parker Dam is due to conservation and transfer of water from conveyance, distribution, and on-farm use of Colorado River water. This reduced level of use is within the range of historic use. There would also be an associated reduction in seepage and drainage similar to that which has occurred historically with reduced water use.

In the case of water to be received by MWD and SDCWA, the conservation and transfer components provide replacement water for water now diverted through the Colorado River Aqueduct. There would be no change in the capacity of the Colorado River Aqueduct, which supplies MWD and, through it, SDCWA. Flow in the Colorado River Aqueduct is planned to remain at maximum capacity, although the total annual volume that is diverted may be less than historic diversions. A portion of the water would be conserved, previously stored, or apportioned water rather than surplus or apportioned but unused water. The amount of water conveyed by the Aqueduct is physically limited by its capacity, and no additional water beyond that previously used in coastal southern California would be provided.

The combined effects of the components identified in the Program on water resources are associated with changes in the following:

Quantified Water Supply

The overall effect of the Program would be a net decrease in use of Colorado River water by California. MWD and SDCWA would receive the same amount of Colorado River water as they currently receive, but it would be conserved and stored water rather than either surplus water or water apportioned to but unused by other Lower Division states (Arizona and/or Nevada). The net result would be no increase in Colorado River water supplies to the coastal region over current conditions.

Changes in flow quantities would take place within IID's service area, where conservation efforts would reduce the demand for Colorado River water. The transfer of conserved water to CVWD would improve groundwater management by CVWD in Coachella Valley.

River and Aqueduct Flows

Implementation of individual Program components would have an effect on the amount of flow in the Colorado River between Parker Dam (diversion point for the Colorado River Aqueduct) and Imperial Dam (diversion point for the All American Canal to IID and CVWD).

Under the Program, projected flow in the river could slightly decrease the annual volume of the Colorado River at Imperial Dam. Some or all of this decrease may be made up with surplus water, especially when flood control releases are projected, and the maximum and minimum levels of flow rate would remain the same. However, the annual decrease in flow would result in a minimal drop in “bankline” water level.

The Salton Sea

Conservation of as much as 300,000 af in the Imperial Valley and transfer of this water to SDCWA, CVWD, and/or MWD may change flows to the Salton Sea. Reduced flows could potentially change the rate of increasing salinity of the Salton Sea and could decrease its surface elevation.

Water Quality

The salinity of the Colorado River increases as the river flows downstream. If river flows are reduced, the salinity of

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

water at Imperial Dam and downstream may increase slightly. The possible reduction in river flow and potential subsequent increase in salinity between Parker and Imperial dams would be negligible, and Program implementation would not cause an exceedance the Water Quality and Salinity Standards for the Colorado River system.

IX. LAND USE AND PLANNING - Would the project:

a. Physically divide an established community?	☐	☐	☐	☒
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c. Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	☒

Discussion:

Land uses within the Program area include urban development with major centers in metropolitan Los Angeles, Orange, Riverside, Ventura, San Bernardino, and San Diego counties. Other key land uses include agriculture along the Colorado River and in the Coachella, Imperial, and Palo Verde valleys. Large amounts of land also are much less developed and are in private ownership or are owned by federal and state governments.

Implementation of the Program may result in impacts to specific areas where facilities or projects are implemented. There may be minor changes in land use due to the construction of facilities associated with Program components.

The Program would ensure that the available water supply for the southern California coastal plain and inland valleys remains at close to current levels. There would be no change in the capacity of the Colorado River Aqueduct, which supplies MWD and, through it, SDCWA. The Program would attempt to maintain current maximum levels of flow through the Aqueduct, although the total annual volume that is diverted may be less than historic diversions. The IID retains its historic water rights, the 3rd and 6th priorities in California; however, IID would voluntarily limit its total annual diversions of Colorado River water and would transfer certain quantities of conserved water for use by others. Accordingly, in combination, the components proposed in the Program would not substantially contribute to land use impacts within those portions of southern California.

No aspects of the Program would physically divide an established community, nor are conflicts with adopted plans and policies anticipated.

X. MINERAL RESOURCES – Would the project:

a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Discussion:

Significant geothermal resources and oil and gas fields exist in the area potentially affected by the Agreement (California Department of Conservation, Division of Mines and Geology 1998b, 2000). According to the California Department of Conservation, Division of Mines and Geology (1998c), a variety of mineral resources are scattered throughout the Program area. The following summarizes the major minerals by county in the Program area.

Table 4. Major Minerals in the Seven-County Region

County	*Mineral Resources*
Ventura	Clay, gypsum, shale, specialty sand, sand and gravel
Los Angeles	Clay, decorative rock, sand and gravel, crushed stone, titanium, tungsten
Orange	Silica, sand and gravel
Riverside	Clay, crushed stone, dimension stone, sand and gravel
San Bernardino	Alumina, clay, crushed stone, decorative rock, feldspar, sand and gravel, limestone, gold, talc, rare earths, salt, saline compounds, pumice, volcanic cinders, zeolites
San Diego	Crushed stone, dimension stone, gemstones, specialty sand, sand and gravel,
Imperial	Clay, gypsum, sand and gravel, gold
Source: California Department of Conservation, Division of Mines and Geology 1998c.	

Implementation of the Program would have no impacts on mineral resources.

XI. NOISE - Would the project result in:

a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f. For a project within the vicinity of a private air strip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

Land uses considered noise-sensitive include residential, educational, and health facilities, research institutions, and certain recreational and entertainment facilities such as parks used for passive recreation or wilderness areas where solitude is key to the quality of the recreational experience. Most commercial and industrial uses and certain noise-

generating recreational facilities such as playgrounds and gymnasiums are considered less sensitive to noise.

Southern California has a variety of land use patterns that range from natural to urban/suburban. Growth in the region has resulted in conversion of open spaces and agricultural areas to higher density urban and suburban uses, producing increases in noise associated with greater densities of development and human activity. Although this growth has caused a cumulative increase in sources of noise and in the potential number of noise recipients and noise-sensitive land uses in the region, noise impacts are nevertheless localized in nature and would not be cumulative on a regional or area-wide basis.

Many of the components associated with the Program would be non-structural (e.g., water transfers or exchanges) and would not directly contribute to noise effects. Some of the types of the components (e.g., structural activities) that may occur within the framework of the Program, could result in short-term noise impacts during construction and could, depending upon the specific timing and location, in combination contribute to an increase in noise levels. Examples of structural projects that may occur include the lining of the All American and Coachella Canals to increase efficiencies in water conveyance, and development of new facilities and spreading grounds to offset groundwater overdraft in the Coachella Valley.

XII. POPULATION AND HOUSING - Would the project:

a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

Since the recession of the early 1990s, the economy has diversified as manufacturing jobs have been lost and new jobs in information technology, entertainment, services, and apparel and fashion design, to name a few, have been created (SCAG 1998). Development patterns favor investment in new development over reinvestment in older areas. The distribution of jobs and dependence on automobiles for access to the workplace adversely affects the ability of low-wage earners to obtain and hold employment (SCAG 1998).

Increasing housing prices exclude many from home ownership and separate workers who opt for lower cost housing on the urban fringe in Riverside and San Bernardino Counties from employment centers in Los Angeles, Orange, and San Diego Counties. The rate of new housing construction in San Diego County is not keeping pace with growth, thereby increasing the cost of housing (SANDAG 1999a).

The Program is expected to make a de minimus contribution to socioeconomic effects. In coastal southern California, the proposal would maintain current levels of Colorado River water in the face of impending reductions in the overall volume of water available to the region. It would enable the region to maintain socioeconomic trends but would not influence the choices made by individual communities or the socioeconomic effects resulting from future planned development.

In the Coachella Valley, CVWD will address overdraft by adopting mechanisms that shift demand from groundwater to previous levels of use of Colorado River water. This would not have an adverse effect on socioeconomic factors, including population, employment, or housing.

Imperial County has the lowest per capita income in southern California, and the highest percentage of minority residents (it is approximately 70 percent Hispanic). Reflecting the county's economic dependence upon agricultural production, approximately one-third of its work force is employed in farming or related services. In January 2000, Imperial County had an unemployment rate of approximately 19.6 percent; much greater than the statewide average of 5.4 percent, but similar to that in other agricultural areas of the state (California Employment Development Department 2000). The proposed transfer of conserved water from PVID and IID to other California users would not adversely impact employment in the Riverside or Imperial Counties since no adverse impacts to agricultural

resource are anticipated. The Program would neither displace housing nor people; therefore, no impacts associated with housing would occur.

XIII. PUBLIC SERVICES

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion:

Public services are provided by local governing bodies. It is anticipated that the component facilities necessary for implementation of the Program would involve only minimal requirements for public services. The Program would have a de minimus impact on public services within the ROI.

XIV. RECREATION

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion:

The Program area contains a wide variety of both passive and active recreational resources. Active recreational resources are found primarily in urban areas, whereas undeveloped areas, can be used for a variety of activities, including hiking, camping, bicycling, and horseback riding. The Colorado River is used for a variety of recreational activities, including fishing, swimming, boating, and bird-watching.

XV. TRANSPORTATION/TRAFFIC – Would the project:

a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☒
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in	☐	☐	☐	☒

substantial safety risks?

d. Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☐	☒
f. Result in inadequate parking capacity?	☐	☐	☐	☒
g. Conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Discussion:

General development throughout southern California has a cumulative impact on the regional transportation system. Increasing numbers of people, a general pattern of land use development that is not conducive to mass transit, and other factors guarantee that transportation systems will struggle to provide convenient access to employment, services, recreation, and other activities and maintain the level of mobility enjoyed in the past. The regional transportation plans (RTPs) prepared by SCAG and SANDAG address the seven-county southern California region and are based on growth projections that assume that the current levels of water availability, particularly to the coastal areas and adjoining inland valleys, will continue into the future.

It is not anticipated that implementing the various Program components would result in traffic impacts. None of the Program components would produce substantial traffic due to construction or operating parameters. Additionally, any traffic generated by the various projects anticipated in the Program would be expected to be in remote areas where there are no congestion-related issues.

The Program would support the transfer of conserved water from the Imperial Valley to other users. This Program component is not expected to stimulate new growth that would affect either local or regional transportation systems or require the construction of additional transportation infrastructure. The Program would have a de minimus impact on the existing and projected effects of growth on the transportation system.

XVI. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g. Comply with federal, state, and local statues and regulations related to solid waste?	☒	☐	☐	☐

h. Will the project result in a need for new systems, or substantial alterations to utilities?	☒	☐	☐	☐

Discussion:

Utilities and service systems within the seven-county area are provided by municipalities, special agencies and large private utilities such as Southern California Edison Company, Southern California Gas Company, and San Diego Gas & Electric Company.

It is anticipated that the components of the Program would involve only minimal requirements for public services and utilities. Additional use of electricity for operation of pumps and other facilities may be required, but would be small compared to the overall electrical consumption in the area. Reduced flows of Colorado River water could reduce the potential for its use as a reliable source of hydropower generation by the entities that generate power from Hoover Dam to the Headgate Rock Dam and IID.

The Program would have a de minimus impact on public services and utilities in the Coachella Valley. CVWD is adopting measures that are expected to shift existing demand away from use of groundwater supplies back to Colorado River water supplies.

The impact of the Program on public services and utilities in the Imperial Valley is dependent upon the specific water conservation measures to be undertaken; however, the combined impacts of the components proposed in the Program are expected to be minimal.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Implementation of the Agreement could result In significant impacts to the following resources. Impacts to human beings and the physical environment are considered potentially substantial.

- Air Quality — Pumping water to different locations may require additional power, some of which would be provided by fossil fuel-fired electrical generating facilities. Fugitive dust emissions could be generated during construction of facilities, and decreased surface elevation of any open water body also could result in increased fugitive dust emissions.

- Biological Resources — Local changes in water use, water storage, and water transportation may cause local impacts to plant and wildlife populations.

- Cultural Resources — Both structural and non-structural components associated with the Program could affect significant prehistoric and historic resources.

- Hazards and Hazardous Materials — Accidents involving hazardous materials, such as lubricating oils, fuels, and chemicals associated with the implementation of the Program could cause significant impacts.

- Noise — Construction of some Program components could result in short-term noise impacts.

- Utilities and Service Systems — Reduced flows of Colorado River water could reduce the potential for its use as a reliable source of hydropower generation by the entities that generate power from Hoover Dam to the Headgate Rock Dam and IID.

The above impacts could be cumulatively considerable when combined with other development within the Program area.

XVIII. REFERENCES

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STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nissen
ACTING DIRECTOR

Notice of Preparation

June 8, 2000

RECEIVED
JUN 15 2000
SAIC Santa Barbara

To: Reviewing Agencies

Re: Colorado River Water Quantification Settlement Agreement
SCH# 2000061034

Attached for your review and comment is the Notice of Preparation (NOP) for the Colorado River Water Quantification Settlement Agreement draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Robert D. Thomson
Colorado River Water Quantification Settlement Agreement Co-lead
816 State Street
Suite 500
Santa Barbara, CA 93101

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 WWW.OPR.CA.GOV/CLEARINGHOUSE.HTML

Document Details Report
State Clearinghouse Data Base

SCH# 2000061034
Project Title Colorado River Water Quantification Settlement Agreement
Lead Agency Colorado River Water Quantification Settlement Agreement Co-lead Agencies

Type nop Notice of Preparation

Description The proposed agreement consists of detailed implementation components that are the outcome of the October 15, 1999 Key terms for Quantification Settlement. The Key Terms identify a wide scope of activities that include:
Further quantification of certain entitlements to use of California's apportionment of Colorado River water.
Modification of agreements with respect to existing water management programs.
Implementation of new water management programs, including facility improvements, groundwater conjunctive use, water conservation programs, transfers and exchanges.
Support for improved reservoir management and operations.
The program evaluated in this initial study is the implementation of the agreement through specific program components and agreements. No site-specific facilities or construction would occur solely as a result of this program.

Lead Agency Contact

Name Robert D. Thomson
Agency Colorado River Water Quantification Settlement Agreement Co-lead
Phone 805 966-0811 **Fax** 805 965-6944
email thomsonr@saic.com
Address 816 State Street
Suite 500
City Santa Barbara **State** CA **Zip** 93101

Project Location

County Ventura, Los Angeles, Orange, San Diego, San Bernardino, ...
City
Region
Cross Streets
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways
Schools
Land Use

Project Issues Toxic/Hazardous; Septic System; Other Issues; Water Quality; Noise; Air Quality

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Reclamation Board; Department of Water Resources; Department of Fish and Game, Region 5; Department of Fish and Game, Region 6; Native American Heritage Commission; State Lands Commission; Colorado River Board; Caltrans, Division of Transportation Planning; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; Regional Water Quality Control Board, Region 7; Regional Water Quality Control Board, Region 8; Regional Water Quality Control Board, Region 9

Date Received 06/08/2000 **Start of Review** 06/08/2000 **End of Review** 07/07/2000

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County of Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial

SCH# 2000061034

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Regional Water Quality Control Board

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SCH 6/05/00

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 12, 2000

Robert D. Thomson
Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA. 93101

Dear Mr Thomson,

The Environmental Protection Agency (EPA) has reviewed the Notice of Preparation (NOP) and Environmental Checklist for the **Colorado River Water Quantification Settlement Agreement (Agreement), Southern California.** We understand that the US Bureau of Reclamation (Bureau) is developing a Programmatic Environmental Assessment for the related Department of Interior Secretarial Agreements required for proposed changes such as change in diversion points between Parker and Imperial Dams. There are also clear links between the Agreement and a number of other Federal actions (e.g., Interim Surplus Criteria, water transfers, canal lining projects). Therefore, although the Agreement is a non-Federal action, our review and comments are pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), Section 309 of the Clean Air Act, and the Clean Water Act. Our goal is to help ensure full and understandable disclosure of critical issues and concerns, proposed actions, and the potential impacts of these actions on the environment and water supply allocation in the Lower Colorado River.

The Co-Lead Agencies will assess the environmental impacts associated with the implementation of the proposed Colorado River Water Quantification Settlement Agreement (Agreement) for the apportionment of Colorado River water among four water agencies in southern California: Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), the Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA) (Co-Lead Agencies).

The implementation of the Agreement involves a series of nine water transfers, water exchanges, water conservation measures and other changes identified in the Agreement:

- IID/SDCWA Conservation and Transfer Project (up to 300,000 acre-feet per year (af/yr)).
- Coachella Canal Lining Project - Conservation and Transfer
- IID/CVWD 1st 50,000 af/yr; 2nd 50,000 af/yr (MWD Option)
- MWD/CVWD 35,000 af/yr State Project Water Transfer and Colorado River Water Exchange

- 1988 MWD/IID Water Conservation and Transfer Agreement
- 1989 MWD/IID/CVWD/Palo Verde Irrigation District (PVID) Approval Agreement Amendment
- All American Canal Lining Project - Conservation and Transfer
- IID and CVWD Priority 3 Water Diversion Caps
- Sharing Miscellaneous and Indian Present Perfected Rights Obligations

The programmatic evaluation will address the aggregate impacts of the implementation of each of the nine program components above. Separate environmental analysis has either been completed or is under preparation for many of these program components.

We applaud the efforts by the Co-Lead Agencies, State of California, Department of Interior/Bureau of Reclamation, and other water resource stakeholders to provide flexibility to meet California's Colorado River allocation goals while ensuring adequate water supply reliability for all beneficial uses. We acknowledge and are encouraged by the shifts in water policy, management, and planning for water resources in California.

It is well known that Colorado River water supply actions are often complex and controversial. We strongly recommend the Co-Lead Agencies and Bureau develop a clear and comprehensive description or road map of all proposed actions and related or effected Federal and State actions. Providing such a road map of what is being proposed, how all the parts interrelate, and how it fits into the larger picture of California and Lower Colorado River water supply will help minimize confusion, clarify issues, and provide supporting rationale for your Agreement. We recommend the road map include the proposed schedules and point-of-contacts for each specific action. We suggest the description be provided to the public and decisionmakers either as a separate package or for inclusion as an introductory piece in each environmental document.

EPA believes that long-term water supply planning should focus, in part, on determination of available supplies and bringing water supply commitments into alignment with these supplies. We recognize and commend the Agreement's attempt to move toward such an alignment. To help minimize adverse impacts of the Agreement, we urge consideration of a water needs analysis, if not already done, which evaluates in detail both the supply and demand side of water management in the program area. We strongly recommend the Co-Lead Agencies and Bureau consider all available tools for enhancing water management flexibility and reliability. These tools could include water transfers, conservation, pricing, irrigation efficiencies, operational flexibilities, market-based incentives, water acquisition, conjunctive use, voluntary temporary or permanent land fallowing, and wastewater reclamation and recycling. The proposed water supply program should also provide the flexibility to accommodate future shifts in water policy. EPA also advocates consideration of instream and other public interest beneficial uses in long-term water resource planning.

