CHAPTER 4

OTHER NEPA CONSIDERATIONS

4.0 OTHER NEPA CONSIDERATIONS

4.1 REGULATORY FRAMEWORK

4.1.1 Federal Statutes and Policies

In compliance with NEPA, this EIS is intended to provide decisionmakers and the public with information regarding the environmental impacts of the proposed action. Project compliance with other environmental laws, rules, and regulations that are applicable to the proposed action is discussed below.

Endangered Species Act of 1973, as amended – Section 7 of the ESA requires Federal agencies to consult with the FWS to ensure that undertaking, funding, permitting, or authorizing an action is not likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat, as defined under the law. Reclamation initiated consultation with FWS in August, 2000 by transmitting the *Final 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)* to FWS and requesting a formal consultation. The BA covered the IA water transfers up to 400 KAFY, as well as adoption of the ISG. FWS issued a Final BO in January, 2001 (a non-jeopardy opinion with reasonable and prudent measures for incidental take). These documents are included in Appendices D and E, respectively, of this EIS. The conservation measures that were developed by Reclamation and modified by FWS to fully reduce the impacts of the proposed water transfers to acceptable levels are included as part of the proposed action in this EIS. The BA and BO cover impacts on the River; any off-River impacts from use of the water are being addressed by HCPs and other plans and programs developed by the water user entities. For example, HCPs (e.g., the CVMSHCP and the San Diego Municipal Habitat Conservation Program) are in preparation and are anticipated to be permitted within the next 3 years (in approximately 2004).

Fish and Wildlife Coordination Act of 1934, as amended – This Act requires coordination with Federal and State wildlife agencies for the purpose of mitigating project-induced losses to wildlife resources. FWS recommendations for mitigating impacts to fish and wildlife resources (other than threatened and endangered species) were requested by Reclamation, but have not yet been received.

National Wildlife Refuge System Administration Act of 1966 (42 U.S.C. 668dd) – This Act provides for the administration and management of the national wildlife refuge system, including wildlife refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas and waterfowl production areas. The biological conservation measures included as part of the proposed action are consistent with the goals of this Act.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 703) – This Act protects migratory birds by limiting the hunting, capturing, selling, purchasing, transporting, importing, exporting, killing, or possession of these birds or their nests or eggs. The specific migratory birds covered are identified in separate agreements between the U.S. and Great Britain, Mexico, and Japan. Subject

to limitations in the Act, the Secretary may adopt regulations determining the extent to which, if at all, hunting, capturing, selling, purchasing, transporting, importing, exporting, killing, or possession of these birds or their nests or eggs will be allowed. No such impacts to migratory birds would result from the proposed action. This aspect of the proposed action, including mitigation alternatives that could reduce impacts to migratory birds, is included in the IID Water Conservation and Transfer Project EIR/EIS.

Migratory Bird Conservation Act of 1929 (16 U.S.C. 715) – This Act, which was passed by Congress in 1929, protects migratory birds by creating the Migratory Bird Conservation Commission. The Commission's purpose is to consider and approve the purchase, rental, or other acquisition of any areas of land or water that may be recommended by the Secretary for the purpose of establishing sanctuaries for migratory birds. The establishment of habitat as part of the proposed biological conservation measures would be consistent with this Act.

Bald Eagle Protection Act of 1940 (16 U.S.C. 4901-4918) – The Bald Eagle Protection Act imposes criminal and civil penalties on anyone in the U.S. or within its jurisdiction who, unless excepted, takes, possesses, sells, purchases, barters, offers to sell or purchase or barter, transports, exports or imports at any time or in any manner a bald or golden eagle, alive or dead; or any part, nest or egg of these eagles; or violates any permit or regulations issued under the Act. If compatible with the preservation of bald and golden eagles, the Secretary may issue regulations authorizing the taking, possession and transportation of these eagles for scientific or exhibition purposes, for religious purposes of Indian Tribes or for the protection of wildlife, agricultural or other interests. No adverse impacts to bald eagles would result from the proposed action; thus, it would be consistent with this Act.

Section 176, Clean Air Act (42 U.S.C. 7506) – The primary objective of the Clean Air Act is to establish Federal standards for air pollutants from stationary and mobile sources and to work with the States to regulate polluting emissions. The Act is designed to improve air quality in areas of the country that do not meet Federal standards and to prevent significant deterioration in areas where air quality exceeds those standards. Most emissions related to the proposed action are expected to be minimal and consistent with the standards established by the Clean Air Act. However, it is possible that mitigated emissions from large construction activities proposed within the SCAB project region could exceed air pollutant thresholds established by the SCAQMD, which would not be consistent with the Act. The potential exists for the IID Water Conservation and Transfer Project to produce significant amounts of windblown dust (PM_{10}) from the exposed shoreline of the Salton Sea. If these emissions were to contribute to an exceedance of a PM_{10} ambient air quality standard, they would not be consistent with this Act.

General Conformity Rule, 40 CFR, Part 51, subpart W – This rule requires that Federal projects or projects receiving Federal funding conform to State Implementation Plans developed for the purpose of reaching attainment of national ambient air quality standards. Section 3.11 of this EIS provides an analysis of compliance with the General Conformity Rule.

Clean Water Act of 1972, as amended – Section 404 of the Clean Water Act identifies conditions under which a permit is required for construction projects that result in the discharge of fill or dredged materials into waters of the U.S. Construction activities associated with implementation of the proposed action, including implementation of biological conservation

measures may require a permit under Section 404, depending on the location and nature of the construction.

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 U.S. as described by the USACE section 10/404 implementing regulations at 33 CFR Part 329. The Act also prohibits unauthorized construction in navigable waters of the U.S. Reclamation will comply with this order, as necessary, for implementation of the biological conservation measures.

National Historic Preservation Act of 1966, as amended – Federally funded undertakings that have the potential to impact historic properties are subject to Section 106 of the NHPA. Under this Act, Federal agencies are responsible for the identification, management, and nomination to the National Register of Historic Places of cultural resources that would be impacted by Federal actions. Reclamation's compliance with this Act is described in section 3.9.

American Indian Religious Freedom Act (42 U.S.C. 1996) – The American Indian Religious Freedom Act establishes as U.S. policy, the protection and preservation for American Indians of their inherent right to freely believe, express, and practice their traditional religions, which includes, but is not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites. Federal agencies are required to make a good faith effort to learn about Indian religious practices, consult with Indian leaders and religious practitioners and consider any adverse impacts on Indian religious practices during decision making. Implementation of the proposed IA, IOP, and biological conservation measures would not conflict with these requirements.

Native American Graves Protection and Repatriation Act (24 U.S.C. 3001) – Native American Graves Protection and Repatriation Act assigns ownership to Native Americans of human burials and associated grave goods, which are excavated or discovered on Federal or tribal lands. It requires federally sponsored museums to conduct inventories of their collections, and requires a 30-day delay in project work when human remains are discovered on Federal lands. Implementation of the IA and IOP have no potential to disturb human remains or associated grave goods. Further review for compliance of the biological conservation measures would occur prior to their implementation.

Antiquities Act (16 U.S.C. 431) – The Antiquities Act of 1906 provides for the protection of historic and prehistoric remains or any object of antiquity on Federal lands; establishes criminal penalties for unauthorized destruction or appropriation of antiquities; and authorizes scientific investigation of antiquities on Federal land, subject to permit and regulations. The proposed Federal action would be in compliance with this Act.

Archaeological Resources Protection Act (16 U.S.C. 470) – The Archaeological Resources Policy Act of 1979 provides for the protection of archaeological resources on public and Indian lands. Protection of archaeological resources, under the guidelines of this Act, includes consideration of excavation and removal of resources, enforcement of the Act, and confidentiality of information concerning the nature and location of archaeological resources. It also provides substantial criminal and civil penalties for those who violate the terms of the Act. The proposed Federal action would be in compliance with this Act.

Farmland Protection Policy Act of 1981 – The purpose of the Farmland Protection Policy Act is to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also stipulates that Federal programs be compatible with State, local, and private efforts to protect farmland. There is a potential for agricultural land to be converted to habitat under the proposed biological conservation measures. IID's water conservation actions include the possibility of fallowing farmland. No other aspects of the proposed action would result in the loss of farmland or the removal of farmland from protection.

Executive Order 11988, Floodplain Management, May 24, 1977 – This Executive Order requires avoiding or minimizing harm associated with the occupancy or modification of a floodplain. The proposed action would involve the creation of backwaters or habitat within the historic floodplain of the lower portion of the Colorado River. No other sites would be biologically suitable for mitigating potential impacts from the IA to threatened and endangered species, and the type of mitigation proposed would not adversely impact the functions of the floodplain.