Detailed comments are enclosed. We appreciate the opportunity to review this NOP. Please send three copies of the draft environmental document to this office at the same time it is released to the public. If you have any questions, please call Laura Fujii, of my staff, at (415) 744-1601.

Sincerely,

Laura Fujii for

David J. Farrel, Chief
Federal Activities Office
Cross Media Division

Enclosure: Detailed Comments
EJ Executive Order

MI003421
Filename: CAquantagreenop.wpd

cc: Bill Rinne, BOR
Carol Roberts, USFWS
Charles Fisher, IBWC
Charles Keene, CA DWR
Phil Gruenberg, RWQCB

DETAILED COMMENTS

Water Resources

Water Quality

1. EPA appreciates the Department of Interior's role in managing the Colorado River for the use of tens of millions of people in the Southwestern states, tribes and Mexico. We also applaud the Department's commitment to water quality as well as water supply. We have recently been informed of a proposal to eliminate a vital tool for monitoring the water quality of the Colorado River, the USGS' National Stream Quality Accounting Network - NASQAN. Under this program USGS has been collecting what is not only the best water quality data on the Colorado River, but possibly the ONLY comprehensive and long-term monitoring data for this vital water supply source. As one example of the utility of this monitoring program, since 1998 EPA has been using samples obtained by NASQAN to track the spread of an inorganic thyroid toxin, perchlorate, from the source near Las Vegas to the Mexican border.

With the potential changes in the management of flow and storage in the Colorado River system and increased use of the water for direct human consumption, the monitoring of water quality must not be compromised. We understand that the USGS decision was driven by budget limitations and a desire to pursue scientific needs in the Yukon River. We urge the Co-Lead Agencies, Department of Interior and Bureau of Reclamation, as managers and users of the Colorado River, to advocate and help pursue funding to restore the USGS NASQAN effort, a critical part of water quality monitoring of the Colorado River. Please let us know how we might assist you in establishing a sufficiently high priority for the Colorado River monitoring program to ensure its continued implementation.

2. Potential impacts to groundwater and drinking water quality are of concern. The high salinity of Colorado River water is a known problem and the presence of other constituents, such as perchlorate, is of growing interest. For instance, recent studies have indicated that perchlorate may affect hormone production in infants. Thus, increased use of Colorado River water for domestic use or groundwater injection or recharge should be carefully considered and evaluated. The environmental analysis should fully evaluate the water quality, environmental, and human health implications of the proposed water transfers, conjunctive use, water banking (if applicable), and other Agreement actions.

3. The environmental evaluation should fully disclose potential beneficial and/or adverse impacts to water quality, wetlands, and aquatic ecosystems. The discussion should include an evaluation of potential impacts on existing fishery, restoration, and nonpoint source pollution programs. We encourage active coordination and collaboration with these programs, if appropriate. Include information on:

a. The potential of the proposed actions to cause adverse aquatic impacts such as increased siltation and turbidity; changes in the direction of stream flow, salinity, substrate, dissolved oxygen, and temperature; and habitat deterioration.
b. Critical fisheries habitat, especially spawning and rearing areas; and other sensitive aquatic sites such as wetlands. Outline past and potential beneficial uses of these areas, and disclose potential impacts from the proposed actions.

4. The environmental document should identify impacts to water, floodplains, and wetlands, including identification of Section 404 Clean Water Act (CWA) requirements, and management and mitigation proposals to ensure compliance with these requirements.

Groundwater

1. Groundwater is a critical element in water supply and demand. Not only is it an alternative source to surface water supply, if used prudently, groundwater can provide significant flexibility in meeting demand at different times and from a number of different water sources. If applicable, the environmental document should describe groundwater sources - how, when, and by whom groundwater is used. The document should also evaluate how the Agreement may affect this pattern of groundwater use. Identify information gaps and where there are no direct groundwater measurements. We also recommend describing the historical and anticipated relationship between surface water supplies and groundwater.

2. EPA is concerned with potential tradeoffs between surface water and groundwater use which may occur as a result of proposed water transfers and conjunctive use projects. If groundwater use is an issue, we recommend a careful evaluation of the long-term implications on groundwater use (e.g., increased overdraft, improved management). EPA supports the creation of groundwater management basins and institutional mechanisms to collect information, manage, and monitor groundwater use. A recommended set of practices for implementing ground water management plans, known as "AB3030" is available from the California Department of Water Resources. The environmental document should address the need for measurement and management of the combined resources of surface and groundwater supplies to stabilize supplies over the long term and to maximize benefits and minimize potential impacts of the Agreement.

3. If groundwater injection is proposed (injection into the groundwater through injection wells), the action may be regulated under the Underground Injection Control Program (UIC) pursuant to the Safe Drinking Water Act. This program requires owners/operators to submit applications for new injection wells. Any injection into the subsurface could potentially require a UIC permit. Region 9 US EPA Ground Water Office implements the UIC program. We urge the Co-Lead Agencies and Bureau to contact our Ground Water Office soon to determine the applicability of the UIC regulations. Inquiries can be made by contacting Elizabeth Janes at (415) 744-1834.

Monitoring and Accounting

1. Discuss specific monitoring programs that will be implemented before and after proposed management actions to determine potential impacts on water quality and beneficial uses, and whether maintenance and protection of water quality can be guaranteed.

2. Effective and sustainable management of water supplies depends on an accurate knowledge of water supply availability and water use. This knowledge can only be obtained through monitoring and accounting of water supply and demand. We recommend the Co-Lead Agencies and the Bureau make a firm commitment to timely and accurate monitoring and accounting. This commitment should include dedicated funding for the monitoring/accounting effort. The environmental document should describe in detail proposed modeling, monitoring, accounting methods, enforcement tools, and assurance measures that will be used to verify, validate, and ensure effective implementation of the Agreement and its water conservation and transfer actions. Given the proposed transfer of significant amounts of water, the environmental evaluation should persuasively demonstrate that water will be put to reasonable beneficial use and that there will be no misuse of the water.

Environmental Evaluation and National Environmental Policy Act (NEPA)

1. Given the high level of interest and controversy surrounding the use and allocation of Colorado River water, we urge the Co-Lead Agencies and Bureau to seek full disclosure of all relevant issues, related projects, proposed actions, possible alternatives, and potential benefits and adverse impacts of the Agreement. Below is a suggested list of items to consider:

– Clear description of the following projects and their possible effects and role, if any, as part of the Agreement or its implementation: Interim Surplus Criteria, Salton Sea Restoration Project, IID/SDCWA water transfer, California 4.4 Plan, Lower Colorado River Multi-Species Conservation Plan, San Luis Rey Indian Water Rights Conveyance and Agreement, CVWD Water Management Plan, All-American Canal and Coachella Canal lining projects, and IID/MWD water transfers.
– A short history of the Colorado River and its allocation to provide the historical and "bigger picture" context. For instance, briefly describe the Colorado River Compact, final Arizona vs California ruling, Lower Basin States agreements, role of the Department of the Interior as Water Master, history of litigation, and key components of the "Law of the River" and water law in California.
– A description and role of new or recent storage and conveyance projects, if any.
– Clear description of related wheeling, conveyance, transfer, exchange, and conjunctive use agreements. Of special interest would be agreements and arrangements with California Colorado River water diverters who are not party to the Agreement (e.g. Palo Verde Irrigation District, Yuma Project-Reservation Division). We recommend the terms and conditions for the proposed actions be fully disclosed in the documentation.

– List of all relevant and necessary local, State and Federal actions and permits. For example: State Water Board and Regional Water Quality Control Board permits and approvals (e.g., change in place of use, change in beneficial use), US Corps of Engineers Section 404 permits, and US Fish and Wildlife Service Biological Opinions.
– Description and evaluation of the role and potential effects of Present Perfected Rights not encompassed by the 1931 Seven Party Agreement priority system (e.g., who are they, the amount of their water right).
– Evaluation and description of possible unquantified Indian water rights (e.g, Coachella Valley Tribes, Quechan) and the potential impacts of the Agreement on these rights.

2. The environmental document should fully describe existing conditions and explain the changes which have occurred as a result of current water management systems and policy. We recommend the document provide a summary of what management actions have been done and what is being done in the program area. We believe such a summary is important in providing the historical and environmental context for current conditions and possible effects of the Agreement.

3. Clearly state which baseline will be used to evaluate the potential impacts of the proposed actions. Include a description of underlying management assumptions, assumed current and future projects, and baseline environmental conditions. The baseline should be clearly defined, scientifically credible, logical, and have general support from all stakeholders.

Alternatives Analysis

The environmental analysis should evaluate a broad mix of possible alternatives to the entire Agreement or its parts. Note that evaluation of reasonable alternatives that may not be within the jurisdiction of the lead agency is required for Federal actions (e.g., Bureau actions) pursuant to the National Environmental Policy Act (NEPA, 40 CFR Section 1502.14(c)). We suggest that such an evaluation would be of benefit for the Co-Lead Agencies. There should be a clear discussion of the reasons for the elimination of alternatives which were not evaluated in detail. The evaluation should describe how each alternative was developed, how it addresses project objectives, and how it will be implemented.

Environmental Consequences

1. The environmental analysis should fully evaluate the direct, indirect, and cumulative impacts of proposed actions. The evaluation should include evaluation of potential impacts to irrigation district operations, flood control, other water diversions, hydroelectric power generation, recreation, threatened and endangered species, and the sensitive resources of the region.

Indirect effects may include growth-inducing effects related to induced changes in the pattern of land use (e.g., conversion of agricultural land to urban development), population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Changes in water quality or downstream effects which may be indirectly caused by the project also may constitute indirect effects. These indirect effects and appropriate mitigation measures for adverse impacts should be fully disclosed. For instance, we recommend a short evaluation of potential impacts of the Agreement on the lower Colorado River and Delta which may be caused by changes in diversion rates, locations, and timing.

Past cumulative effects may have greatly influenced the "existing conditions," which should be described, and may represent deficiencies (adverse impacts) which may be perpetuated under the action and no action alternatives. In addition, it may not be sufficient to establish compliance with certain environmental protection laws (such as the Endangered Species Act and Clean Water Act), where the status quo may reflect unacceptable conditions and trends resulting from on-going activities. Information in the document should assist in establishing the possible deficiencies in current conditions and defining potential restoration and enhancement goals that can be implemented by the Co-Lead Agencies, Bureau, or other interested stakeholders.

2. Special attention should be placed on fully describing and evaluating potential transboundary effects on Mexico. For example, the potential adverse effects of lining the All-American Canal on Mexico's groundwater aquifer is an on-going issue. In addition, Mexico may have a significant interest in the ultimate success of the Agreement, California's 4.4 Plan, and associated actions such as the Interim Surplus Criteria which could influence the timing, quantity, and quality of Mexico's Colorado River diversions. We urge the Co-Lead Agencies and Bureau to fully engage Mexico in the planning process for the proposed actions by working closely with the International Boundary and Water Commission. We note that we have an obligation to consider transboundary issues and to work with Mexico pursuant to NEPA and the La Paz Agreement.

Indian Tribes

1. The Colorado River is a resource highly valued by many Indian Tribes. These tribes have broad regulatory and land management authority, including Water Quality Standards authorities, for resources within and traversing their reservations. Furthermore, many may have priority water rights which need to be considered. We urge the Co-Lead Agencies and Bureau to pursue government-to-government consultations with all potentially affected tribes. At a minimum, we recommend the following tribes be contacted and encouraged to participate in the planning process: Torres Martinez Desert Cahuilla, The Morongo Consortium of Coachella Valley Tribes, The Morongo Band of Mission Indians, The Agua Caliente Band of Cahuilla Indians, Twenty Nine Palms Band of Mission Indians, Augistine Band of Desert Cahuilla Indians, the Cabazon Band of Desert Cahuilla Indians, Quechan, San Luis Rey Indians, Ft Mojave Indian Tribe, Chemehuevi Tribe, Colorado River Indian Tribe and Cocopah Indian Tribe. Given the

controversial nature of Colorado River water, we suggest that other potentially interested tribes also be consulted.

2. Each of the six tribes in the Coachella Valley operate and co-regulate environmental programs. Five of the six have come together to form the Morongo Consortium of Coachella Valley Tribes. This Consortium was organized to develop a watershed approach for control programs to address surface and groundwater pollution. The Coachella Valley Tribes are currently establishing beneficial use criteria and developing surface water quality standards and future Total Maximum Daily Loads (TMDLs) to protect these uses. The environmental document should describe tribal environmental programs and evaluate in detail potential impacts of the Agreement on these programs and their efforts to address surface and groundwater pollution. We note that other tribes in Southern California may have similar efforts underway which should be taken into consideration when evaluating potential impacts of the Agreement.

Air Quality

The environmental document should provide a detailed discussion of air quality standards, ambient conditions, and potential air quality impacts, for the program area. The fact that potential impacts may be equal to or less than potential impacts under "no action" does not eliminate the requirement for full disclosure pursuant to NEPA. Cumulative and indirect impacts should be fully evaluated. For instance, conservation measures and related water transfers could result in potential air quality impacts and health risks from exposed Sea sediments due to a reduction in inflows to the Sea. Furthermore, changes in land use may generate additional sources of PM10, smoke, and vehicle emissions.

Federal agencies are required by the Clean Air Act to assure that their actions conform to an approved air quality implementation plan. If the proposed project area is in a nonattainment area, the Bureau may need to demonstrate compliance of their actions with conformity requirements of the Clean Air Act [Section 176(c)]. General Conformity Regulations can be found in 40 CFR Parts 51 and 93 (58 Federal Register, page 63214, November 30, 1993). These regulations should be examined for applicability to the proposed actions. We believe that such an evaluation may be of benefit for the Co-Lead Agencies.

Fish and Wildlife Issues

The environmental document should fully evaluate the potential for habitat fragmentation, loss of connectivity, and the cumulative effects on species viability. Special attention should be given to evaluating effects caused by modification of diversions, reduction in agricultural drainage, and changes in water quality and quantity. For example, potential indirect and cumulative effects could include reduction or change in seeps and ephemeral streams and modification of habitat (e.g., wetlands along canals) within the Imperial Valley and Salton Sea Trough.

Environmental Justice

In keeping with Executive Order 12898, **Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations** (EO 12898), the environmental document should describe the measures taken by the Bureau to: 1) fully analyze the environmental effects of the proposed Federal action on minority communities,(e.g. Indian Tribes), and low-income populations (e.g. agricultural workers), and 2) present opportunities for affected communities to provide input into the environmental planning process. The intent and requirements of EO 12898 are clearly illustrated in the President's February 11, 1994 Memorandum for the Heads of all Departments and Agencies, attached. We urge the Co-Lead Agencies to consider a similar evaluation of potential environmental justice impacts.

General

1. We strongly recommend the environmental document include a separate section describing specific actions and techniques which will be used to ensure continuous public participation and inter-agency/intra-agency coordination in decisions regarding the proposed action and other proposed water management decisions.

2. We recommend that currently planned or reasonably foreseeable rulemaking and regulations which relate to the Agreement be included in the program description.

3. Since specific environmental analyses exist for many of the program components, the programmatic evaluation should provide a summary of the critical issues, assumptions and decisions made in these specific environmental documents. These summaries should be complete enough to stand alone without depending upon continued referencing of the other documents. A short description of the status of each program component (e.g., completed, contract under development) and related litigation, if any, would be helpful in providing the historical context and issues raised by the proposed actions.

United States Department of the Interior
U.S. Fish and Wildlife Service
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Phoenix, Arizona 85021-4951
Telephone: (602) 640-2720 FAX: (602) 640-2730

In Reply Refer To:

AESO/SE
20000246

June 30, 2000

Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
Attention: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, California 93101

Dear Mr. Thomson:

The Arizona Ecological Services Office of the Fish and Wildlife Service has reviewed your Notice of Preparation of a Draft Program Environmental Impact Report (PEIR) for the Colorado River Water Quantification Settlement Agreement. This project involves apportionment of Colorado River water among four water agencies in southern California. The PEIR will address effects of the action within California. Our office of the Service will not be directly involved with that facet of the overall action. Our office will be involved with the Bureau of Reclamation actions on the Colorado River that are part of the overall Quantification Settlement Agreement. Those items involve effects to the Colorado River from changes in points of diversion of water under the program components.

In the Environmental Checklist, issue IV (page 9), it states that the environmental effects of changes in river water surface elevations are being handled under the Lower Colorado River MSCP. This is not correct. The changes in water surface elevation are being addressed by the Bureau and the Service in a separate NEPA and ESA compliance procedure. This compliance may eventually be combined back with the MSCP, but is proceeding separately for a December 31, 2000, completion date.

Thank you for the opportunity to review this Notice. Please direct future correspondence on this project to Tom Gatz (x240) or Lesley Fitzpatrick (x236).

Sincerely,

David L. Harlow

David L. Harlow
Field Supervisor

cc: Regional Director, FWS, Albuquerque, NM (ARD-ES)
Field Supervisor, Carlsbad Fish and Wildlife Office, FWS, Carlsbad, CA

CAQuantAgreeNOI:LAF:bh

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
Eastern Sierra - Inland Deserts Region
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July 6, 2000

Quantification Settlement Agreement Co-lead Agencies
c/o Science Applications International Corporation
Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

Notice of Preparation (NOP)
of a Draft Program Environmental Impact Report (Draft PEIR)
for the Colorado River Water Quantification
Settlement Agreement

Dear Mr. Thomson:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the Draft Program Environmental Impact Report (PDEIR) for the Colorado River Water Quantification Settlement Agreement, relative to impacts to biological resources. The PDEIR will assess the environmental impacts associated with the implementation of the proposed Colorado River Water Quantification Settlement Agreement (Settlement Agreement) for the apportionment of Colorado River water among four water agencies in southern California: Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), Metropolitan Water District of Southern California (MWD), and San Diego County Water Authority (SDCWA). The implementation of the Settlement Agreement involves a series of water transfers, water exchanges, water conservation measures and other changes identified in the Settlement Agreement. There are nine program components required in the Settlement Agreement. The aggregate impacts of the implementation of each of the nine program components will be addressed in the PDEIR. Separate environmental analysis has either been completed or is under preparation for many of the program components. The PDEIR will also address the project-specific impacts of those components not addressed in a separate environmental document. The nine program components are:

- IID/SDCWA Conservation and Transfer Project (up to 300,000 acre-feet per year)
- Coachella Canal Lining Project-Conservation and Transfer
- IID/CVWD 1st 50,000 acre-feet per year; 2nd 50,000 acre-feet per year (MWD option)
- MWD/CVWD 35,000 Acre-feet per year State Project Water Transfer and Colorado River Water Exchange
- 1988 MWD/IID Water Conservation and Transfer Agreement
- 1989 MWD/IID/CVWD/PVID Approval Agreement Amendment
- All American Canal Lining Project-Conservation and Transfer
- IID and CVWD Priority 3 Water Diversion Caps
- Sharing Miscellaneous and Indian Present Perfected Rights Obligations

Several parallel actions are also associated with the Settlement Agreement. They are:

- The California's Colorado River Water Use Plan-which is a planning document outlining the overall plans and policies for California to reduce it's use of the Colorado River water;
- The State Water Resources Control Board and the Secretary of the Interior must take certain actions and issue certain approvals in order to implement the Agreement;
- The U.S. Bureau of Reclamation is addressing the direct and indirect environmental impacts of these approvals in a Program Environmental Analysis under the National Environmental Policy Act (NEPA).

The region of influence for the Settlement Agreement includes much of southern California. It includes all or part of Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial Counties. The region of influence also includes the Lower Colorado River and the areas of conveyance and distribution of Colorado River water by these agencies. This affected river reach comprises approximately 240 river miles bordering California.

The Colorado River and associated backwaters supports high quality habitat for resident fish, wildlife, and vegetation. Numerous Federally and State listed species dependant on this habitat occur in the area affected by this project including, but not limited to: western-yellow billed cuckoo *(Melanerpes uropygialis)*, Yuma clapper rail *(Rallus longirostris yumanensis)*, southwestern willow flycatcher *(Empidonax trailii extimus)*, least Bell's vireo *(Vireo bellii pusillus)*, razorback sucker *(Xyrauchen texanus*), and bonytail chub *(Gila elegans)*.

The proposed project also has the potential to impact the biological resources in and around the Salton Sea. The Salton Sea provides habitat for several listed species including, but not limited to: the Yuma clapper rail *(Rallus longirostris yumanensis*), California black rail *(Laterallus jamaicensis coturniculus*), California brown pelican *(Pelecanus occidentalis californicus)*, and the desert pupfish *(Cyprinodon macularius)*.

Canal lining activities will affect the habitat values, environmental productivity, water quality, and species use of the existing earthen canals. Canal lining activities conflict with various state policies such as "no net loss" of wetlands and riparian habitat. A direct impact to seeps such as Dos Palmas, in Riverside County, will result from these canal lining activities. Numerous seeps have historically supplied habitat and water for threatened, endangered, and resident wildlife species within the project area, and qualify as wetlands and riparian habitat. The Department requires that the canal lining activities must include an escape design for large ungulates, acceptable to the Department, and must maintain migration corridors for terrestrial wildlife.

In connection with this project, the Department will be acting as a Trustee Agency for fish, plant and wildlife resources and as a Responsible Agency regarding impacts to endangered species and issuance of Streambed Alteration Agreements (SAA) pursuant to Section 1600, Fish and Game Code. As Trustee, operations which negatively affect the natural communities of California, or related recreational opportunities are of concern to the Department. This project has the potential to significantly impact wetland resources. The Department is concerned about the increasing appropriation of in-stream flows and loss of natural wetland systems through project activities.

To enable Department staff to adequately review and comment on the proposed project, we recommend the following be considered in preparing the draft PDEIR for the proposed project:

1. The effect of canal lining will result in changes to habitat and species use. A thorough analysis of how the canal lining will affect groundwater, seeps, wildlife species use, aquatic and terrestrial vegetation, and water quality should be included.

2. The effect of a change in point of diversion will be a reduction of flows in the reach of river from Parker Dam to Imperial Dam. In-stream flows produce numerous direct benefits to the public such as fish and wildlife habitat, recreation, and aesthetic enjoyment. A thorough analysis of how the reduction in flows will affect groundwater elevations, river and backwater surface acreage, river and backwater depth, water quality, navigation, and recreation needs to be included in the document.

3. The Lower Colorado River Multi-Species Conservation Program (LCRMSCP) is still in the planning stages, and it is not anticipated that the program will be completed until July, 2001, at the earliest. Since this proposed settlement agreement will potentially have significant impacts on the biological resources of the Lower Colorado River, it is important that the PDEIR address its interaction with the LCRMSHCP and what, if any, effects the former will have on the latter's ability to conserve and protect biological resources along that portion of the river.

4. The Department has a "no net loss" policy for riparian habitat. An analysis of the impacts to riparian vegetation resulting from lowered groundwater levels, reduced median flows, and canal lining needs to be included. This analysis also needs to include the potential for these changes to favor exotic plant species such as salt cedar and giant reed.

5. The Department has a "no net loss" policy for wetlands. An analysis of the impacts to wetland vegetation resulting from lowered groundwater levels, reduced median flows, and canal lining, needs to be included. This analysis should include a discussion of the change in the rate of succession and loss of wetland habitat to upland terrestrial habitat.

6. An analysis of the loss of surface acreage in the Colorado River and associated backwaters, along with a reduction of median flows, water depth, and volume and how this loss will impact fish and wildlife needs to be included. Reducing the available habitat and condensing the fish into smaller areas implies increasing predation and competition for existing resources. The Department is of the opinion that less water will be detrimental to fish, wildlife, and their habitat.

7. This project could have a negative impact to recreation such as angling and hunting opportunities. An analysis of how reduced water depth will increase navigational hazards along the river such as sandbars, gravel bars, unstable riverbanks, floating or submerged debris, or other unfamiliar obstacles needs to be included. Also thorough discussion of the extent to which access by hunters and anglers to launch ramps, docks, other recreational facilities and backwaters will be compromised by the reduction in river depth and decreased water volume. Another important factor that needs to be addressed in the PDEIR is the possible reduction in water quality (eg. elevated levels of salinity and selenium) in the river and backwaters due to decreased flushing rates.

8. An analysis of the impacts to the Salton Sea and its associated wetlands resulting from less water needs to be included. This analysis should include, but not be limited to, the change in water levels, the effects on salinity, water quality, and the species that inhabit the Sea and its shoreline pools such as brown pelicans, Yuma clapper rails, and desert pupfish. In addition, a thorough discussion is needed that analyzes the effects of this settlement agreement and it's associated projects on the Salton Sea Restoration Project,

both in the short term and the long term.

9. The Department's Imperial Wildlife Area (IWA) supports the largest population of Yuma clapper rails in the state. It also is an important hunting area in the region. The effects of the water transfer and conservation program on IWA's programs and the Yuma clapper rail need to be thoroughly analyzed.

10. The water conservation portion of the project will result in less water entering the Salton Sea through the drains. The drains provide important habitat for the desert pupfish. A thorough analysis of the changes in water quantity and quality in the drains and the effect on desert pupfish needs to be included in the PDEIR.

11. The water conservation and transfer program may also result in up to 100,000 acre feet of water per year being transferred to the Coachella Valley Water District as one of the other designees. Additional water transferred to the Coachella Valley has the potential to impact, through increased growth, several listed and sensitive species such as the Coachella Valley fringe-toed lizard (*Uma inornata*); Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*); flat-tailed horned lizard (*Phyrnosoma mcalli*); Palm Springs ground squirrel (*Spermophilus teritaudus chlorus*); Palm Springs pocket mouse (*Perognathus longimembris bangsi*); crissal thrasher *(Toxostoma crissale*); LeConte's thrasher (*Toxostoma lecontei*); burrowing owl (*Speotyto cunicularia*); and Peninsular bighorn sheep (*Ovis canadensis cremnobates*). A detailed analysis of the growth inducing impacts and their effect on the above mentioned species resulting from this transfer needs to be included in the draft PDEIR.

12. The water conservation and transfer program may also result in up to 300,000 acre feet of water per year being transferred to the San Diego County Water Authority as one of the other designees. Additional water transferred to the San Diego County area has the potential to impact several listed and sensitive species. An analysis of the growth inducing impacts and their effect on species resulting from this transfer needs to be included in the draft PDEIR.

13. The water conservation and transfer program may also result in water transfers to Los Angeles, Orange, Riverside, Ventura, San Bernardino and San Diego counties as one of the other designees. Additional water transferred to the above referenced counties has the potential to impact several listed and sensitive species. An analysis of the growth inducing impacts and their effect on species resulting from this transfer needs to be included in the draft PDEIR.

14. An analysis of the growth inducing impacts and their effect on species, the Salton Sea, Los Angeles, Orange, Riverside, Ventura, San Bernardino and San Diego counties resulting from the changes to surplus criteria needs to be included in the draft PDEIR.

15. There should be a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats to include:

    a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities.

    b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys,

conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380). The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

16. There should be a thorough discussion of direct, indirect, and cumulative impacts expected to adversely effect biological resources, with specific measures to offset such impacts.

    a. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

    b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

    c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce theses conflicts should be included in the environmental document.

    d. A cumulative effects analysis should be developed as described under CEQA Guideline, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

    e. The document should include an analysis of the effect that the project may have on completion and implementation of regional and /or subregional conservation programs such as the Colorado River Multi-species Conservation Plan, San Diego Multi-species Habitat Conservation Plan, Orange County Natural Communities Conservation Plan, Western Riverside County Multi-species Habitat Conservation Plan, Western San Bernardino County Multi-species Habitat Conservation Plan, and the Coachella Valley Multi-species Habitat Conservation Plan and the Salton Sea Restoration Project.

17. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resource should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

    a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality

habitat elsewhere should be addressed.

    b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

    c. The Department generally does not support the use of relocation, salvage, and /or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

18. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

    a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirement s for a CESA Permit.

    b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

19. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

    a. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations

    b. The Department has direct authority under Fish and Game code § 1600 et seq. in regard to any proposed activity which would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any river, stream, or lake.

    c. The Department is in the process of complying with a writ of mandate issued by the Superior Court of California (Mendocino Environmental Center vs California Department of Fish and Game, Respondents, Bruce Choder, River Rat Salvage, et. al. Real Parties). The writ of mandate states:

        A writ of mandate shall issue ordering the California Department of Fish and Game on or before May 1, 1999, to prepare and implement a program or process that will incorporate a

CEQA review into the Fish and Game Section 1603 process. The writ of mandate shall further order the California Department of Fish and Game to cease and desist entering into Section 1603 agreements after May 1, 1999, unless such agreements have been subject to a CEQA review.

The writ of mandate clearly spells out what the Department's responsibilities are under CEQA with respect to all SAA's (1601 and 1603). In this regard, the Department is emphasizing in comment letters on projects that impacts to lakes or streambeds, alternatives and mitigation measures must be addressed in CEQA-certified documents prior to submittal of an application of a SAA. Any information which is supplied to the Department after the CEQA process is complete will not have been subject to the public review requirements of CEQA. In this instance, the Department has three choices: 1) refuse to issue the SAA; 2) not file the Notification because CEQA has not been complied with and return the package to the lead agency for further CEQA action; or 3) become the lead agency.

In order for the Department to process a SAA agreement, the CEQA-certified documents must include an analysis of the impacts of the proposed project on the lake or streambed, an analysis of the biological resources present on the site, copies of biological studies conducted on the site, biological survey methodology, and a discussion of any alternative measures, avoidance measures, mitigation measures which will reduce the impacts of the proposed development to a level of insignificance.

The Department appreciates the opportunity to comment on this project. Questions regarding this letter should be directed to Ms. Teresa Newkirk, Environmental Specialist III, at (760) 251-4817.

Curt Taucher
Regional Manager
Eastern Sierra-Inland Deserts

Charles Raysbrook
Regional Manager
South Coast Region

cc: Carol Roberts, USFWS
Ryan Broddrick, CDFG

State of California • The Resources Agency — Gray Davis, *Governor*
DEPARTMENT OF PARKS AND RECREATION • P.O. Box 942896 • Sacramento, CA 94296-0001 — Rusty Areias, *Director*
(916) 653-3460

July 5, 2000

Mr. Robert D. Thomson
Colorado River Water Quantification Settlement Agreement Co-Lead
816 State Street, Suite 500
Santa Barbara, California 93101

Dear Mr. Thomson:

Colorado River Water Quantification Settlement Agreement, SCH #2000061034

Thank you for giving us the opportunity to comment on the subject project, which is of considerable concern to us because of potential impacts to units of the California State Park System. California State Parks staff have reviewed the document and have the following comments.

1. State Parks operates several units that will/may be affected by the projects listed in this NOP. For example, the natural and cultural resources within the Salton Sea State Recreation Area (SRA) will be affected if conservation and transfers cause less water to enter the Salton Sea. Picacho SRA will be affected if less water flows down the Colorado River as a result of water transfer from the Lake Havesu Gate. Anza-Borrego Desert State Park (SP) will be affected if a pipeline is built through its resources (some classified as State Wilderness) to provide Colorado River water from the river direct to San Diego, as has been proposed. And Ocotillo Wells State Vehicular Recreation Area (SVRA) will be affected if a pipeline is built through its resources (also some classified as State Wilderness) for the same reason.

2. Pg. 6, 1(a, b, c,) We disagree with the finding of less than significant impact to aesthetic resources. Reducing the amount of water that flows into the Salton Sea or through the Colorado River has potential for significant negative impact. Reduced water into the Sea due to transfers will lower the level of the Sea and cause its salt and nutrient levels to increase, stressing its natural systems. This will result in obnoxious odors, fish die offs and bird kills. Additional biomass will be exposed along the shoreline which will cause offensive odors and an offensive visual perception. Cumulatively this will substantially degrade the existing visual character of the area. Additionally, Highway 111 from Bombay Beach to North Shore runs along the eastern side of the Sea and is classified, though not designated, as a scenic highway. Reducing the amount of water that flows through the Colorado River adjacent to

Picacho SRA due to transfers that originate from the Lake Havesu Gate may also expose additional biomass causing a negative olfactory experience. If the transfer of water from the Colorado River includes a pipeline from Imperial County to San Diego that has to cross Anza-Borrego or Ocotillo Wells, that park unit's visual aesthetics will be impacted severely.

3. Pg. 7, III (e). We do not agree that conserving/transferring water that would normally flow into the Salton Sea will have a less than significant impact to creating objectionable odors affecting a substantial number of people. Over 250,000 people visit the Salton Sea SRA annually, in addition to the more than 7,500 people who live along the shore of the Sea, and the thousands of people who travel Highways 111 and 86, adjacent to the shore of the Salton Sea every day. If the amount of water that flows into the Sea as a result of transfers/conservation is reduced, significant odor will result due to the Sea's increased salt and nutrient levels which will cause fish and birds to die at a greater frequency and will tend to worsen the huge algal mass that causes noticeable sulfuric gas odors. Additionally, as the water level drops more shoreline and biomass will be exposed, causing obnoxious odors. We believe that this project will have the potential to increase objectionable odors to a level that will affect a substantial number of people.

4. Pg. 8, IV. We agree that water transfers/conservation will cause significant negative impact to the biological systems of the region, particularly at the Salton Sea. Reducing the amount of water the flows into the Salton Sea will stress its natural systems, causing salt and nutrient levels to increase. This will reduce the viability of the Sea's fishery, and negatively impact the fish eating birds that depend upon the Salton Sea. The Sea has been classified as a critical link in the Pacific Flyway; its failure may very well cause the flyway to collapse. The DPEIR should evaluate in depth the effects on the Sea that will result from conservation/transfers. The Salton Sea SRA provides habitat to desert pupfish, Yuma clapper rail, black rail, brown pelicans and other protected/listed species. State Park resources also provide habitat for nesting great blue herons, night herons, egrets, black legged stilts and others. Reducing the level of the Sea or increasing its salt/nutrient content will irreparably damage these resources. Additionally reducing the flow of water in the Colorado River, adjacent to Picacho SRA will cause damage to the biological systems at the river's shore. If the water transfers will cause a pipeline to be constructed to move water from Imperial County to San Diego, through Ocotillo Wells, or Anza-Borrego Desert SP, the installation of the pipeline will cause significant damage to a large portion of the natural/cultural resources of these units, and possibly State Wilderness.

5. Pg. 9, V. We agree that conservation/transfer methods of water will cause significant damage to cultural resources in Imperial and San Diego Counties.

6. Pg. 14, Paragraph 9, "Salton Sea". Conservation of as much of 300,000 afa will (not may) change the flow of water into the Salton Sea. The cumulative effects of this reduction, in combination with requests for another almost-500,000 afa of water from the Sea, should be considered in total. Reducing the amount of water that flows into the Sea will have a significant negative impact to the resources that are protected within the Salton Sea SRA. This impact should be evaluated in great depth by the DPEIR. The reduction of water that flows into the Salton Sea may also impact concentrations of nutrients within the lake. The DPEIR should evaluate in depth the effect on the Sea's nutrient level if water flow is reduced. This analysis should include the impact that will be caused by nutrients within the Sea's bed being released into a smaller body of water as opposed to the current size of the Sea. One would expect this to compound the Sea's eutrophic nature. Additionally, increased salinity in the Colorado River due to reduced water flow will increase the percentage of salt from the river that is delivered to the Salton Sea, causing the Sea's salt levels to increase even more.

7. Pg. 17 XII, Population and Housing. We disagree that the transfer of 300,000 acre feet of water from Imperial County to San Diego County will cause little impact. Contrariwise this transfer will allow an additional 1.6 million people to live in San Diego County, significantly impacting the County's resources and infrastructure and possibly affecting State Park operations in San Diego County due to increased population and resource degradation.

8. Pg. 18, XIV. We disagree that conservation/transfer of water from the Salton Sea region will only slightly impact recreational use patterns. Reducing the amount of water that flows into the Salton Sea and down the Colorado River will have a significant negative impact upon current recreation on the Colorado River and the Salton Sea. It is our estimate that as many as two million people recreate upon the Salton Sea, 250,000 recreate within the Salton Sea SRA alone, another 70,000 recreate within Picacho SRA and many hundreds of thousands recreate upon the Colorado River. Reducing the amount of water that flows into the Sea, due to conservation/transfers, will cause the Sea to become less desirable for recreation. It will also cause the fishery to become more stressed. As the fishery becomes stressed, fewer fish will exist in the Sea, fewer fishers will come to the lake's shore. As the fishery becomes stressed fewer birds will use the Sea as a stop for food and fewer visitors will frequent the lake for bird watching. As the Sea becomes saltier due to reduced water flows fewer people will boat upon, swim in, and water-ski on the lake. This effect should be evaluated in more depth in the DPEIR, the NOP did not contain a discussion of the current recreational use patterns at the Salton Sea SRA and general Salton Sea area.

9. Pg. 20, XVII. We agree that the project will substantially reduce the habitat of fish and other wildlife at the Salton Sea and possibly at the Colorado River.