Executive Order 11990, Protection of Wetlands, May 24, 1977 – This Executive Order provides for protection of wetlands through avoidance or minimization of adverse impacts. As discussed in section 3.2, Biological Resources, the IA has the potential to adversely impact wetlands, although the biological conservation measures identified in this EIS would effectively minimize these impacts.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994 – This order directs agencies to identify and address, as appropriate, disproportionately high and adverse human health and environmental impacts of their programs, policies, and activities on minority and low-income populations. As noted in section 3.8 of this EIS, a potential economic impact could occur if the reduction in power generation at Headgate results in a need for BIA to purchase power on the open market to meet tribal energy demands, and the open market power cost results in higher rates charged by BIA to the Tribes. An analysis of potential effects related to local actions that would be generated by non-Federal entities in California that could occur in the IID and Salton Sea areas identified two possible disproportionate effects – one to low-income and minority farm workers that could be displaced by fallowing by IID, and potential disproportionate impacts to Hispanic populations near the Salton Sea and within the Salton Sea Air Basin from windblown dust from exposed Salton Sea sediments.

Executive Order 13007, Sacred Sites, 1996 – This order requires all Executive Branch agencies that have responsibility for the management of Federal lands will, where practicable, permitted by law, and not clearly inconsistent with essential agency functions, provide access to Indian sacred sites for ceremonial use by Indian religious practitioners and will avoid adversely impacting the integrity of these sites. When possible, Federal agencies must also maintain the confidentiality of sacred sites. Implementation of the IA, IOP, and biological conservation measures would not conflict with the requirements of this Act.

4.2 CUMULATIVE IMPACTS

The Council on Environmental Quality's regulations (40 CFR § 1500-1508) implementing the procedural provisions of NEPA define cumulative impacts as the following:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

Cumulative impacts refer to two or more individual impacts that, when considered together, are significant or that compound or increase other environmental impacts. Cumulative impacts can be categorized as additive and interactive. An additive impact results from additions from one kind of source either through time or space. An interactive impact results from more than one kind of source.

This section addresses the cumulative impacts of the proposed action combined with other regional water supply or closely related projects in the region. A list approach was used to identify these closely related projects that could result in cumulatively significant impacts. These projects are briefly described below.

4.2.1 Projects Considered in the Cumulative Impact Analysis

Numerous past, present, and reasonably foreseeable projects have been identified due to the large geographic area considered in this EIS. This EIS, however, addresses only those projects that have the potential to contribute to a cumulative impact when combined with the proposed action. The projects considered for cumulative analysis in this EIS are as follows.

Interim Surplus Guidelines

Project Description

As discussed in section 1.2.3, in February, 2001 Reclamation implemented the ISG (formerly referred to as Interim Surplus Criteria), which identify when the Secretary may make Colorado River water available for delivery to the States of Arizona, California, and Nevada in excess of the normal 7.5 MAFY apportionment. These guidelines, which define when surplus water is available for a period of 15 years, were adopted pursuant to Article III(3)(b) of the *Criteria for Coordinated Long-Range Operation of the Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1968* (LROC). The ISG will be in effect through calendar year 2015, for determinations made for calendar year 2016 and applied each year as part of the AOP. The guidelines will be able to afford mainstream 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 Lake Mead surplus determination in a given year. The guidelines will facilitate California's transition to a reduced supply of Colorado River water. A Final EIS has been released that assesses the impacts of these guidelines (USBR 2000) and a ROD has been approved (*Federal Register*, Vol. 66, No. 17, January 25, 2001, Notices).

The ISG is critical to the overall implementation of the IA and QSA since the ISG define the process by which surplus water can be used to partially offset the impact of the reduction of California's use of Colorado River water to the States' normal year level. Implementation of the IA and QSA are critical, as the ISG will stay effective only if the QSA and associate agreements

are executed by December 31, 2002, and/or California meets the "benchmark" reductions in Colorado River water use as specified in the ROD. It is anticipated that once the ISG period is completed, California will be able to limit the States' use of Colorado River water to its apportionment of 4.4 MAFY in a normal year without the benefit of special surplus criteria.

With the implementation of the ISG, California has a higher probability of receiving Colorado River water in excess of the State's 4.4 MAF normal year apportionment from 2001 to 2015. After 2016, the likelihood of surplus water being available would be diminished (USBR 2000b). By this time, however, most IA and QSA components would be in place, and the impacted agencies would likely have the capabilities to meet customer water demands within California's allocation of 4.4 MAF.

Environmental Impacts

A ROD was signed in January 2001, and the ISG became effective on February 25, 2001. Reclamation determined that the small changes in probabilities of occurrence of flows that could impact some resources are within Reclamation's current operational regime and authorities under Federal law. Specific mitigation measures were identified for threatened and endangered species (razorback sucker and other native fish) through the 2000 BA, which also addressed the IA water transfers.