Sincerely,

Richard G. Rayburn, Chief
Resource Management Division

SENT BY: ; 7- 6-00 ; 4:24PM ; RESOURCE MGMT. DIV. → 8058656844;# 1

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

FACSIMILE TRANSMITTAL

DATE 7/6/00
TIME

(Please complete in ink)

TO NAME Robert Thomson
OFFICE/ORGANIZATION/COMPANY
FACSIMILE PHONE NO.
OFFICE PHONE NO.

FROM NAME Noah Tilghman
UNIT
FACSIMILE PHONE NO.
OFFICE PHONE NO.

SUBJECT Additional Comments
NO. OF PAGES SENT INCLUDING TRANSMITTAL SHEET* 2

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☐ NOTE AND FILE ☐ REPLY-MY SIGNATURE ☐ INVESTIGATE
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MESSAGE/REMARKS

Additional comments on SCH# 2000061034

DPR 802 (Rev. 7/91)(Excel, Rev. 11/3/98)

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State of California • The Resources Agency
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Gray Davis, *Governor*
Rusty Areias, *Director*

(916) 653-3460

July 6, 2000

Mr. Robert D. Thomson
Colorado River Water Quantification Settlement
Agreement Co-Lead
816 State Street, Suite 500
Santa Barbara, California 93101

Dear Mr. Thomson:

Colorado River Water Quantification Settlement Agreement, SCH #2000061034, Amendment

Due to my inadvertent error, the following summary paragraph was left out of the preparation of the July 5, 2000 letter commenting upon the above referenced Notice of Preparation.

The Department of Parks and Recreation requests that the draft program EIR include analysis of all possible impacts to units managed by California State Parks including State Water Project facilities. Analysis should include changes to State reservoir and sea levels and changes to rates of withdrawal and supplementation. Also, analysis regarding potential impacts to recreation, biological resources, aesthetics and overall operations should be examined in the draft program EIR. We encourage the lead agencies to consult with State Parks when planning for specific projects that could involve or affect State Parks managed units.

Sincerely,

B. Noah Tilghman

B. Noah Tilghman
Senior Park and Recreation Specialist
Resource Management Division

California Regional Water Quality Control Board
Colorado River Basin Region

Winston H. Hickox
Secretary for Environmental Protection

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73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260
Phone (760) 346-7491 • FAX (760) 341-6820

Gray Davis
Governor

July 6, 2000

C/O Science Applications International Corporation
Quantification Settlement Agreement Co-Lead Agencies
Mr. Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

RE: RESPONSE TO "NOTICE OF PREPARATION PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE COLORADO RIVER WATER QUANTIFICATION SETTLEMENT AGREEMENT"

On June 12, 2000, the Colorado River Basin Regional Water Quality Control Board (RWQCB) received the "Notice of Preparation Program Environmental Impact Report For The Colorado River Water Quantification Settlement Agreement" and the Environmental Checklist, State Clearinghouse document No. 2000061034. Colorado River Water Quantification Settlement Agreement Co-lead Agencies: Coachella Valley Water District, Imperial Irrigation District (IID), Metropolitan Water District of Southern California, and San Diego County Water Authority, submitted the two subject documents in accordance with the California Environmental Quality Act (CEQA) to acquire input regarding issues and extent of analysis to be addressed in the Program Environmental Impact Report (PEIR), scheduled to be released late Summer 2000. The PEIR will address environmental impacts associated with implementation of the Colorado River Water Quantification Settlement Agreement (Agreement). The Agreement includes water transfers, water exchanges, water conservation efforts, and other water related issues which impact all or part of the following southern California counties that receive Colorado River water: Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside, and Imperial. According to the Environmental Checklist, implementation of the Agreement may potentially significantly impact water quality standards, waste discharge requirements, and degrade water quality.

The forthcoming PEIR should identify and evaluate potential Program implementation activities (e.g., water quantity changes) that may result in water quality impacts on Imperial Valley surface water bodies, reasonable alternatives, mitigation efforts, and/or water quality restoration measures. Specifically, the PEIR should focus on suspended sediment, pesticides, nutrients, selenium, bacteria, and salts for Imperial Valley agricultural drains, the New and Alamo Rivers, and the Salton Sea.

Impact on the Salton Sea:
Implementation of the Agreement would likely lead to a reduction in the volume of Colorado River water flowing into the Salton Sea (Sea). This would exacerbate the existing elevated salinity of the Sea's waters, and adversely affect wildlife, threatened and endangered species, migratory and non-migratory birds, and aquatic life. Moreover, any changes in the Sea's water level would also impact restoration efforts of the Bureau of Reclamation and Salton Sea Authority. Additionally, contributions of selenium, salts, nutrients, and suspended sediment to the Sea are a RWQCB concern.

Impact on Imperial Valley Agricultural Drains, New River, and Alamo River:
Implementation of the Agreement could potentially lead to impairment of Imperial Valley agricultural drains, New River, and Alamo River resulting in violation of RWQCB Water Quality Standards (WQS) and generally degrading water quality. Specific water quality concerns are nutrients, bacteria, selenium, and pesticides. For example, a reduction in the volume of tailwater flow from the farm fields (due to water conservation efforts) would likely result in a significant increase in selenium concentrations in the drains and rivers, having a significant impact on the Salton Sea watershed.

In conclusion, the Draft Environmental Impact Report should contain a detailed description and evaluation of potential impacts on the waters of the Salton Sea, Imperial Valley agricultural drains, New River, and Alamo River; and intended response(s).

Beatrice Griffey

BEATRICE GRIFFEY
Associate Engineering Geologist

BG/kt

Enclosure

cc: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814

STATE OF CALIFORNIA Gray Davis, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

June 16, 2000

Robert D. Thomson
Colorado River Water Quantification Settlement Agreement Co-lead
816 State Street, suite 500
Santa Barbara, CA 93101

RE: SCH # 2000061034– Colorado River Water Quantification Settlement Agreement

Dear Mr. Thomson:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission reccomends the following action be required:

1. Contact the appropriate Information Center for a records search. The record search will determine:
   - Whether a part or all of the project area has been previously surveyed for cultural resources.
   - Whether any known cultural resources have already been recorded on or adjacent to the project area.
   - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
   - Whether a survey is required to determine whether previously unrecorded cultural resources are present.

2. The final stage of the archaeological inventory survey is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   - Required the report containing site significance and mitigation be submitted immediately to the planning department.
   - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.

3. Contact the Native American Heritage Commission for:
   - A Sacred Lands File Check.
   - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f). Health and Safety Code §7050.5 and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Associate Governmental Program Analyst

CC: State Clearinghouse

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SAIC Santa Barbara

June 13, 2000

Mr. Robert D. Thomson
Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

RE: **Comments on the Notice of Preparation for a Draft Program Environmental Impact Report for the Colorado River Water Quantification Settlement Agreement - SCAG No. I 20000298**

Dear Mr. Thomson:

Thank you for submitting the **Notice of Preparation for a Draft Program Environmental Impact Report for the Colorado River Water Quantification Settlement Agreement** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIR's discuss any inconsistencies between the proposed project and the applicable general plans and **regional plans (Section 15125 [d])**. If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide, which may be applicable to your project, are outlined in the attachment. **We expect the Draft PEIR to specifically cite the appropriate SCAG policies and address the manner in which the Project is consistent with applicable core policies or supportive of applicable ancillary policies. Please use our policy numbers to refer to them in your Draft PEIR. Also, we would encourage you to use a side-by-side comparison of SCAG policies with a discussion of the consistency or support of the policy with the Proposed Project.**

Please provide a minimum of 45 days for SCAG to review the Draft Program EIR when this document is available. If you have any questions regarding the attached comments, please contact Jeffrey Smith, Senior Planner, at (213) 236-1867.

Sincerely,

J. DAVID STEIN
Manager, Performance Assessment and Implementation

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE COLORADO RIVER WATER QUANTIFICATION SETTLEMENT AGREEMENT

PROJECT DESCRIPTION

The Coachella Valley Water District (CVWD), Imperial Irrigation District (IID), The Metropolitan Water District of Southern California (MWD), and the San Diego County Water Authority (SDCWA) have entered into an agreement to be Co-Lead Agencies for the preparation of a Draft Program Environmental Impact Report (PEIR) in accordance with CEQA.

The PEIR will assess the environmental impacts associated with the implementation of the proposed Colorado River Water Quantification Settlement Agreement for the apportionment of Colorado River Water among four water agencies in Southern California including, CVWD, IID, MWD and SDCWA. The implementation of the Agreement involves a series of water transfers, water exchanges, water conservation measures and other changes identified in the Agreement.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The **Growth Management Chapter (GMC)** of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the Project.

3.01 The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.

Regional Growth Forecasts

The Draft EIR should reflect the most current SCAG regional growth forecasts which are the 1998 RTP (April 1998) Population, Household and Employment forecasts for the SCAG region, which includes Imperial, Los Angeles, Orange, Riverside San Bernardino and Ventura Counties. The SCAG regional growth forecasts area as follows:

SCAG Region Forecasts	2000	2005	2010	2015	2020
Population	16,999,000	18,234,000	19,491,000	20,286,000	22,352,000
Households	5,434,000	5,794,000	6,275,000	6,746,000	7,320,000
Employment	7,441,000	8,206,000	9,018,000	9,746,000	10,574,000

3.3 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

3.09 Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.

3.10 Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

3.18 Encourage planned development in locations least likely to cause adverse environmental impacts.

3.19 Support policies and actions that preserve open space areas identified in local, state, and federal plans.

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

3.21 Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.

3.22 Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.

3.23 Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resource, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project includes:

5.11 Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The **Water Quality Chapter** core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

11.02 Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.

11.03 Coordinate watershed management planning at the subregional level by (1) providing consistent regional data; (2) serving as a liaison between affected local, state, and federal watershed management agencies; and (3) ensuring that watershed planning is consistent with other planning objectives (e.g., transportation, air quality, water supply).

11.05 Support regional efforts to identify and cooperatively plan for wetlands to facilitate both sustaining the amount and quality of wetlands in the region and expediting the process for obtaining wetlands permits.

11.06 Clean up the contamination in the region's major groundwater aquifers since its water supply is critical to the long-term economic and environmental health of the region. The financing of such clean-ups should leverage state and federal resources and minimize significant impacts on the local economy.

11.07 Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.

11.08 Ensure wastewater treatment agency facility planning and facility development be consistent with population projection contained in the RCPG, while taking into account the need to build wastewater treatment facilities in cost-effective increments of capacity, the need to build well enough in advance to reliably meet unanticipated service and storm water demands, and the need to provide standby capacity for public safety and environmental protection objectives.

OPEN SPACE CHAPTER ANCILLARY GOALS

Outdoor Recreation

9.01 Provide adequate land resources to meet the outdoor recreation needs of the present and future residents in the region and to promote tourism in the region.

9.02 Increase the accessibility to open space lands for outdoor recreation.

9.03 Promote self-sustaining regional recreation resources and facilities.

WATER RESOURCE CHAPTER RECOMMENDATIONS

The **Water Resources Chapter (WRC)** is a non-mandated chapter, and it is provided for information and advisory purposes. The recommendations contained in this chapter to fulfill the stated goals and objectives do not create new legal mandates for local governments or other regional organizations. SCAG signed a Memorandum of Understanding (MOU) with the Metropolitan Water District (MWD), the largest wholesale water agency in the region, to develop the WRC. The WRC also includes projections of water supply and demand for areas within the SCAG region, outside the boundaries of MWD. Population and growth projections on which the WRC was based, were developed through the year 2010, and have not been updated to reflect recently adopted SCAG growth forecasts through the year 2020.

Projected Water Demand in the MWD Service Area in 2010 (Million Acre Feet)

County	**2010**
Los Angeles	1.93
Orange	0.73
Riverside	0.62
San Bernardino	0.30
Ventura	0.15
Within SCAG Region	**3.73**
San Diego	0.81
MWD Service Area	**4.54**

Potential Water Supply for the MWD Service Area in 2010 (Million Acre Feet)

	Average Year Supply	**Minimum Year Supply**
Existing Supplies		
Local Production	1.05	1.05
Reclaimed Water	0.40	0.40
Los Angeles Aqueducts	0.37	0.12

Colorado River	0.62	0.62
State Water Project	1.56	0.21
Total	**4.00**	**2.40**
Potential Increases in Supplies		
Additional Colorado River	0.45	0.45
Additional SWP & Transfer	0.20	1.13
Reclaimed Water	0.27	0.27
Groundwater Recovery	0.10	0.10
Total	**1.02**	**1.95**
Total Supplies	**5.02**	**4.35**

Strategies to Balance Supply and Demand in MWD Service Area in 2010 (Million Acre Feet)

	Average Year Conditions	**Minimum Supplies Condition**
BMP's	0.56	0.56
Existing Conservation	0.21	0.21
Rationing		0.49
Total Demand Reduction	**0.77**	**1.26**

Programs to Meet Future Water Demands

1. Colorado River Programs

   - All American Canal and Coachella Canal Lining
   - Interstate Underground Storage of Unused Colorado River Water
   - Phase II Water Conservation Program with Imperial Irrigation District
   - Modified Irrigation Practices and Land Fallowing Proposal of Imperial Irrigation District

2. State Water Project Programs

   - South Delta Improvements
   - Kern Water Bank

   - Los Banos Grande Reservoir

3. Water Transfer and Exchange Programs

   - Arvin-Edison/Metropolitan Water Storage and Exchange Program
   - Semitropic/Metropolitan Water Storage and Exchange Program
   - Dudley Ridge/Metropolitan Water Transfer Program

4. Local Management Strategies

   - Water Reclamation
   - Groundwater Management Programs
   - Groundwater Recovery
   - Surface Water Management
   - Desalination
   - Gray Water

5. Management Response During Drought or Other Emergencies

Potential Water Issues

1. Growth Management

   Issue: *What is the relationship between growth management and water supply?*

   Planning Strategy: *MWD commitment to continuing to accommodate population growth and to remain consistent with regional growth management plans.*

2. Water Transfer Policies

   Issue: *What role will water transfers (also known as water marketing) take in the future to respond to the water needs of urban, agricultural and environmental users- statewide and in Southern California?*

   Planning Strategy: *MWD commitment to develop a full range of voluntary transfers with willing partners, that protect, and where feasible, enhance environmental resources.*

3. Water Supply Development and Environmental Regulations

   Issue: *What strategies can water agencies take for future development of water supplies and facilities in view of increasingly stringent environmental regulations?*

Planning Strategy: *MWD integrates environmental values in its decision making procedure for water resources and facilities development. Environmental needs for available water supply and protection of endangered species and their habitats offer a significant challenge to MWD and its member agencies to develop effective physical, institutional, and management solutions that lead to "win-win-win" outcomes for the environment, agricultural and urban users.*

4. Desalination

Issue: *How could desalination contribute to future water supply?*

Planning Strategy: *MWD is currently supporting brackish groundwater desalinization through its Groundwater Recovery Program and actively supporting and participating in research efforts for ocean desalination.*

5. Conservation of Storm Runoff

Issue: *How can conservation of storm runoff enhance the region's water supply?*

Planning Strategy: *It is imperative to maintain existing recharge basins in the San Gabriel and Santa Ana river systems at optimum percolation rates with debris management programs and prevent potential contamination of groundwater from urban runoff into recharge areas. Specific projects which would afford an increase in storm runoff capture, like the Long Beach Harbor/Los Angeles River project and maximizing use of existing dams and reservoirs, could increase groundwater recharge.*

6. Potential for Increases in the Use of Reclaimed Water

Issue: *What is the potential of increasing the use of reclaimed water?*

Planning Strategy: *Reclaimed water is a reliable resource which can be used to augment existing supplies and among the efforts that should be pursued include seeking political support, understanding benefit cost analysis, overcoming funding issues, resolving regulatory issues and getting greater public acceptance.*

Water Supply in the Non-MWD Area

1. Reliability of Imported Sources

SCAG recognizes that a number of issues need to be resolved before water transfers can be successful and recommends initiating a dialog among local governments, water districts, and the State of California on issues of land use, water resources and water marketing.

2. Groundwater Quality

SCAG recognizes a concern by many water agencies outside of MWD of groundwater contamination and overdraft conditions in some areas.

3. Drinking Water Quality Standards

SCAG recognizes a concern by several water providers of the increasing costs of meeting treatment requirements under Federal and State drinking water laws.

Consistency with the Resolution in Support of Consensus Planning to Address the Use of Surplus Water in the Colorado River System

On December 4, 1997 SCAG approved Resolution #97-381-1 in support of consensus planning to address the use of surplus water in the Colorado River system. The resolution acknowledges the following:

- The continued economic well-being of the urban, business and agricultural sectors of southern California depend on a reliable and affordable supply of water from the Colorado River.
- Many of SCAG member jurisdictions are dependent either solely or in part on water supplies from the Colorado River.
- The water supplies needed by these SCAG member jurisdictions and in southern California as a whole are threatened by the historic and continuing use of surplus water in the Colorado River system.
- That although David Kennedy, Director of the California Department of Water Resources, is currently working with the Colorado River Board of California to construct a consensus plan to address the historic use of California's surplus water of Colorado River water, no consensus on this issue has yet been reached.

The resolution resolves the following:

- *SCAG supports the continuing efforts of Director Kennedy and the Colorado River Board of California to construct a consensus plan to address the historic use of California's surplus water of Colorado River water.*

- *SCAG specifically supports a plan which calls for the historic use of surplus water to be addressed with a combination of water transfers as the result of conservation in the agricultural sectors and a reasonable wheeling cost that facilitates water transfers but does not result in cost shifting or reduction in water service reliability for non-participating agencies.*

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

ENDNOTE

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. '134(g)-(h), 49 U.S.C. '1607(f)-(g) et seq., 23 C.F.R. '450, and 49 C.F.R. '613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. '7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. '7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. '1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • http://www.aqmd.gov

June 20, 2000

Mr. Robert D. Thomson
Quantification Settlement Agreement Co-lead Agencies
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Dear Mr. Thomson:

Notice of Preparation of a Draft Program Environmental Impact Report
for the Colorado River Water Quantification Settlement Program

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The AQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR).

Air Quality Analysis
The AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The AQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the AQMD's Subscription Services Department by calling (909) 396-3720.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be considered. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the evaluation. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures
In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the AQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Pursuant to state CEQA Guidelines Section 15126 (c), any impacts resulting from mitigation measures must also be discussed.

Data Sources
AQMD rules and relevant air quality reports and data are available by calling the AQMD's Public Information Center at (909) 396-3600. Much of the information available through the Public Information Center is also available via the AQMD's World Wide Web Homepage (http://www.aqmd.gov).

The AQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Dr. Charles Blankson, Transportation Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

ALL000607-09LI
Control Number

July 6, 2000

Colorado River Water Quantification
Settlement Agreement
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101
Attention: Robert Thompson

Comments by Salton Sea Authority
Notice of Preparation, Program Environmental Impact Report
Colorado River Water Quantification Settlement Agreement

The Salton Sea Authority respectfully submits the following comments on the Notice of Preparation, Program Environmental Impact Report for the Colorado River Water Quantification Settlement Agreement ("PEIR").

Briefly, the Authority is concerned that the PEIR fully address potential impacts on the Salton Sea of the various program segments included within the Quantification Settlement Agreement, and that mitigation of those impacts be addressed at the full program level, and not deferred to segment-specific environmental analysis, where mitigation of the full impacts on the Salton Sea may not be financially feasible.

I. THE SALTON SEA AUTHORITY AND THE SALTON SEA RESTORATION PROJECT.

The Salton Sea Authority is a California Joint Powers Authority composed of the counties of Imperial and Riverside, the Coachella Valley Water District and Imperial Irrigation District. The Authority was created by its member agencies to coordinate their activities with respect to the restoration of the Salton Sea.

The Salton Sea is an excessively salty, nutrient-rich, man-made lake in a closed basin in Riverside and Imperial Counties, within the region of influence of the Quantification Settlement Agreement. The Sea exists primarily due to continued agricultural drainage from the Imperial, Coachella, and Mexicali valleys and smaller contributions for municipal effluent and storm water runoff. The Sea is a productive sport fishery and provides critical migratory and resident bird habitat within the Pacific flyway.

The Salton Sea eco-system is under stress from increasing salinity, nutrient-loading, oxygen depletion, and temperature fluctuations that may be threatening the reproductive ability of some biota, particular sports fish species, and also causing additional eco-system health problems. Pursuant in part to the Salton Sea Reclamation Act of 1998 (PL105-372), the Authority and Bureau of Reclamation have undertaken preliminary studies for the Salton Sea Restoration Project ("Restoration Project"). Specific objectives of the Restoration Project include:

1. Maintain the Sea as a repository of agricultural drainage;
2. Provide a safe, productive environment at the Sea for resident and migratory birds and endangered species;
3. Restore recreational uses at the Sea;
4. Maintain a viable sports fishery at the Sea; and
5. Enhance the Sea to provide economic development opportunities.

The Act recognizes that water transfers will occur in the drainage of the Salton Sea. It directs that the restoration feasibility study include inflow reduction assumptions.

Since its inception in 1993, and in an accelerated fashion since the passage of the Salton Sea Reclamation Act, the Authority, in conjunction with the Bureau, has engaged in extensive studies, public meetings, and symposia to establish a scientific foundation, engineering methodology, and public support for the restoration effort. Pursuant to the 1998 Salton Sea Reclamation Act, the Restoration Project has undertaken the study and design of projects that will meet Restoration Project goals under several reduced inflow scenarios, in anticipation of water transfers and conservation activities such as those provided for by the Quantification Settlement Agreement.

In January 2000, the Authority and Bureau jointly issued the Draft Salton Sea Restoration Project, Environmental Impact State/Environmental Impact Report, which analyzes in depth the environment of the Salton Sea and impacts of five alternative approaches to restoring the sea. Based on the comments received to the Draft EIS/EIR and additional engineering studies, the

Authority anticipates that a supplemental or revised draft EIS/EIR may be necessary before a program of large scale restoration efforts is adopted.

II. THE QUANTIFICATION SETTLEMENT AGREEMENT PROGRAM ENVIRONMENTAL IMPACT REPORT ("PEIR")

The Authority's concern is that water transfers, conservation efforts, or other actions contained within program components of the Quantification Settlement Agreement may reduce inflows into the Sea. The PEIR should address the potential impacts of reduced inflows on the Sea.

III. SPECIFIC IMPACTS TO THE SALTON SEA.

With respect to the environmental assessment checklist included with the NOP, the Authority has concerns regarding the following specific issues, which are addressed in the Draft Restoration Project EIS/EIR:

A. Aesthetics.

Water transfers out of the Salton Sea basin will likely reduce the level of the Sea, exposing wide areas of shoreline, affecting the view scape of the Sea.

B. Air Quality.

Reduced inflows may significantly reduce the level of the Sea, exposing large shoreline areas. Exposed soils may be subject to erosion by the frequent high winds of the area. The resulting air born dust may significantly reduce air quality in the vicinity of the Salton Sea.

C. Biological Resources.

The Salton Sea area contains a diverse and rich ecosystem, exhibiting one of the highest degrees of avifauna diversity in the United States. The Salton Sea Restoration Draft EIS/EIR

describes potentially significant impacts to biological resources that may result from reduced inflows. Additional impacts are possible in the Sea's tributaries if concentrations of selenium and other constituents rise due to the water conservation program.

D. Hydrology and Water Quality.

Reduced inflows may accelerate degradation of water quality within the Sea.

E. Recreation.

The Salton Sea is an important recreational resource which is served by the Salton Sea State Park, Sonny Bono National Wildlife Refuge and several private marinas. Reduced inflows into the Sea may accelerate degradation of water quality below existing levels. Docking facilities may become inoperable, large shoreline areas may be exposed, and degraded water quality will be less attractive for recreational uses and less supportive of sport fisheries.

The Salton Sea Authority looks forward to cooperating fully with the Quantification Settlement Agreement effort in studying and addressing impacts to the vital ecological and recreational resources of the Salton Sea.

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ROGER B. MOORE
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6 July 2000

via facsimile to (805) 965-6944, and mail

Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
Attention: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

Re: Draft Program EIR on Colorado Quantification Settlement

Dear Mr. Thomson:

This letter supplements the letter of Imperial County Planning Director Jurg Heuberger dated 27 June 2000, as an additional scoping comment by the County of Imperial on the above-referenced draft environmental impact report (EIR).

Planning Director Heuberger's letter addresses specific concerns of the County of Imperial that relate to components of the proposed program that may involve transfer of water from Imperial County to San Diego or elsewhere in the Metropolitan Water District service area. To the extent that the anticipated program involves such a transfer, the County of Imperial also requests that the program EIR consider the County's outstanding scoping comments on the proposed EIR addressing the proposed IID-SDCWA water transfer.

In particular, as noted in the County's specific scoping comments of 23 November 1999 and 3 May 2000 (attached), the County of Imperial asks that the programmatic EIR recognize the County of Imperial's role as responsible agency in reviewing the environmental and economic acceptability of the water transfer component of the proposed program.

Additionally, the County of Imperial requests that the programmatic EIR on the quantification settlement recognize that voluntary quantification of water *rights* in the Colorado River, a desirable and commendable voluntary apportionment of California's entitlements to that water, is *not* dependent on the proposed IID-SDCWA water transfer. Instead, the quantification appears as a necessary pre-requisite to the transfer, but does not therefore require that the transfer take place in any given quantity, or at all. Accordingly, it should be made clear that the quantification, if it is realized, does not commit IID or SDCWA to the water transfer at all, or any given level of transfer.

At the same time, the County of Imperial recognizes the benefit of and need for assessing the programmatic impacts of anticipated reallocation of Colorado River *uses* throughout Southern California, and toward that end, appreciates that the programmatic EIR must assess as capably as possible the cumulative impacts on the County of Imperial of the various program components identified in the notice of preparation.

Finally, the County of Imperial desires to review the "lead agency agreement" on which the four water agencies are proceeding as "co-lead agencies." Due to a combination of tardiness on the part of this writer, and unavailability of the document in your office, we have not received that document as of this date. As soon as we do receive that agreement, if it occasions further comment on the part of the County of Imperial, we will forthwith supplement these comments accordingly.

The County of Imperial appreciates this opportunity to provide these comments at this time.

Respectfully,

Special Counsel to the County of Imperial

cc: Imperial County Board of Supervisors
Imperial County Counsel
Imperial Irrigation District

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23 November 1999

via facsimile (760) 339-9356 and mail

Steve Knell, Special Projects Coordinator
Imperial Irrigation District
P.O. Box 937
Imperial, CA 92251

Re: EIR/EIS IID Water Conservation and Transfer Project

Dear Mr. Knell:

Thank you for your courtesy in granting the County of Imperial an additional 30 days beyond 25 October to comment on the notice of preparation of the above-referenced document. The comments below are submitted in behalf of the County pursuant to the California Environmental Quality Act (CEQA) to you as state lead agency. We are not clear whether your request for comments was also in behalf of the federal lead agency, the U.S. Bureau of Reclamation; but request by the copy transmitted that these comments also be considered by the Bureau in the event they do not separately solicit scoping comments prior to preparation of the draft EIR/EIS.

In its formal protest to the State Water Resources Control Board, the County of Imperial states its interest as follows:

> The County of Imperial encompasses the entire territory of petitioner Imperial Irrigation District (IID), which holds the water rights that are the subject of the petition. The County includes within its territory not only the owners and occupants of all the lands embraced within the IID, but also a significant additional territory. The County includes an equally significant constituency of citizens, residents, and landowners who do not control or use the waters entrusted to IID, but who can be adversely affected by the environmental and economic impacts of the proposed transfer and change of place of use. Additionally, the County as a political subdivision of the state can be adversely affected in its ability to provide public services and conduct County business because of adverse environmental and economic impacts of the proposed transfer and change of place of use. Finally, the County as the government of general jurisdiction over the affected Imperial Valley bears a responsibility to articulate and protect public interests such as avoidance of public nuisance, protection of public trust values, assurance of county of origin protections, and maintenance of public health.
>
> In particular, as the county of origin within California of the water to be transferred, Imperial County seeks to preserve opportunities for its own reasonable municipal, industrial, and agricultural growth. The quantity of water to be transferred (up to 200,000 acre-feet a year), with a long-term potential of an additional 100,000 acre-feet, and the term of the transfer (up to 75 years) give rise to Imperial County's concerns.

Thus, the County's primary interest in the preparation of the EIR/EIS is to ensure that it identifies, assesses, and defines mitigation of impacts that the project will produce on Imperial County as a governmental entity and on Imperial County citizens who may not necessarily hold proprietary water rights under California law. In this respect the County's interest is distinct and potentially broader than that of the District or its individual members who are entitled to rely on the District's rights to water under federal and state law.

In the past the County's interests, both as a governmental entity and in behalf of its citizens and their environment, have often been dismissed as those of "third parties." This labeling often has led to the discounting or outright disregard of impacts on those considered "third parties." The County firmly believes that such categorizations can no longer be relied upon by the drafters of the EIR/EIS or by the decision-makers who will ultimately engage the EIR/EIS in their respective public responsibilities. Above all, the County of Imperial requests that potential adverse impacts to individual County residents, and to the general environment of the County as a whole, be treated with equal concern as impacts to individual or corporate water right holders.

The County additionally requests that the EIR/EIS recognize and protect Imperial's unique status as the California county of origin of waters from the Colorado River that form the subject of the proposed project.

The County requests that the project definition be revisited to ensure that it conforms to the project now anticipated as a result of the recently-announced "quantification settlement." We also request that the project definition make clear that the transfer of conserved water excludes water "obtained" from non-temporary fallowing of productive agricultural lands, and also excludes the increased extraction of groundwater to compensate for surface supplies that are to be transferred. If the County misapprehends that the project is so defined, then the EIR/EIS should expressly state that project definition includes non-

temporary land fallowing, or increased groundwater extraction, as applicable, and account for the consequent impacts.

The notice of preparation states that the District "intends" that the transfer will not result in the loss of IID's historic Colorado River priorities and water rights. To the extent that this "intention" has been modified by the "quantification settlement," this premise must be acknowledged in the EIR/EIS. More broadly, the County remains concerned that at present apparently no authoritative determination has been made about the priority and quantity of Imperial Valley water rights after this project is carried out.

We recognize that the EIR/EIS should not focus on legal issues. Nonetheless, the County asks that the EIR/EIS as a necessary part of its assessment of project impact either (1) include from authoritative sources a determination of the impact of the project on these rights, or (2) assess the impact of the project if the District realizes its present "intention" and also the impact of the project if the District's "intention" is not realized (that is, if the transfer were to result in the loss of Imperial Valley water rights and their priority).

The County similarly remains concerned that despite the terms of years written into the project definition, a water transfer of this magnitude and duration will de facto become a permanent and irreversible transfer. This circumstance should be addressed in one of two ways: either expressly stating as part of the assessment that the transfer will be assumed a permanent one, or else including assessment of an alternative project that is a permanent and irreversible transfer.

The County notes that the notice of preparation states the project purpose to serve both urban and agricultural uses in the receiving (San Diego County) area. Project impacts in that receiving area, and hence an assessment of project benefits or detriments there, cannot be ascertained without identification of the quantity of water to be used over time in the separate urban and agricultural sectors of San Diego County. This information vital to understand the relative benefits of the transfer in Imperial and San Diego Counties, and also to inform the identification and evaluation of other potential receiving areas, if any, for the conserved water.

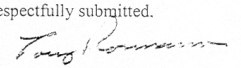
Finally, in returning to the County's concern that its interests not be treated as those of a "third party," we ask that the EIR/EIS expressly identify the decisions that are to be made by each lead and responsible or trustee agency, state and federal, together with an identification of each agency's scope of discretion in their decisions. Specifically, but not exclusively, the County desires affirmation that the State Water Resources Control Board has within its "public interest determination" authority the ability to disapprove or condition the requested transfer in response to impacts within Imperial County, whether they be to water rights holders, public trust values, or non-trust but nonetheless vital environmental amenities. The County also desires specification of the approvals that the Secretary of Interior is empowered and expected to render in review of this project, and the ability of such approvals to respond to the County's environmental concerns as stated here.

The County emphasizes that when this project was initially announced, the project proponents asked the County and others to rely for assurances on the preparation of the EIR/EIS announced by the present notice of preparation. The County responded positively to these requests, expressly forbearing from litigation under CEQA in the expectation that the pending EIR/EIS would respond to the County's concerns.

In the end, however, assurance does not flow from an environmental document, but instead from the knowledge that public agencies will use that document to modify the proponents' project, if necessary, to protect environmental quality. The public participation of the County of Imperial and others cannot be effective without a clear understanding of the authority that the respective lead and responsible agencies will exercise. Accordingly, it is imperative that by the time the draft EIR/EIS is issued, the reviewing public, including the County of Imperial, be given definition of the exact purposes for which the lead and responsible agencies will use the assessment.

On behalf of the County of Imperial and its Board of Supervisors, County Counsel and this writer reiterate our appreciation for your courtesy in granting extra time to submit these comments. The successful completion of an EIR/EIS on this project will largely determine, in our view, the ultimate political and popular acceptance of the decisions to be made. We look forward in cooperation to assist the Imperial Irrigation District and Bureau of Reclamation in attaining that overriding public goal.

Respectfully submitted,



cc: U.S. Bureau of Reclamation
Lower Colorado River Office
Board of Supervisors, County of Imperial
County Counsel, County of Imperial

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3 May 2000

William Rinne
U.S. Bureau of Reclamation
P.O. Box 427
Boulder City, NV 89005

Steven R. Knell, P.E.
Imperial Irrigation District
P.O. Box 937
Imperial, CA 92251

Re: Follow-up Scoping Comments on IID-SDCWA EIS/EIR

Gentlemen:

This letter will supplement the oral remarks that representatives of the County of Imperial made at the scoping workshop in El Centro on 17 April 2000. We appreciate the District's forwarding to us of the entire scoping summary report, including the letters from other commenting parties.

The County wishes to restate two overriding concerns at this early point of the environmental analysis. Because these concerns are also stated and detailed in our concurrent comments to the California Water Resources Control Board (State Board) on their water transfer guide, we attach and incorporate by reference this writer's letter to that board of yesterday, 2 May 2000.

The first concern is that both the Bureau of Reclamation and Imperial Irrigation District, as respective lead agencies, make clear in this environmental document the *precise* scope of its use by them and by responsible agencies. We need to know what the two lead agencies, as well as the State Water Board, believe to be their discretion and jurisdiction here to respond to the so-called "third party impacts" generally of concern to the government and citizens of Imperial County. We realize that we are asking all these agencies, and in particular the Bureau and the State Board, to "come clean" on questions that have not been definitively answered in the past. But we are not alone, as we now learn; the U.S. Environmental Protection Agency has made precisely the same point in its response to scoping.

The reason we need this knowledge is to know to what extent the County of Imperial can look to the Bureau, IID, and the State Board to respond to its particular environmental concerns. The greater the degree to which these agencies, and in particular the Bureau and the State Board as relatively disinterested parties, can govern the water transfer to meet the County's concerns, the greater will become the environmental and political acceptability of the ultimate water transfer project.

The second concern relates to the first: the County of Imperial's role as another responsible agency using this EIS/EIR. The County believes that at a minimum, it is authorized by state law (Water Code section 1810) to render or withhold the legally-required finding that the water transfer will not unreasonably affect the overall economy or the environment of the county from which the water is being transferred. If this finding cannot be made, the water transfer cannot take place. The EIS/EIR must include sufficient information and detail to enable the Board of Supervisors or its delegate to render this finding.

The County is presently examining the means by which it will make this finding. One approach, adopted by the County of Inyo and described in the concurrent letter to the State Board, is to proceed by conditional use permit. Other approaches could be less formal and produce action by Board of Supervisors resolution. The County of Imperial welcomes the views of others as to the means it can employ.

The County also points out that in the County of Inyo example, the operator of the relevant aqueduct, the City of Los Angeles Department of Water and Power, has adopted a formal policy of itself only approving water transfers that are acceptable to the County of Inyo. The lead agencies in the present project, as well as the State Board and the owner of the Colorado Aqueduct, could adopt similar policies as a means of fostering up-front assurances of a final water transfer that earns the requisite acceptance in the county of origin and from which the water is to be transferred.

The County of Imperial appreciates the efforts of IID to ensure that the County's concerns have been stated and will be considered, and looks forward to working with both lead agencies and others as their environmental analysis proceeds.

Respectfully,

Special Counsel to the County of Imperial

cc: (See next page)

cc: Thomas Peltier, State Board Division of Water Rights
Laura Fujii, Region 9 USEPA
Michael Concannon, CH2MHill
Ellen Spellman, allan, Matkins, etc.
Imperial County Board of Supervisors
Imperial County Counsel

Planning Department

COUNTY OF IMPERIAL

PLANNING / BUILDING INSPECTION / PLANNING COMMISSION / A.L.U.C.

Jurg Heuberger, AICP - Director

June 27, 2000

Quantification Settlement Agreement Co-lead Agencies
c/o Science Applications International Corporation
Attention: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

Subject: Response to Notice of Preparation of a Draft Program Environmental Impact Report (EIR) for the Colorado River Water Quantification Settlement Agreement

Dear Mr. Thomson:

The Planning/Building Department has received the Notice of Preparation (NOP), Transmittal Notice, Introduction, Description of the Proposed Project, Alternatives, Potential Environmental Effects, Responses to Notice, Figure 1, and the Environmental Checklist, which includes your explanations of the environmental impacts for implementing the Quantification Settlement Agreement.

General Overall Comments:

In the NOP, page five, the statement is made "...Certain actions and approvals from the Secretary of the Interior are anticipated. Other federal approvals may be required to implement other Program components..." If this is in fact the case, then should not a federal environmental document be jointly prepared for any future approval by a federal agency relating to the "Settlement Agreement", namely an "Environmental Assessment" or an "Environmental Impact Statement"?

The checklist identifies those factors which would be "potentially affected" by the program, and many have been marked as a "Potentially Significant Impact". However, on page 5 and page 6 of the checklist "Agricultural Resources" is not checked as being potentially significantly affected. Please clarify in the draft environmental document why you feel agricultural resources will not be significantly impacted in Imperial County. Agriculture is the predominant water user, therefore any significant change in water availability could be a significant influence on the viability of agriculture.

In 1988, Imperial Irrigation District (IID) and the Metropolitan Water District (MWD) entered into a Water Transfer Agreement to transfer over 100,000 acre-feet of water annually to the coastal basin. The present Settlement Agreement proposes to transfer up to 300,000 acre-feet of water annually to the San Diego County Water Authority via the MWD aqueduct.

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(AN EQUAL OPPORTUNITY EMPLOYER) INTERNET WEB SITE co.imperial.ca.us

The Supreme Court on June 19th has allowed the Quechan Tribe to continue its claim on about 25,000 acres on the Fort Yuma Reservation and a claim to approximately 25.6 billon gallons of Colorado River water each year.

The Quantification Settlement Agreement and any environmental document prepared must include this new claim and its potential socio-economic impacts on agricultural resources, aesthetics, air quality, biological, cultural, geology/soils, hazards, hydrologic, land use/planning, population/housing, noise, public services, recreation, and utilities/service systems in Imperial County.

The checklist form prepared by the consultant and the staff for the four co-lead agencies has modified the State "CEQA Guidelines", Title 14, California Code of Regulations, Section 15000, et seq., and re-names the column "Potentially Significant Unless Mitigation Incorporated" to "Less Than Significant with Mitigation Incorporated". Please clarify why this change was made to the State's format in this manner. "Less Than Significant with Mitigation Incorporated" assumes that adequate mitigation measures have been incorporated and yet the discussion after each section does not have appropriate mitigation identified in the NOP. How can the reader determine how the impact is "Less Than Significant Impact (LTSI)" without the mitigations provided for public review and comment? The environmental checklist should be changed to reflect the proper analysis, and the proposed mitigation measures clearly identified.

The NOP also indicates that the "General Plan Designation" and "Zoning" is **"Not Applicable",** we disagree! Those preparing the NOP should review the following Imperial County General Plan, Goals and Policies, which relate to any water transfer which has "potentially significant impacts" to Imperial County, County residents, the Salton Sea, the New and Alamo Rivers, and its natural resources.

The County's General Plan has a "Land Use Element", an "Agricultural Element", a "Water Element" and a "Conservation/Open Space Element" which are directly applicable to water transfers impacting Imperial County. The checklist, under **XVIII REFERENCES**, does not reference the County's General Plan. Please clarify why the transfer of 300,000 acre-feet annually will not adversely impact Imperial County in any way.

If this water is transferred to San Diego County, the project will allow for growth inducement to San Diego County. Absent a supply of water, San Diego's rapid growth could be curtailed. Please explain. However, the proposed water transfer could limit future agricultural growth in Imperial County due to less acres being farmed and therefore fewer agricultural-related jobs created and less secondary agriculture-related purchases/services being demanded. In the future housing availability may also be impacted adversely due to the lack of water supply if future water transfers occur.

Specific comments on the NOP's submitted environmental checklist:

Section I, "Aesthetics", the potential reduction of water levels in the Salton Sea, Alamo River and the New River could create a substantial adverse aesthetic effect on those residing

near these water bodies due to less water being delivered to Imperial County agricultural lands. Paragraphs a, b and c should be marked "Potentially Significant Impact (PSI)".

Paragraphs a and b are marked as "LTSI", however, the proposed project would most surely have a substantial adverse impact on the existing scenic vistas and visual character of Imperial County. This project will potentially result in the fallowing of agricultural farmlands. Over the past 100 years, Imperial County has been slowly turned into an approximately 400,000 acre agricultural oasis. The visual character and identity of the Valley has been its agricultural greenways that surround each of the urban communities. As the availability of water decreases the long established greenways will be lost through fallowing. The conversion of farmlands will be a slow process: land will not immediately turn into scenic desert vistas, such as those found beyond the current cultivated fields, but into blighted fallow land.

Another impact will be on the Colorado River with the loss of 300,000 acre-feet annually, which will lower of the river's water level and impact the existing marsh and wetlands along the river south of the MWD's aqueduct. The environmental document needs to address the impacts to existing flora and fauna of the Colorado River area and its aesthetic impacts.

Section II, "Agricultural Resources", page 7, last paragraph it states **"…. There may be temporary reductions in agricultural land use due to land fallowing associated with dry year and reserve building water transfers. It is anticipated that the area affected by fallowing would be small and would primarily occur in the Palo Verde Valley…"** (emphasis added). In the Land Use Element, the majority of the irrigated lands in central Imperial County are designated as "Agriculture" and could potentially be affected by the implementation of the Settlement Agreement.

However, it does not explain the extent of the fallowing, whether there are any programs/policies to prevent this fallowing, or whether this fallowing impacts Imperial County as a whole, such as other secondary impacts to recreational, commercial, industrial and/or residential development in the region). It also does not discuss whether or not during these "dry years" the SWCWA or CVWD will reduce their transfer amounts. Based on this statement it appears that Imperial County, and specifically the Palo Verde Valley, is going to take the brunt of the "dry year" and "reserve building water transfers".

The explanation seems to indicate that there will be "land fallowing". However the NOP neither explains fully what is meant by "reserve building water transfers" nor does it discuss the possibility of aquifer recharge, especially in those areas which rely on groundwater resources. Paragraphs a, b and c should be marked "Potentially Significant Impact" and should be thoroughly addressed in the draft environmental document.

The County's "Agriculture Element" on page 37 has the following County goal and objectives regarding **"Water Availability and Conservation"**:

"Goal 4: Maximize productivity of Imperial County's agricultural resources by ensuring future availability of adequate and affordable irrigation water and by managing water such that it is used effectively and not wasted.

> Objective 4.1 The County must favor efforts to ensure adequate irrigation water for agricultural areas.
>
> Objective 4.2 Coordinate with the appropriate agencies for the availability of water to meet future agricultural needs.
>
> Objective 4.3 The County will participate and encourage multi-agency participation in water projects where such coordination can improve the likelihood to maintaining an adequate long-term supply of irrigation water throughout the County…"

The County "Water Element" on page 26 identifies the goal for having an **"Adequate Agricultural Irrigation Water Supply"** as follows:

"Goal 3: The County will secure the provision of safe and healthful sources and supplies of agricultural irrigation water adequate to assure the continuation of agricultural land uses as established by the County General Plan and the long-term continued availability of this essential resources…"

Goal 5: Water Resources shall be managed effectively and efficiently through inter-agency and inter-jurisdictional coordination and cooperation…"

The above description of "land fallowing", however small, appears to be inconsistent with the goals and objectives of both the "Agricultural Element" and the "Water Element" of the County's General Plan. The potentially significant impact of this proposed water transfer and future water transfers could result in water supplies that may be neither "adequate" nor "affordable" to future agriculturalists.

Section III, "Air Quality", paragraph e, "Create objectionable odors affecting a substantial number of people…" is marked "as a "Less Than Significant Impact". Decreased surface elevation of an open water body, in this case the Salton Sea, will create a "Potentially Significant Impact (PSI) with regard to the potential creation of objectionable odors. At its current level, the Salton Sea has algae blooms, generally during the summer months, when increased evaporation due to heat and lower water level occurs along with the algae blooms, decrease oxygen and fish die. This creates a very objectionable odor for those residing or visiting the area. The permanent lowering of the Salton Sea would surely result in an increase in the potential for objectionable odors in the future. Furthermore, the discussion fails to address the effect the land fallowing that will occur in Imperial County will have on air quality and may negatively impact the air quality in Imperial County. The draft environmental document should address this potential impact and provide appropriate mitigation.

Section IV, "Biological Resources", the checklist has a mark of LTSI for paragraph f, but appears inconsistent with the "Conservation/Open Space Element" and its "Goals" and "Objectives" as follows:

"Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions.

> Objective 1.1 Recognize that the degradation of one natural resource will have a concomitant negative effect upon the total resource base, including water, vegetation, air, wildlife, soil, and minerals.
>
> Objective 1.2 Encourage only those uses and activities which are compatible with the fragile desert, aquatic and marshland environment.
>
> Objective 1.3 Coordinate the acquisition, designation, and management of important natural resource areas in Imperial County with other appropriate governmental agencies as necessary.
>
> Objective 1.4 Develop standards to protect significant natural resource areas for the purpose of enhancing both the planning and decision-making process.
>
> Objective 1.6 Ensure the conservation, development and utilization of the County's natural resources.

Goal 2: The County will preserve the integrity, function, productivity, and long-term viability of environmentally sensitive habitats, and plant and animal species.

> Objective 2.1 Conserve wetlands, fresh water marshes, and riparian vegetation.
>
> Objective 2.2 Protect significant fish, wildlife, plant species, and their habitats.
>
> Objective 2.3 Protect unique, rare and endangered plants and animals and their habitats.
>
> Objective 2.4 Use the environmental impact report process to identify, conserve and enhance unique vegetation and wildlife resources.

Goal 4: The County will actively conserve and maintain contiguous farmlands and prime soil areas to maintain economic vitality and the unique lifestyle of the Imperial Valley.

> Objective 4.2 Control and prevent soil erosion when possible."

It is the County's assertion that there is a potentially significant adverse environmental impact on biological resources. The environmental document should provide appropriate coordination with other federal planning documents and environmental plans, e.g. the California Desert Conservation Area Plan and the Northern and Eastern Desert Coordinated Management Plan.

In this section it implies, *"that there will be adverse impacts to local biological resources due to the raising or lowering of the water levels, but for a program of this scale it is difficult to specifically predict or summarize* **(Note: this is paraphrased and not a direct quote)**."

There have been a number of recent studies on the Salton Sea, which state that the Sea's primary problem is that it is too rich in nutrients.

The recent biological problems could be attributed to the lowering of the water level during summer months, which increases the nutrients per volume of water increasing the chance of oxygen depletion, disease and die-offs of wildlife. Based on the projected water transfer, it appears that the Salton Sea, Alamo River and New River will experience a permanent water reduction. How will the environmental document address these issues and the adverse impacts the Agreement could have on the existing problems of the Salton Sea? What type of offsets will be incorporated into the mitigation measures (which will surely be needed)? How will this water transfer agreement and the reduction of water going into the Salton Sea affect the Federal Government and the Salton Sea Authority's efforts on current and future restoration? How will the Agreement's environmental document be coordinated with the environmental document that the Salton Sea Authority is currently preparing?

Furthermore, the statement is made "…It is anticipated that the IID would receive sufficient Colorado River water each year, even with proposed transfers to the MWD, SDCWA, and CVWD to sustain the **"existing"** level of agricultural activity…" (emphasis added). There are hundreds and hundreds of acres of land that are currently fallow which may not have been farmed in recent years and have paid to IID the "Water Availability Charge" for "adequate and affordable" water to be made available for future agricultural uses. Will water be made available for these lands, which have not been farmed in recent years?

The Federal Bureau of Land Management and the U.S. Fish and Wildlife Service may be significantly impacted due to the potential impacts of this proposed water transfer on those federally-protected species under Federal Endangered Species Act.

Section V, "Cultural Resources", has marks for "potentially significant impacts" to paragraphs a, b, c, and d, regarding adverse changes in the significance of historical resources, archaeological resources, and paleontological resources but is unclear as to what may be impacted and in what manner they may be impacted. Please clarify in the draft environmental document prepared for this project.

Section VII, "Hazards and Hazardous Materials", the Checklist shows a potentially significant impact for paragraph b. "…create a significant hazard to the public or the environment through the reasonable foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment…" There is, however, no impact with regards to paragraph a. "…create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials..." How will the project create a significant hazard involving the release of hazardous materials, but does not create a hazard through transport, use or disposal? The checklist discussion does not address or identify any hazardous materials.

The County concurs with the environmental checklist has Section VII "Hazards and Hazardous Materials" (b) as PSI, however the discussion as to while there is a PSI fails to include the impacts on the existing hazardous/toxic problems found in the County rivers (New River and Alamo River) and the Salton Sea. The New River has been classified as one of

most polluted rivers in the United States, with the reduction of agricultural field runoff due to the water transfer the level of the New River will be lowered, while the influx of raw waste from Mexico, which the County has no control over, will continue and possibly increase. This would only exacerbate the existing hazardous/toxic problems in the New River. Additionally, with no natural outlet, the Salton Sea is already inundated with overdose of pollution and nutrients, most of which are introduced via the New River. The reduction of both water bodies will result in an increase in pollutants per volume thus increasing the possible exposure of people to deadly hazards/toxins such as e-coli. A complete analysis of the reduction of water on the rivers/waterways flowing through the County and the Salton Sea needs to be done with proper mitigation to reduce the impacts to humans and wildlife. Please clarify in the draft environmental document prepared for this project.

Section VIII, "Hydrology and Water Quality", under paragraph b, the mark is for "No Impact" and there is a potential significant adverse environmental impact due to the deletion of groundwater resources. In the event that the Coachella Canal is lined, in the Hot Mineral Spa Area, there are a number of fish farms that utilize shallow geothermal wells to produce fish for Southern California markets. In this area, the hot mineral spas (such as Fountain of Youth and Bashford's Spa) utilize warm mineral waters that have been a draw for thousands of "snowbirds" for many years. In the event the Coachella Canal is lined, this will impact those spas in the area.

Also, it appears that the current water transfer emphasis is for water conservation on lands under cultivation at this time. However, in other portions of the NOP it states "…The Program would ensure that the available water supply…remains as close to current levels…"In the future, if currently fallow lands that were previously farmed and/or new areas were opened to cultivation, the above statement seems to indicate that the "available water supply" may not be available. The "Program" needs to clarify how new lands requesting water supplies will be dealt with, water availability of water to these lands and whether there will be any limits placed on future agriculturalists in Imperial County.

Additionally under the "Goals" and "Objectives" portion of the Imperial County General Plan's Conservation/Open Space Element states as follows:

"Goal 8: The County will conserve, project, and enhance the water resources in the planning area.

Objective 8.1 Protect all bodies of water, e.g. Salton Sea, and water courses for their continued use and development.

Objective 8.2 Maintain the salinity of the Salton Sea at 40,000 parts per million salinity and encourage the advantageous usage of the Salton Sea for agricultural and natural drainage, recreation, and development.

Objective 8.4 Ensure the use and protection of the rivers and other waterways in the County. Ensure proper drainage and provide accommodation for storm runoff from urban and other developed areas in manners compatible with requirements to provide necessary agricultural drainage.

Objective 8.5 Protect and improve water quality and quantity for all water bodies in Imperial County.

Objective 8.6 Eliminate potential surface and groundwater pollution through regulations as well as educational programs.

Objective 8.7 Reclaim polluted water bodies, such as the New and Alamo Rivers and the Salton Sea…

Objective 8.8 Ensure protection of water bodies that are important for recreational fishing.

Objective 8.12 Protect aquifer recharge areas…

Objective 8.14 Coordinate with the appropriate agencies for the availability of water to meet future domestic, industrial/commercial and agricultural needs."

Under IX "Land Use and Planning", the checklist has a mark of "No Impact" and that there will be no effect on land use, and that the *"Program will ensure that the available water supply for the southern California coastal plain and inland valleys remains at close to current levels. There would be no change in the capacity of the Colorado River Aqueduct, which supplies MWD and, through it, SDCWA."* However, the discussion fails to address the transferred water no longer traveling south of the Colorado River Aqueduct. How will this decrease affect the biological resources that proliferate the riverbanks and the land affected by the underground water seepage of the river into the lands beyond the riverbanks? How would the lowering of the river impact wildlife's ability to access the river? Will there be areas set aside to allow species, e.g. big horn sheep, to access the river? If so, what studies will be done, how far apart will they be, has BLM, the Army Corps of Engineers or other applicable agency been contacted? How will the reduction affect the recreational, agricultural and residential uses on the Colorado River?

Section XII, "Population and Housing", the checklist marks this entire section as "No Impact". However, this should be changed to "Potentially Significant Impact". The discussion on housing fails to discuss the impacts on existing and future housing in the recreational water communities of Palo Verde, Salton City, Desert Shores, Salton Sea Beach, and Bombay Beach. The reduction of water will directly impact these communities, which rely on the water as a major recreational draw, both for attracting new residents as well as commercial tourism revenue. How does the environmental document plan on mitigating these impacts? Additionally, the checklist fails to identify the impacts that this agreement will have on the future growth in Imperial County, in terms of the cost and availability of water for new construction (commercial, industrial and residential).

The discussion also fails to adequately include adjacent coastal communities such as the County of San Diego. According to the State of California Department of Finance estimations, the County of San Diego has experienced a population increase of 372,100 during the 1990's, while much of the decade in a recession. With the increased availability of water, this population figure is sure to increase. Conversely, with the decreased availability of water for

desert communities in Imperial County, there is the potential for population growth to decrease.

Section XIV, "Recreation", paragraphs a and b are marked as "No Impact". However, with the potential lowering of the water level in the Colorado River and the Salton Sea, there will be an impact on existing boat launching ramps, jetties and on park improvements when the water level falls. The mark should be "potentially significant impact" and discussed in the draft environmental document.

Section XVI, "Utilities and Service Systems", has a mark of "No Impact" and the County feels that it should be marked as a "potentially significant impact" due to the potential decrease in water flow through IID turbine-generators thereby with the loss of hydroelectric power there may be the potential for an increase in local power rates if more expensive power is purchased from non-hydroelectric utilities. The project has a "potentially significant impact" regarding paragraph g, "compliance with federal, state and local statutes and regulations related to solid waste". However, there is no discussion to explain this potentially significant impact. Additionally, the final statement *"The above impacts could be cumulatively considerable when combined with other development within the Program Area",* does not specify what development is planned or predicted within the Program area that this statement refers to in the document.