Lower Colorado River Multi-Species Conservation Program

Project Description

The MSCP is described in section 1.5. The IA is one of the projects whose impacts to the lower portion of the Colorado River is covered by the MSCP.

Environmental Impacts

An EIS/EIR and BA are being prepared to analyze the impacts of the program. Reclamation and FWS are the lead agencies under NEPA, and MWD is the lead agency under CEQA.

The MSCP is intended to have a beneficial impact on habitat along the lower portion of the Colorado River. Although impacts from the MSCP are yet to be identified, it is likely that most impacts will consist of short-term, localized construction impacts, which may include impacts to air quality, noise, water quality, geology and soils, and biological resources. Long-term impacts may include the removal of agricultural land from production and impacts to cultural resources, depending on the location of the sites selected for restoration. The MSCP was not included in the cumulative impact modeling analysis because none of the conceptual 'covered' projects are proposed and considered reasonably foreseeable from a NEPA perspective.

Palo Verde Irrigation District Land Management, Crop Rotation and Water Supply Program

Project Description

This program is described in section 1.5.

Environmental Impacts

A Draft EIR assessing the impacts of this program was released by PVID in May 2002, and a Final EIR was issued in September 2002. The PVID Board filed a Notice of Determination on September 18, 2002. Environmental impacts include long-term changes associated with hydrology, water supply, and socioeconomics. This program would require the change in point of diversion of Colorado River water of up to 111 KAFY from Palo Verde Diversion Dam to Lake Havasu, resulting in less flow in the reach from Parker Dam to Palo Verde Diversion Dam. These impacts could be additive to the water transfers described in this EIS, or could substitute for a portion of the transfers if they are not fully implemented. Reclamation's cumulative analysis of River impacts (Tables 4.2-1 and 4.2-2) included this transfer. The Palo Verde Valley has no hydrologic connection to the Salton Sea and thus a decrease in water applied to the PVID service area would not impact inflow to the Sea (personal communication, Jan Matusak, MWD, December 10, 2002).

All-American Canal Lining

Project Description

This project is described in general terms in sections 1.5 and 1.6. IID obtains water from the 82-mile long AAC, which diverts water from the Colorado River at Imperial Dam. The preferred alternative 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 one 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. Operation and maintenance roads would be 20 feet wide to match existing canal roads.

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 three years.

A variety of mitigation measures have been incorporated into the project, including establishing 43 acres of honey mesquite and cottonwood/willow and one acre of marsh, restoring shelter for juvenile fish by constructing artificial reefs in the canal, replacing and protecting habitat for special status species and to help maintain the fishery for recreational fishing, and avoiding cultural resources sites where feasible.

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. Pending final design, the canal lining project could reduce the regulatory storage capacity.

Environmental Impacts

A Final EIS/EIR for the All-American Canal Lining Project was released in March 1994. Environmental impacts were identified in the following areas: groundwater, water quality, biological resources (wetland habitat including wetlands along the canal and along the impacted reach of the Colorado River, terrestrial habitat, and special status species), canal fisheries, air quality, cultural resources, hydroelectric power, and socioeconomics. A ROD was prepared and signed by the Lower Colorado Region's Regional Director on July 29,1994. On November 22, 1999, Reclamation determined that the EIS and ROD continued to meet the requirements of NEPA.

Coachella Canal Lining Project

Project Description

This project is discussed in general terms in sections 1.5 and 1.6. CVWD obtains water from the 122-mile long Coachella Canal, which diverts water from the AAC. The preferred alternative identified in the Final EIS/EIR for the Coachella Canal Lining Project (USBR and CVWD 2001) 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 siphon 15 and 32, a distance of approximately 33 miles.

Other land disturbances associated with construction would include a 10-acre concrete batch plant and one 5-acre staging area. Existing, unpaved roads would be used for construction activities. Actual construction would take two years. The lined canal would continue to be operated on a year-round basis.

Environmental Impacts

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, the FEIR was certified by CVWD in May 2001, and a ROD was signed March 27, 2002. Environmental impacts were identified in the following areas: biological resources (including marsh/aquatic, desert riparian, and terrestrial habitat, along with special status species), large mammal escape, canal fisheries, cultural resources, and air quality.

Rule for Offstream Storage

Proposed Project

This project is described in section 1.2.3.

Environmental Impacts

Impacts of this rule were assessed at a programmatic level in an EA. No significant environmental impacts requiring mitigation were identified, although Reclamation will conduct the appropriate project level of NEPA analysis to identify potential impacts associated with all specific SIRAs when they are presented to the Secretary. As described in section 1.5.2, Reclamation, AWBA, SNWA, and CRC are in the process of executing a SIRA for storage of 1.2

MAF of Colorado River water for the benefit of SNWA. Reclamation and SNWA completed the EA for the SIRA in June 2002 and a Finding of No Significant Impact was completed by Reclamation on June 6, 2002.