We look forward to working with the Imperial Irrigation District and its water partners in the providing of safe, healthy, adequate and affordable water supplies to residents and farmers in the Imperial County for years to come.

If you should have any questions, please contact Jurg Heuberger, AICP at (760) 339-4236, extension 310.

Sincerely,

JURG HEUBERGER, AICP
Planning Director

cc: Imperial Irrigation District, Jesse Silva
Board of Supervisors
Robertta Burns, County Administrative Office
Ralph Cordova, County Counsel
Jurg Heuberger, AICP, Planning Director
Darrell Gardner, Assistant Planning Director
IID/SDCWA Water Transfer File

JH/DG/RC/JM/BT/sm/nopdeir2

County of San Diego

DEPARTMENT OF PUBLIC WORKS

5555 OVERLAND AVE, SAN DIEGO, CALIFORNIA 92123-1295

JOHN L. SNYDER
DIRECTOR
(858) 694-2233
FAX: (858) 268-0461

COUNTY ENGINEER
COUNTY AIRPORTS
COUNTY ROAD COMMISSIONER
TRANSIT SERVICES
COUNTY SURVEYOR
FLOOD CONTROL
WASTEWATER MANAGEMENT

RECEIVED
JUN 30 2000
SAIC Santa Barbara

June 26, 2000

Colorado River Water Quantification Settlement Agreement
c/o Robert D. Thomson
Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Subject: Notice of Preparation Program Environmental Impact Report
for the Colorado River Water Quantification Settlement Agreement

Dear Mr. Thomson:

We are in receipt of the Notice of Preparation (NOP) for the above project, dated June 6, 2000. We concur with the findings of the NOP that the issues of air quality, biological resources, cultural resources, hazards and hazardous materials, hydrology/water quality, utilities/service systems, and noise may have a significant effect on the environment, and need to be addressed in the Program Environmental Impact Report.

We have no further comments at this time. We are looking forward to receiving a copy of the Program EIR when it is available.

If you have any questions, please contact Nelson Olivas at (858) 874-4005 or Gary Fink at (858) 874-4007. Thank you.

Nelson E. Olivas, Project Manager
Department of Public Works

NEO:GRF:wc

THE CITY OF SAN DIEGO

RECEIVED
JUN 19 2000
SAIC Santa Barbara

June 13, 2000

Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
Attention: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

SUBJECT: NOP for the Draft Program EIR for the Colorado River Water Quantification Settlement Agreement

Dear Mr. Thomson,

As a potential responsible agency, the City of San Diego would like to receive at least two copies of the draft EIR on this project when it becomes available during the public review period. No further issues have been identified at this time.

Sincerely,

Cathy Cibit

Cathy Cibit,
Senior Planner

cc: Mike Gonzales, Senior Planner, Water Department

DIVERSITY

Planning and Development Review
1222 First Avenue, MS 501 • San Diego, CA 92101-4155
Tel (619) 446-5460

City of Needles

Needles Customer Service Center

817 Third Street • Needles, California 92363
(760) 326-5700 • FAX (760) 326-6765

July 5, 2000

Via Facsimile and U.S. Mail
(805) 965-6944

Colorado River Water Quantification
Settlement Agreement
c/o Science Applications International Corporation
816 State Street, Suite 500
Santa Barbara, CA 93101

Attention: Robert Thompson

Re: Comments by the City of Needles to Notice of Preparation, Program Environmental Impact Report for the Colorado River Water Quantification Settlement Agreement

Dear Mr. Thompson:

The City of Needles respectfully requests that the Environmental Impact Report being prepared for the Colorado River Water Quantification Settlement Agreement fully address potential impacts on the Lower Colorado River Water Supply Project ("LCWSP"). The City is concerned that implementation of one program segment of the Quantification Settlement Agreement - the lining of the All American Canal ("AAC") - will lead to the degradation of water quality in the aquifer from which the LCWSP draws its water. Degradation of the water quality will threaten the long-range viability of the LCWSP, on which the City of Needles and other communities along the Colorado River depend for future water supplies.

Negotiations with respect to the use of the Colorado River water have historically not well served the smaller California communities and undeveloped lands along the Colorado River, which should be the natural beneficiaries of the River's bountiful water. When water rights to the Colorado River were allocated, these communities and undeveloped lands were allocated very little, if any, rights to the Colorado River. Many users along the river currently do so "illegally", using the water that flows by or near their properties without any right to do so. As the Bureau of Reclamation claims that the ground water in the vicinity of the River is River water, these communities and undeveloped lands have little or no water which they are entitled to use. Certainly, there is no water to accommodate even the modest growth that the communities hope for.

In an effort to address the historical inequities of allocation of California River water and provide for current and future water needs of California communities along the lower Colorado River, Congress enacted the Lower Colorado Water Supply Act, Public Law 99-655. The Act authorized the construction of a small-scale well field along the All American Canal to provide a water supply of up to 10,000 acre-feet for users who do not hold sufficient rights to the Colorado River water to meet present or future needs. These users include "The City of Needles, the town of Winterhaven, and other domestic, municipal, industrial and recreational water users along the Colorado River in the State of California," and include recreational lands leased from, or operated by, the BLM.

The Act provided for the establishment of a well field to pump water from the aquifer underlining the All American Canal into the canal. That water is to be exchanged for an equivalent amount of Colorado River water to be diverted at points of use along the River. Two of the four wells anticipated by the Act have already been installed, at a cost of $740,812.95 to the City of Needles.

The lining of the AAC was the subject of an environmental impact statement/report finalized in 1994. At that time, the City of Needles questioned the affect of the lining project on the LCWSP. The report concluded that the lining of the AAC would not affect the LCWSP. The report noted that the lining would inevitably reduce the ground water recharge in the vicinity of the well field, and that water levels would be expected to eventually fall below pre-canal levels. However, given the depth of the wells (440 feet), it was not anticipated that falling water levels would significantly reduce the wells' ability to access sufficient water.

However, there remains a question with respect to water quality. The Act, and the implementing water exchange agreement among the United States, IID, and CVWD, require that the quality of water pumped into the canal from the well field be equal to, or greater than, that of the water in the AAC. The final environmental impact statement notes that "the LCWSP well field has been designed to accommodate the post-lining decline in ground-water elevation. If pumping in the Mexicali Valley continues at historic levels, ground-water of poorer quality would be expected to migrate into the well field area. Reclamation estimates that the change in water quality would not exceed 2 milligrams per liter per year after the lining is installed." (Response to letter 18, p. F-39, Final Environmental Impact Statement, All-American Canal Lining Project.)

Apparently little is known regarding the quality of groundwater underlying and adjacent to the All-American Canal. Ground-water studies performed for the LCWSP did not specifically address the potential for intrusion of poor quality water should the All-American Canal be lined. There was some concern that accelerating development of the full-scale 10,000 acre-foot per year well field would increase the potential for poor quality water from the East Mesa area migrating into the well field and jeopardizing the exchange agreement with IID.

Over the last few years, pursuant to a request by the City of Needles, the Bureau of Reclamation has reviewed available information regarding water quality in the vicinity of the LCWSP. In a letter dated April 25, 2000 to the Needles city attorney, the Bureau noted:

> "[While] water quality at the wells appears adequate at present, it is not clear from information now available what changes in quality may occur over time once the sustained pumping is initiated. We believe that even though the AAC lining environmental impact statement estimates a maximum increase in salinity of two parts per million per year, additional studies to estimate impacts are warranted."

The possibility that the lining of the AAC, and the full development of the LCWSP would reduce water quality below the levels required by the exchange agreement is of great concern to the City. This possibility jeopardizes the water supply that the City has acquired after such great effort and on which the City and other users along the Colorado River rely for future development.

It is imperative that water quality impacts be fully evaluated at this time. The City of Needles respectfully requests that the Quantification Settlement Agreement EIS fully evaluate water quality impacts below the AAC and specify appropriate mitigation measures.

Very truly yours,

Robert Walker
Acting City Manager

RW:kc

c: Jim Cherry, Bureau of Reclamation

Thomson, Robert D.

From: Fred Cagle [fred.cagle@sdsu.edu]
Sent: Thursday, July 06, 2000 3:54 PM
To: "Robert..D.Thomson"@saic.com
Subject: PEIR

Colorado River Water Quantification Settlement Agreement

C/o SAIC

Attn: Robert Thomson

816 State St. ,Suite 500

Santa Barbara, CA. 93101

California Audubon requests for additions to the PEIR

Responses to Notice:

Agricultural Resources: there is considerable evidence that fallowing of farm land is to be a apart of the definition of conservation of water in the Imperial Valley which will have definite effects on the amount of water that flows to the Salton Sea as well as the utilization of fields for wildlife.(Parson's report) Loss of farmlands should be considered in the EIR as they have multiple effects which may not be considered under other EIS-EIR's.

Hydrology and water Quality: There is no discussion of the loss to the Salton Sea of seepage water from the lining of the All American Canal. There is evidence that water 64,000 AF +) which is pumped from the aquifer onto fields and then may be returned to the US via ag drainage to the New River. There is evidence that water transfers and other water conservation techniques will have significant effects on the flow to the Salton Sea and its water quality. These combined events of the water quantification agreement may not be included in other EIS-EIR's. The statements in the PEIR that conservation of as much as 300,000 feet (or more) (pg. 14)S. Increase salinity and decrease surface elevation. Appear the conflict with the statement on page 7" it was anticipated that the IID would receive sufficient Colorado River water each year, even with proposed transfers to MWDS. To sustain the existing level of agricultural productivity".

There appears to be no mention of the necessity to maintain in stream flow for the lower Colorado and the Mexican Delta as well as the Salton Sea , a water for nature concept.

As this PEIR is intended to address the aggregate impacts of the implementation of each of the nine program components, it is critical not to assume that an adequate environmental analysis under other separate project specific EIS-EIR's will be completed. This document should integrate the project specific components mentioned on page two as none of the other mentioned projects take a watershed based viewpoint. As the Quantification agreement effects cross over all of these projects they should be integrated as far as possible.

PACIFIC INSTITUTE
FOR STUDIES IN DEVELOPMENT, ENVIRONMENT, AND SECURITY

July 6, 2000

Quantification Settlement Agreement Co-Lead Agencies
c/o Science Applications International Corporation
Attention: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA 93101

RECEIVED
JUL 10 2000
SAIC Santa Barbara

Re: **Notice of Preparation of a Draft Program EIR for the Colorado River Water Quantification Settlement Agreement**

Dear Quantification Settlement Agreement Co-Lead Agencies:

The Pacific Institute for Studies in Development, Environment, and Security offers the following comments on the scope of issues and the extent of analysis that should be evaluated in the Draft Program Environmental Impact Report (PEIR) for the Colorado River Water Quantification Settlement Agreement (Quantification Agreement). The Pacific Institute supports the development of a plan to reduce California's use of Colorado River water to the state's allocation of 4.4 million acre-feet; the Quantification Agreement represents an important step to this end.

The Pacific Institute believes that the PEIR should include the following information:

- Cumulative impacts on the Alamo, New, and Whitewater Rivers and agricultural drains resulting from changes in water quantity and quality.
- Growth-inducing impacts, particularly within the area served by the Metropolitan Water District of Southern California.
- Potential impacts to biological resources due to changes in water elevation between Parker Dam and Imperial Dam, at a variety of temporal scales ranging from instantaneous to annual and multi-year.

The Pacific Institute urges the co-lead agencies not to rely on separate environmental documents to address project-specific and/or cumulative impacts of the various program components. The release date of these documents is often postponed, which could result in insufficient information being available to assess the cumulative impacts of these programs or the Quantification Agreement as a whole.

Thank you for the opportunity to participate in this important process. We look forward to reviewing the draft PEIR upon its release.

Sincerely,

Michael Cohen
Research Associate

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WWW.PACINST.ORG

PRINTED ON 100% RECYCLED PAPER

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HARVEY J. ROY

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Eleanor M Roy
P.O. Box 5233
Salton City, CA 92275

WEST SHORES GOLF CLUB
Salton City,Ca. 92275

RECEIVED
JUN 16 2000
SAIC Santa Barbara

June 12, 2000
Quantification Settlement Agreement Co-lead Agencies
c/o Science Applications International Corp.
Attn: Robert D. Thomson
816 State Street, Suite 500
Santa Barbara, CA. 93101

Dear Mr. Robert D. Thomson,

This valley is one of the most desired places to live in California, as evidenced by the growth in the past twenty years, with the potential for greatest growth still not touched.
The Salton Sea is among the 10 wonders of California. Of course San Diego and other areas want our water During my lifetime of selling real estate and living in the San Diego area , San Diego went from (NOT) in the top 100 cities in the United States to the present of being #8 in population and according to Real Estate brokers outlook will be #1 in a very short time if given more water.

Why not put our efforts and resources to cleaning up the Salton Sea and make this the 2nd Riveria. The money you make from selling water will be peanuts , compared to the return, if you allow the Salton Sea to develop. The potential is here why not make use of it.

Sincerely,

Harvey J. Roy

Eleanor M. Roy

7-25-00

Quantification Settlement Agreement Co-lead Agencies
c/o Science Application International Corporation
Attn: Robert Thomson

Gerald Zimmerman, executive director, Colorado River Board of California, in response to the question: What is this EIR going to do of a substantive nature?, said: It deals with the global, long-range issues.

I propose that two major global issues include:

(1) IID's water under state jurisdiction, the priority of municipal/domestic water use over agricultural use, and provision in the Key Terms for defensive transfers.

(2) Reasonable beneficial use, Reclamation concluding that IID is not using at least 200,000 acre-feet efficiently, moratorium and waiver provisions in the Key Terms, and defensive transfer provisions for the question of wasting water, and IID making no major effort to manage its water more effectively (e.g. the tailwater program is token).

Through these two areas, it is conceivable that all the farmland in Imperial Valley could be dried up, and exclusive of municipal/domestic use, the only other priority would be the water needed to maintain the flora/fauna habitats in the drains and at Salton Sea.

Therefore, it is important that defensive, as well as this voluntary transfer be recognized and dealt with through your EIR.

17

Cliff Hurley

Cliff Hurley • 1108 W. Evan Hewes Hwy, El Centro, CA 92243 • Phone/fax (760) 352-6496

FROM : PHONE NO. : 619 352 6496 P01

6-16-00

Quantification Settlement Agreement
Attn. Rob Thomson

As of yesterday, the documents may or may not be introduced by 6-23-00 At least one (key term, as approved by IID, will not appear in the documents, i.e. state jurisdiction (though it is in petition).
Have other key terms been dropped? eg.
- the state being a party to the contract?
- the grace period & the moratorium period?

Because of the slippage between the Key Terms & the documents, I request that the 30 day comment period be extended / based on the date that the documents are introduced.

17

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6-16-00

To: Bureau of Reclamation
Department of Water Resources
Others

Pursuant to Sec. 2106) of the Reclamation Reform Act the Colorado River water users are to prepare a water conservation plan and updated it every five years.
In the case of IID, AB 3616 appears to be companion to it.
Apparently, Reclamation & DWR have excused IID from reporting.
This along with IID making no attempt to manage on-farm water more effectively, leads to the conclusion that IID expects to transfer water on a "dumb & dirty" basis. Which means that the

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determinations from the Tetra Tech Report will kick in at the end of the moratorium period via Reclamation's Part 417 process.
Therefore, it is my position that the EIS as well as the EIR for the Quantification Settlement Agreement should recognize & deal with the impact of IID losing another 200,000 to 300,000 acre feet of water at the end of the moratorium period.

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Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
INVERTEBRATES						
Alkali Skipper (*Pseudocopaeodes eunus)*					X	
Andrew's Dune Scarab Beetle (*Pseudocotalpa andrewsi*)	SC			X	X	
California Floater (*Anodonta californiensis*)	FS		X			
Cheeseweed Moth Lacewing (*Oliaroes dara*)	SC			X		
Coachella Giant Sand Treader Cricket (*Macrobaenetes valgum*)	SC			X	X	
Coachella Valley Grasshopper (*Spaniacris deserticola*)					X	
Coachella Valley Jerusalem Cricket (*Stenopelmatus cahuilaensis*)	SC			X	X	
Dotted Blue Butterfly (*Euphilotes enoptes*)					X	
Mojave Desert Blister Beetle (*Lytta inseparata*)	SC			X		
Palm Springs June Beetle (*Dinacoma caseyi*)					X	
AMPHIBIANS						
Arroyo Southwestern Toad (*Bufo microscaphus californicus*)	FE/CSC	Mainly west of the desert in Southern California		X	X	
Colorado River Toad (*Bufo alarius)*	FE/CE	Mainly southeast of California. Temporary pools and irrigation ditches are favored breeding habitat.	X			

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
AMPHIBIANS						
Arizona Toad (*Bufo microscaphus microscaphus)*	--/CDFG Protected	Headwaters and tributaries to Colorado River	X			
California Red-Legged Frog (*Rana aurora draytonii*)	FT/CSC			X		
Couch's Spadefoot Toad (*Scaphiopus couuchii*)	--/CSC	Mesquite savanna, creosote bush desert	X			
Desert Slender Salamander (*Batrachoseps aridus*)	FE/CE	Palm oases		X	X	
Lowland Leopard Frog (*Rana yavapaiensis*)	--/CSC	Usually found close to water	X	X		
Northern Leopard Frog (*Rana pipiens*)	--/CSC	Found in a variety of habitats, more adapted to cold than other leopard frogs. Glen Canyon and Kanab Creek	X			
REPTILES						
Banded Gila Monster (*Heloderma suspectum cinctum*)	--/CSC	Shrubby, grassy areas of the desert	X			
Barefoot Banded Gecko (*Coelonyx switaki*)	--/CSC	Arid hillsides and canyons				X
Coachella Valley Fringe-Toed Lizard (*Uma inornata*)	FT/CE	Loose sand		X	X	
Colorado Fringed-Toed Lizard (*Uma notata notata*)	--/CSC	Loose sand		X		X
Desert Rosy Boa (*Lichanum trivirgata gracia*)	BLM sensitive	Arid habitats, such as Gila and Castle Dome	X		X	
Desert Tortoise (*Gopherus agassizii*)	FT/CT	Widespread, but rapidly declining population densities	X	X	X	X
Flat-tailed Horned Lizard (*Phrynosoma mcalli*)	CDFG protected	Fine sand	X	X	X	