Any agreement for offstream storage would require 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 flows. For example, in the event that MWD and AWBA enter into an agreement for offstream storage, there would be changes in points of diversion from or to the MWD facilities to the CAWCD facilities, although, as both are located in Lake Havasu, there would not be a reduction in River flows. Under the SIRA for the benefit of SNWA, there would be changes in points of diversion from or to Lake Mead and Lake Havasu, respectively, and a subsequent increase or reduction in river flows between Hoover Dam and Lake Havasu. Arizona State law has established a cumulative annual maximum of 100 KAF of recovery for the States of California and Nevada. Currently, the AWBA is believed to be the only storing entity in prospective offstream storage agreements involving entities in Arizona, California, and Nevada.

Colorado River Basin Salinity Control Program

Project Description

This project is described in section 1.5.2.

Environmental Impacts

To achieve future reduction goals, a variety of salinity control methods are being investigated. Environmental impacts would depend on the methods implemented and site locations. Existing salinity control measures under this program will prevent over a half-million ton of salt per year from reaching the River (DOI 1999).

Coachella Valley Water Management Plan (Non-IA/QSA Part)

Project Description

CVWD prepared the CVWMP (CVWD 2000) to provide an overall program of managing its surface and groundwater resources in the future. The objectives of this plan include eliminating groundwater overdraft and its associated adverse impacts, such as groundwater storage reduction, declining groundwater levels, land subsidence and water quality degradation and maximizing conjunctive use opportunities.

The overall plan 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) and various recycling and conservation measures to reuse or decrease the consumption of water. The impacts of the overall CVWMP were addressed in a PEIR (CVWD 2002). A substantial portion of the additional water to be used from the Colorado River is associated with the implementation of the IA and QSA. Other elements of the CVWMP are not dependent upon the implementation of the IA/QSA and are described below. Water would be gained through non-QSA/IA related activities of the CVWMP, 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 treatment of water 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 IA and QSA. This includes a potential transfer of up to 100 KAFY of SWP water.

Environmental Impacts

A Notice of Preparation (NOP) was originally filed with the State Clearinghouse in November 1995. A revised NOP was issued in March 2000 to incorporate the changes to the project brought about by the Colorado River allocation negotiations. The Draft PEIR was released in June 2002, and the Final PEIR was issued in September 2002. The CVWD Board certified the document in October 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 might include impacts to biological resources, air quality, transportation, and noise. Other impacts could include increased agricultural return flows and decreased water quality to drains that empty into the Salton Sea from the Coachella Valley, increased salinity in the groundwater, and impacts to biological and cultural resources.

Salton Sea Restoration Project

Project Description

This project is described in section 1.5.2.

Environmental Impacts

A draft EIR/EIS was issued in January 2000 (USBR and SSA 2000), which evaluated alternative methods of restoring the Salton Sea. A revised alternatives document and modeling and impact analyses are currently being prepared. The document is currently scheduled to come out in November 2002.

Total Maximum Daily Load Program

Project Description

Pursuant to the requirements of the Clean Water Act, the Colorado River Regional Board identified and ranked "impaired waterbodies" for which TMDLs need to be established. The Board will 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 Salton Sea and its tributaries (i.e., New River, Alamo River, Imperial Valley drains, Palo Verde outfall drain, CVSC) as quality limited waters. The Salton Sea Watershed has also been identified as a priority watershed.

Environmental Impacts

Implementation of the TMDLs is expected to improve the quality of the individual water quality limited waterbodies and the Salton Sea.

Brawley, California Constructed Wetlands Demonstration Project

Project Description

This project is described in section 1.5.2.

Environmental Impacts

Implementation of this project would improve the quality of flow to the Salton Sea from the Imperial Valley. Both wetlands are designed to remove silt from inflows passing through a sedimentation basin and reduce nutrient loads, pesticide/herbicide toxicity, and selenium concentrations as water flows through a series of shallow ponds. Wetlands can remove significant amounts of nitrogen (up to 80 or 90 percent) and less phosphorus (on the order of 30 to 40 percent).

4.2.2 Cumulative Impacts by Resource

Hydrology/Water Quality/Water Supply

As discussed in section 3.1.2, several hydrologic operational scenarios were modeled to evaluate changes to the Colorado River system resulting from implementation of the IA, ISG, and other future actions. Specific to the cumulative analysis were the following scenarios:

- Baseline for Cumulative Analysis (the future assuming that neither the ISG nor water transfers per the IA take place); and
- Cumulative Analysis (the future assuming that the ISG, IA water transfers, and the PVID Land Management, Crop Rotation, and Water Supply Program [PVID Program] take place).

Comparison of the "Baseline for Cumulative Analysis" to the "Cumulative Analysis" scenario will provide a means to evaluate cumulative impacts from past, present, and future actions. Specifically, this comparison will measure the relative impact of the IA, ISG, and the PVID Program. In the following discussions about hydrologic changes, whenever possible changes due to the ISG versus the IA, versus PVID Program actions are differentiated.

Like the proposed action, the Rule for Offstream Storage could impact both flows and reservoir levels within the Colorado River from Lake Powell to the SIB. The exact impacts would depend on the amounts of transferred water and the location of the diversion points impacted. Reclamation analyzed the potential effects of offstream storage and development and release of ICUA on water surface elevations in the riverine reaches and reservoirs of the Lower Colorado River for the proposed storage and interstate release agreement referenced in section 1.2.3. That analysis is included in the EA for the Agreement dated February 17, 2002, that was prepared for the storage and interstate release agreement, and assumes Arizona's or Nevada's unused basic

and/or surplus apportionments would be delivered from Lake Mead downstream to Lake Havasu for diversion by CAP intakes, conveyed through CAP facilities, and stored offstream by AWBA. This storing action for the benefit of SNWA would have the same effect on the river as if Arizona was diverting water from Lake Havasu for direct use or storing water for intrastate purposes. The EA released February 17, 2002 for the storage and interstate release agreement states there would be no change in water surface elevations of Lake Mead or the river reaches between Hoover Dam and Lake Havasu. Storage of a maximum of 200 KAFY would be equivalent to a maximum of 0.78 foot of water in Lake Mead. This amount of water released from Hoover Dam and delivered downstream to Lake Havasu for storage in Arizona would be equivalent to the following maximum increments of water in the flow column: 0.24 foot below Hoover Dam, 0.34 foot at Willow Beach, and 0.24 foot at Topock Gorge. The storing action will not change or affect the water surface elevations of Lake Mohave or Lake Havasu as their operational levels are controlled. The storing action would be within normal operating ranges for reservoirs and river reaches. To develop ICUA in the future, Arizona would reduce its order of Colorado River water by the amount requested by Nevada, and that amount would remain in Lake Mead for diversion by SNWA facilities. No change in reservoir operation is needed to develop Arizona ICUA for delivery to SNWA. The ICUA would be within reservoir capacity and would be diverted by SNWA or delivered downstream. Retrieval of the maximum of 100 KAFY of ICUA, from Lake Mead would be equivalent to 0.05 foot of reservoir water. When an amount of ICUA is diverted by SNWA facilities at Lake Mead, there would be an equivalent decrease in flows below Hoover Dam to Lake Havasu. The corresponding maximum decrease in water surface elevation of the river would be 0.12 foot below Hoover Dam, 0.17 foot at Willow Beach, and 0.12 foot at Topock Gorge. The action of retrieving ICUA will not change or affect the water surface elevations of Lake Mohave or Lake Havasu as their operational levels are controlled. This action would be within normal operating ranges for reservoirs and river reaches. The small increments of water nor the decreases in water surface elevations below Hoover Dam are not significant effects on the environment. The FEIS for the ISG and this EIS analyzed proposed depletion schedules that simulate the Colorado River water demands for the Lower Division States during the period of offstream storage from 2002-2016.

Surplus water used to store water offstream for SNWA could cause a minor reduction in the quantity of flood control releases that otherwise might reach Mexico. Reclamation's FPEA for the offstream storage rule, dated November 1999, notes that flood control releases that reach Mexico are in excess of U.S. needs, reflect regional climatic conditions, and are not a guaranteed or dependable water supply below the international boundary. Computer modeling conducted as part of the environmental compliance for the rule projected that offstream storage of 1.2 MAF of water over a 12-year storage period would reduce the average annual quantity of flood control releases available to Mexico by 23 KAFY from 1999-2015. Reclamation does not consider this to be a significant effect on excess flows to Mexico. Modeling for the ISG for the period 2002-2016 indicate the occurrence of excess flows exceeding 250 KAF in any year is 24.5 percent for baseline conditions (one year in four), and 21.3 percent (one year in five) for the ISG period. The Arizona and Nevada apportionments that could be stored for interstate purposes were included in this modeling (FEIS for the Colorado River Interim Surplus Criteria, December 2000). Table 4.2-1 and Table 4.2-2 detail the expected combined impacts of the ISG, IA, IOP, and PVID Program, which would be similar, and in addition, to impacts resulting from the Offstream Storage Rule.