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
REPTILES						
Northern Red-Diamond Rattlesnake (*Crotalus ruber ruber*)	--/CSC			X	X	
San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*)					X	
Sandstone Night Lizard (*Xantusia henshawi gracilis*)	--/CSC			X		
Silvery Legless Lizard (*Anniella pulchra pulchra*)	--/CSC	Loose sand for burrowing		X	X	
Sonoran Mud Turtle (*Kinosternon sonoriense*)	--/CSC	Streams and ponds	X			
FISH						
Bonytail Chub (*Gila elegans*)	FE/CE		X			
Desert Pupfish (*Cyprinodon macularius*)	FE/CE		X	X	X	X
Speckled Dace (*Rhinichthys osculus)*	-/CSC		X			
Colorado Pikeminnow (*Ptychocheilus locius)*	FE/CE	Favored in deep, slow moving water. Now extirpated from Colorado River	X			
Mohave Tui Chub (*Gila bicolor mohavensis*)	FE/CE		X			
Razorback Sucker (*Xyrauchen texanus*)	FE/CE		X			X
BIRDS						
Aleutian Canada Goose (*Branta canadensis leucopareia*)	FT/—	Very rare in Southern California		X		

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
BIRDS						
American Peregrine Falcon (*Falco peregrinus anatum*)	--/CE (Federally delisted in 1999)	Widely distributed, but scarce in desert habitats	X	X	X	X
Double Crested Cormorant (*Phalacrocorax auritus)*	--/CSC					X
American White Pelican (*Pelecanus erythrorhynchos*)	--/CSC	Shallow-water lakes	X	X	X	X
Arizona Bell's Vireo (*Vireo bellii arizonae*)	--/CE	Dense riparian habitat; Lower Portion of the Colorado River south of Needles	X			X
Bald Eagle (*Haliaeetus leucocephalus)*	FT/CE	Large lakes and reservoirs	X	X	X	
Black Skimmer (*Rhinchops niger)* (*Rynchops niger*)	--/CSC	Breeds on low sandbars and dikes Forages over shallow water		X		
Black Tern (*Chlidonias niger*)	--/CSC	Freshwater ponds, marshes, and flooded agricultural fields		X		X
Black-Tailed Gnatcatcher (*Polioptila melanura*)	--/CSC	Coastal sage scrub		X	X	
Burrowing Owl (*Athene cunicularia*)	--/CSC	Flat grasslands, agricultural fields	X		X	X
California Black Rail (*Laterallus jamaicensis coturniculus*)	--/CT	Cattail and bulrush marshes	X	X	X	X
California Brown Pelican (*Pelecanus occidentalis californicus*)	FE/CE	Significant numbers at the Salton Sea, especially in summer. Some recent breeding	X	X	X	
California Least Tern (*Sterna antillarum browni*)	FE/CE	Ponds		X		X
Cooper's Hawk (*Accipiter cooperii*)	--/CSC	Riparian woodlands, especially near water	X	X	X	X

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
BIRDS						
Crissal Thrasher (*Toxostoma crissale*)	--/CSC	Dense desert scrub, mesquite			X	X
Double-Crested Cormorant (*Phalacrocorax auritus*)	--/CSC	Nesting colonies only		X		X
Elf Owl (*Micrathene whitneyi*)	--/CE	Desert oases, springs. Very rare in California	X			X
Ferruginous Hawk (*Buteo regalis*)	--/CSC	Grasslands, plains, valleys, and agricultural lands	X		X	X
Fulvous Whistling Duck (*Dendrocygna bicolor*)	--/CSC	Freshwater lakes, ponds, and rivers	X	X		X
Gila Woodpecker (*Melanerpes uropygialis*)	--/CE	Saguaro, date palm, cottonwood forests	X			X
Golden Eagle (*Aquila chrysaetos)*	-/CSC	Nesting habitat includes trees and cliffs. Range includes grasslands, valleys, meadowlands; all open areas.	x			
Gilded Flicker (*Colaptes auratus*)	--/CE	Joshua Trees, riparian woodlands	X			X
Gray Vireo (*Vireo vicinior*)	--/CSC	Juniper, dry chaparral			X	
Great Blue Heron (*Ardea herodias*)	CDFG sensitive	Rookeries only	X	X	X	X
Great Egret (*Casmerodius albus*)	CDFG sensitive	Rookeries only	X	X	X	X
Greater Sandhill Crane (*Grus canadensis tabida*)	--/CT	Agricultural land, grain and stubble fields				X
Gull-Billed Tern (*Sterna nilotica vanrossemi*)	--/CSC	Shorelines, agricultural lands		X		X
Harris' Hawk (*Parabuteo unicinctus*)	--/CSC	Cottonwood forests, mesquite, saguaro cactus	X			X

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
BIRDS						
Large-Billed Savannah Sparrow (*Passerculus sandwichensis rostratus*)	--/CSC	Tamarisk scrub bordering canals and Salton Sea	X	X		X
Least Bell's Vireo (*Vireo bellii pusillus*)	FE/CE	Dense riparian			X	X
Le Conte's Thrasher (*Toxostoma lecontei*)	--/CSC	Widespread in desert habitats exclusive of agricultural land			X	X
Loggerhead Shrike (*Lanius ludovicianus*)	--/CSC	Oases, desert scrub, Joshua Trees, open mesquite fields	X	X	X	X
Long-Billed Curlew (*Numenius americanus*)	--/CSC	Shorelines, ponds, and agricultural land		X	X	X
Long-Eared Owl (*Asio otus*)	--/CSC	Dense stands of trees, such as tamarisk	X		X	X
Merlin (*Falco columbarius)*	--/CSC	Various habitats, especially near water	X		X	X
Mountain Plover (*Charadrius montanus*)	FPT/CSC	Plains, hills, agricultural land	X		X	X
Northern Harrier (*Circus cyaneus*)	--/CSC	Savannas, grasslands, agricultural areas	X	X	X	X
Osprey (*Pandion haliaetus*)	--/CSC	Lakes, rivers	X	X	X	X
Prairie Falcon (*Falco mexicanus*)	--/CSC	Widespread throughout desert areas	X	X	X	X
Purple Martin (*Progne subis*)	--/CSC	Rare, probably only transients				X
Sharp-Shinned Hawk (*Accipiter striatus*)	--/CSC	Woodlands	X	X	X	X
Short-Eared Owl (*Asio flammeus*)	--/CSC	Marshes, grasslands, agricultural land	X		X	X

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
BIRDS						
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	FE/CE	Dense willow riparian, tamarisk	X		X	X
Summer Tanager (*Piranga rubra*)	--/CSC	Cottonwoods, tamarisks, oases	X		X	X
Swainson's Hawk (*Buteo swainsoni*)	--/CT	Savannas, agricultural land, Joshua Trees	X		X	X
Western Least Bittern (*Ixobrychus exilis*)	--/CSC	Densely vegetated freshwater marshes	X	X	X	X
Western Snowy Plover (inland population) (*Charadrius alexandrinus nivosus*)	--/CSC	Alkaline flats and shorelines	X	X	X	X
Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)	--/CE	Dense riparian areas	X		X	X
White-Faced Ibis (*Plegadis chihi*)	--/CSC	Marshes, flooded agricultural fields	X	X	X	X
White-tailed Kite (*Elanus leucurus*)	--/CFP	Grasslands, savannas			X	X
Wood Stork (*Mycteria americana*)	--/CSC	Sloughs, lagoons, and marshes		X		X
Yellow Warbler (*Dendroica petechia brewsteri*)	--/CSC	Riparian habitat		X	X	X
Yellow-breasted Chat (*Icteria virens*)	--/CSC	Dense riparian		X	X	X
Yuma Clapper Rail (*Rallus longirostris yumanensis*)	FE/CT	Marshes	X	X	X	X
MAMMALS						
Big Free-Tailed Bat (*Nyctinomops [=Tadarida] macrotis*)	--/CSC	Upper Sonoran		X		X

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
MAMMALS						
California Leaf-Nosed Bat (*Macrotus californicus*)	--/CSC	Hottest parts of Lower Sonoran Zone	X	X		X
Colorado River Cotton Rat (*Sigmodon arizonae plenus*)	--/CSC		X			X
Greater Western Mastiff Bat (*Eumops perotis*)	--/CSC	Arid and semi-arid lowlands	X	X		X
Jacumba Little Pocket Mouse (*Perognathus longimembris internationalis*)	--/CSC	Sandy soils, Lower Sonoran Zone		X		
Jaguar (*Felis onca arizonensis*)	FE			X		
Mexican Long-Tongued Bat (*Choeronycteris mexicana*)	--/CSC	Sonoran Zone		X		X
Occult Little Brown Bat (*Myotis [lucifugus] occultus*)	--/CSC	Lower Sonoran Zone	X	X		X
Pale Townsend's Big-Eared Bat (*Plecotus townsendii pallescens*)	--/CSC	Sonoran Zone	X	X		X
Pale Western Big-eared Bat (*Corynorhinus townsendii pallesaens*)	SC			X		
Pallid Bat (*Antrozous pallidus*)	--/CSC	Sonoran Zone		X		X
Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*)	SC			X		
Palm Springs Ground Squirrel (*Spermophilus tereticaudis chlorus)*	CSC				X	
Palm Springs Pocket Mouse (*Perognathus longimembris bangsi*)	--/CSC	Lower Sonoran Zone		X	X	
Peninsular Big Horned Sheep (*Ovis canadensis cremnobates*)	FE/CE	Mountain ranges; occasional movement into valleys		X	X	X

Table E-1. Sensitive Wildlife Species Occurring within the Project Area

Common Name (Scientific Name)	*Status Federal/ California/ Other*	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
MAMMALS						
Pocketed Free-Tailed Bat (*Tadarida femorosacca*)	--/CSC	Lower Sonoran Zone		X		X
San Bernardino Northern Flying Squirrel (*Glaucomys sabrinus californicus*)	SC			X		
Southern Grasshopper Mouse (*Onychomys torridus ramona*)	--/CSC	Valley grasslands, Lower Sonoran Zone		X		
Southwestern Cave Myotis (*Myotis velifer brius*)	SC			X		
Spotted Bat (*Euderma maculatum*)	--/CSC	Rare—Sonoran and Transition Zones	X	X		X
Western Small-Footed Myotis (*Myotis ciliolabrum*)	SC			X		
Yuma Hispid Cotton Rat (*Sigmodon hispidus eremicus*)	--/CSC	Cattail marshes, Lower Colorado River	X	X		
Yuma Myotis (*Myotis yumanensis*)	--/CSC	Open woods	X			X
Yuma Puma (*Felis concolor browni*)	SC			X		

Notes: Abbreviations are as follows:
E = Endangered, in immediate danger of extinction
T = Threatened, likely to become endangered
SC = Species of Concern
NP = Nevada Protected
FS = U.S. Forest Service Sensitive
BLM = Bureau of Land Management Sensitive
LCR (Lower Colorado River) information as provided in the Lower Colorado River Multispecies Conservation Program.
Salton Sea information as provided in the Salton Sea Restoration Draft EIS/EIR
CVWD (Coachella Valley Water District) information as provided in Biological Analysis of Three Conservation Alternatives for the Coachella Valley Multiple Species HCP/NCCP (Dec. 1999).
IID (Imperial Irrigation District) information as provided in IID HCP Table 1.
Status information from the above sources or CNDDB January 2000 list.
MWD (Metropolitan Water District) and SDCWA (San Diego County Water Agency) are not included because no project effects are anticipated in those areas.

TableE-2. Special Status Plant Species Occurring within the Project Area

Common Name/ Scientific Name	*Status* Federal/California/ CNPS	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
Abram's Spurge (*Chamaesyce abramsiana*)	-/-/2	Mohavean Desert Scrub, Sandy Areas in Sonoran Desert Scrub				X
Algodones Dunes Sunflower (*Helianthus niveus* ssp. *tephrodes*	-/E/1B	Desert Dunes	X	X		X
Ayenia (*Ayenia compacta*)	-/-/2	Mohavean Desert Scrub, Rocky Areas in Soronan Desert Scrub			X	
Brown Turbans (*Malperia tenuis*)	-/-/2	Sandy Areas in Sonoran Desert Scrub				X
Chaparral Sand-Verbena (*Abronia villosa* var. *aurita*)	-/-/1B	Sandy Areas in Chaparral and Coastal Scrub			X	
Cliff Spurge (*Euphorbia misera*)	-/-/2	Coastal Bluff Scrub, Rocky Areas			X	
Coachella Valley Milkvetch (*Astragalus lentiginosus* var. *coachellae*)	E/-/1B	Sandy Areas in Sonoran Desert Scrub		X	X	
Cove's Cassia (*Senna covesii*)	-/-/2	Sandy Areas in Sonoran Desert Scrub			X	
Creamy Blazing Star (*Mentzelia tridentata*)	-/-/1B	Mohavean Desert Scrub			X	
Crucifixion Thorn (*Castela emoryi*)	-/-/2	Mohavean Desert Scrub, Playas, and Gravelly Areas in Sonoran Desert Scrub				X
Deep Canyon Snapdragon (*Antirrhinum cyathiferum*)	-/-/2	Rocky Areas in Soronan Desert Scrub			X	
Elephant Tree (*Bursera microphylla*)	-/-/2	Rocky Areas in Sonoran Desert Scrub			X	
Fairyduster (*Calliandra eriophylla*)	-/-/2	Sandy and Rocky Areas in Sonoran Desert Scrub				X
Flat-Seeded Spurge (*Chamaesyce platysperma*)	-/-/1B	Desert Dunes and Sandy Areas in Sonoran Desert Scrub		X	X	X
Foxtail Cactus (*Escobaria vivipara* var. *alversonii*)	-/-/- Arizona salvage-restricted, protected native plant	Mohavean Desert Scrub, Sonoran Desert Scrub	X	X		X
Gander's Cryptantha (*Cryptantha ganderi*)	-/-/1B	Desert Dunes, Sonoran Desert Scrub		X		
Giant Spanish Needle (*Palafoxia arida* var. *gigantea*)	-/-/1B	Desert Dunes	X	X		X

TableE-2. Special Status Plant Species Occurring within the Project Area

Common Name/ Scientific Name	*Status* Federal/California/ CNPS	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
Glandular Ditaxis (*Ditaxis clariana*)	-/-/2	Mohavean Desert Scrub, Sandy Areas in Sonoran Desert Scrub			X	X
Grand Canyon Evening-Primrose (*Camissonia specuicola* ssp. *hesperia*)	No official status	Washes and Dry Stream Beds, not known from California	X			
Hairy Evening-Primrose (*Camissonia boothii* ssp. *intermedia*)	-/-/2	Sandy Areas in Sonoran Desert Scrub		X	X	
Hairy Stickleaf (*Mentzelia hirsutissima*)	-/-/2	Rocky Areas in Sonoran Desert Scrub				X
Hardwood's Milk-Vetch (*Astragalus insularis* var. *harwoodii*)	-/-/2	Desert Dunes		X		X
Little San Bernardino Mountain Gilia (*Gilia maculata*)	-/-/1B	Desert Dunes, Joshua Tree Woodland, Mohavean Desert Scrub, and Sandy Areas in Sonoran Desert Scrub		X	X	
Mecca Aster (*Xylorhiza cognata*)	-/-/1B	Sonoran Desert Scrub		X	X	
Munz's Cactus (*Opuntia munzii*)	-/-/1B	Sandy or Gravelly Areas in Sonoran Desert Scrub		X		X
Orcutt's Woody-Aster (*Xylorhiza orcuttii*)	-/-/1B	Sonoran Desert Scrub		X	X	X
Orocopia Sage (*Salvia greatae*)	-/-/1B	Mohavean Desert Scrub, Sonoran Desert Scrub		X	X	X
Peirson's Milkvetch (*Astragalus magdalenae* var. *peirsonii*)	T/E/1B	Desert Dunes		X		X
Peirson's Pincushion (*Chaenactis carpholinia* var. *peirsonii*)	-/-/1B	Sandy Areas in Sonoran Desert Scrub			X	
Purple Stemodia (*Stemodia durantifolia*)	-/-/2	Sandy Areas in Sonoran Desert Scrub			X	
Rock Nettle (*Eucnide rupestris*)	-/-/2	Sonoran Desert Scrub				X
Sand Food (*Pholisma sonorae*)	-/-/1B Arizona highly safe-guarded, protected native plant	Desert Dunes	X	X		X

TableE-2. Special Status Plant Species Occurring within the Project Area

Common Name/ Scientific Name	*Status* Federal/California/ CNPS	*Notes on Habitat and Occurrence*	*LCR*	*Salton Sea*	*CVWD*	*IID*
Shaggy-Haired Alumroot (*Huechera hirsutissima*)	-/-/1B	Subalpine Coniferous Forest, Rocky Areas in Upper Montane Coniferous Forest			X	
Slender-Stem Bean (*Phaseolus filiformis*)	-/-/2	Sonoran Desert Scrub			X	
Slender Wooly-Heads (*Nemacaulis denudata* var. *gracilis*)	-/-/2	Coastal Dunes, Desert Dunes, Sonoran Desert Scrub		X	X	
Sonoran Maiden Fern (*Thelypteris puberula* var. *sonorensis*)	-/-/2	Meadows			X	
Spearleaf (*Matelea parviflora*)	-/-/2	Mohavean Desert Scrub, Rocky Areas in Sonoran Desert Scrub			X	
Threecorner Milkvetch (*Astragalus geyeri* var. *triquetrus*)	-/-/- Nevada critically endangered	Sandy Soils in Flats, Dunes, Washes, Gullies, and Sandy Valley Floors, not known from California	X			
Triple-Ribbed Milkvetch (*Astragalus tricarinatus*)	E/-/1B	Joshua Tree Woodland, Sandy or Gravel areas in Sonoran Desert Scrub			X	
White-Bracted Spineflower (*Chorizanthe xanti* var. *luecotheca*)	-/-/1B	Mohavean Desert Scrub, Pinyon and Juniper Woodland			X	
Wiggin's Croton (*Croton wigginsii*)	-/R/2	Desert Dunes, Sonoran Desert Scrub		X		X

Notes : Abbreviations are as follows:

E = Endangered, in immediate danger of extinction
T = Threatened, likely to become endangered
R = Categorized as Rare by the State of California
1B = considered rare and endangered throughout its range by CNPS
2 = considered rare and endangered in California by CNPS, but also occurs outside of California

LCR (Lower Colorado River) information as provided in the Lower Colorado River Multispecies Conservation Program.
Salton Sea information as provided in the Salton Sea Restoration Draft EIS/EIR
CVWD (Coachella Valley Water District) information as provided in Biological Analysis of Three Conservation Alternatives for the Coachella Valley Multiple Species HCP/NCCP (Dec. 1999).
IID (Imperial Irrigation District) information as provided in IID HCP Table 1.
MWD (Metropolitan Water District) and SDCWA (San Diego County Water Agency) are not included because no project effects are anticipated in those areas.
Supplementary and updated information for IID, Salton Sea, and CVWD and habitat information from CNPS Electronic Inventory (updated June 2000).