Water Quality

In terms of water quality the proposed action could result in higher salinity levels (as much as 1 mg/L) below Hoover Dam and Parker Dam. At Imperial Dam, the IA could result in higher salinity levels, as much as 8 mg/L. Cumulative modeling results show that the combined ISG, IA, and PVID Program would have no significant impact 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.

With implementation of the IA and QSA, IID would undertake conservation actions that have the potential to reduce inflows to the Salton Sea. Depending on how the conservation is accomplished, the impact on inflows from IID could range from essentially no change (all fallowing, with additional fallowing to compensate for reduced inflows) to a reduction of as much as 300 KAFY. Under the maximum impact scenario (300 KAFY conserved and all transferred out of the valley), the reduced inflow would increase salinity to as high as 163,500 mg/L by the end of the 75 year study period, and reduce water surface elevations to about –250 feet over the same period (personal communication, Paul Weghorst, USBR, 12/03/01). The detailed analysis of the full range of IID's conservation alternatives and their impacts on the Salton Sea may be found in the IID Water Conservation and Transfer Project EIR/EIS. In addition to the water conserved for transfer purposes, additional conservation by IID would be required to comply with IID's Priority 3a cap on diversions and the IOP. These actions could have additional effects on reduced inflow to the Salton Sea. The CVWMP could exacerbate these impacts; while the program would increase agricultural return flows, it would decrease water quality to drains emptying into the Salton Sea.

Programs such as TMDL, the SSRP, the Colorado River Basin Salinity Control Program, and Brawley California Wetland Project would act to ameliorate water quality degradation to the Sea, by removing salts from the Sea itself or by limiting the inflow of salts, pesticides and nutrients from agricultural drains.

Within the CVWD service area, recharge with Colorado River water is anticipated to increase salinity of the Upper Valley aquifer and the salinity of groundwater near recharge basins. Recharge using Colorado River water could also introduce perchlorate to CVWD groundwater. Other projects envisioned in the CVWMP could exacerbate these impacts. Programs such as the Colorado River Basin Salinity Control Program would help ameliorate water quality degradation.

Biological Resources

Colorado River

Implementing the cumulative projects would result in a slight lowering of reservoir levels and River levels below Parker Dam. Most of the impacts to aquatic and riparian vegetation would be associated with the IA and would be realized between Parker Dam and Imperial Dam; these

Table 4.2-1. Projected Trends in Reservoir Levels
Baseline for Cumulative Analysis vs. Cumulative Analysis

LAKE POWELL	
	With implementation of the IA, ISG, and PVID actions, Lake Powell water levels would more frequently be lower from year 2002 to year 2025 than under the Baseline for Cumulative Analysis condition. The higher (90th percentile) reservoir levels are similar for both the Cumulative Condition and Baseline for Cumulative. The median (50th percentile) water level of Lake Powell 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 lower water elevations are due primarily to the ISG (USBR 2000b), offset to a minor degree by the impact of the changes anticipated under the IA. When the reservoir is very low (the 10th percentile) under the cumulative analysis condition, the reservoir could be as much as 12 feet lower than would occur under the Baseline for Cumulative Analysis.
LAKE MEAD	
Elevation to Efficiently Produce Electricity *(1083 feet msl)*	Under the Baseline for Cumulative Analysis, during the years 2002 to 2015 there would be a 95 percent probability that elevations in Lake Mead would be greater than that needed to produce electricity. This would decrease to a 56 percent probability after the year 2015. Under the Cumulative Analysis condition the probability that Lake Mead would be above elevation 1083 is somewhat lower. During the years 2002 to 2015 there would be a 90 percent probability that Lake Mead would be above 1083 msl. This would decrease to a 56 percent of the time after the year 2015. The implications of this impact are addressed in section 4.2, Hydroelectric Power.
Elevation to Support SNWA's 1050 intake	Under the Baseline for Cumulative Analysis, during the years 2002 to 2018, there would be a 100 percent probability that Lake Mead would exceed elevation 1050 feet msl. This would decrease to a 60 percent probability after the year 2018. Trends under the Cumulative Analysis condition are similar, there would be a 100 percent probability, for years 2002 to 2018, that water elevations in Lake Mead would exceed elevation 1050 feet msl; this would decrease to a 60 percent probability after the year 2018. During years 2018 to 2040, under the Cumulative Condition, the probability that reservoir elevations would be above elevation 1050 is less (albeit only slightly) than under the Baseline for Cumulative Analysis. Thus in the Cumulative Analysis condition SNWA's 1050 intake would be less reliable.
Elevation to Support SNWA's 1000 intake	Under the Baseline for Cumulative Analysis, during years 2002 through 2049, modeling shows that there would be a 100 percent probability that Lake Mead levels would be greater than necessary to operate SNWA's second water intake (1000 feet msl). After year 2049, Lake Mead elevation is projected to decline and there would be a 6 percent probability that the reservoir would fall below 1000 feet msl. Under the Cumulative Analysis condition the probability that Lake Mead would be above elevation 1000 is consistently lower. During years 2002 to 2049, under the Cumulative Condition, the probability that reservoir elevations would be above elevation 1000 msl would be 93 percent. This probability would decrease to 85 percent after the year 2049. Thus in the Cumulative Analysis condition SNWA's second intake would be less reliable.
For more information refer to Appendix G.	

Table 4.2-2. Projected Flows of the Lower Portion of the Colorado River Baseline for Cumulative Analysis vs. Cumulative Analysis

(All numbers rounded and in MAFY)

River Reach	
GLEN CANYON TO HOOVER DAM	
	Flows from Glen Canyon Dam to Lake Mead would be reduced, primarily as a result of implementing the ISG (USBR 2000b). The IA partly offsets reduced flow from Glen Canyon to Hoover Dam. Overall releases from Lake Powell are reduced no more than 2 percent from implementation of the IA, ISG, and PVID Program.
HOOVER DAM TO PARKER DAM	
	Annual flow volumes in this reach would be greater under the Cumulative Analysis condition than under the Baseline for Cumulative Analysis condition during the 15-year interim period through 2016. Cumulative Analysis conditions would increase flows above the Baseline for Cumulative Analysis by up to 6 percent. The difference is primarily the result of the ISG on the river system, offset to a minor degree by the impact of the changes anticipated under the IA (USBR 2000b). Beyond the 15-year interim period, the annual flow volumes under the Cumulative Analysis are essentially the same (within 1 percent) as those under the Baseline for Cumulative Analysis conditions.
PARKER DAM TO IMPERIAL DAM	
At Headgate Rock Dam	The modeled annual flow volumes in this reach under the Cumulative Analysis would 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. Flows would be as much as 498 KAF less. The difference would result primarily from the proposed IA and the proposed 111 KAF PVID Program. The ISG does not impact this reach of the river significantly.
Below Palo Verde Diversion Dam	The modeled annual flow volumes in this reach under the Cumulative Analysis would 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. For all years modeled, annual flows under the Cumulative Analysis would be less than annual flows under the Baseline for Cumulative Analysis. Flows would be as much as 388 KAF less. The difference would result primarily from the proposed IA. The ISG does not impact this reach of the river significantly.
For more information refer to Appendix C and G.	

impacts and mitigating conservation measures are documented in the BO for the IA (FWS 2001). There would also be a decrease in water levels from Parker Dam to the Palo Verde Diversion Dam, which would result in more impacts to aquatic and riparian vegetation than anticipated under the IA. The slight decrease in reservoir levels would also have a small impact to fisheries.

Implementation of the MSCP is expected to result in a long-term beneficial impact to fish and wildlife species through the provision of additional habitat. As described under the biological conservation measures component of the proposed action, there may be short-term impacts associated with the actual restoration process, including disturbance to wildlife due to noise and human disturbance as well as potential short term turbidity and sedimentation. Because these impacts would be short term and likely would not occur at the same time and in the same place, they are not considered cumulatively significant.

Reclamation prepared a BA and consulted with FWS as part of the environmental compliance for the Final Rule (Appendix C of Reclamation FPEA for the offstream storage rule, October 1999). The proposed action is consistent with Scenarios 1, 2 and 3 as described and evaluated in the BA. Reclamation concluded that the identified scenarios:

- will have no effect on the American peregrine falcon, bald eagle, desert tortoise, flat-tailed horned lizard, brown pelican, and Colorado squawfish;
- are not likely to adversely effect the razorback sucker, bonytail chub, Yuma clapper rail, or southwestern willow flycatcher. Effects on these species are expected to be discountable or insignificant and a take of the species is not expected to occur; and
- will not adversely modify critical habitat for the razorback sucker and bonytail chub in the Lower Colorado River.

Reclamation also determined that the storage and retrieval scenarios would not inhibit or diminish Reclamation's ability to implement the provisions and terms and conditions of the Biological and Conference Opinion on Lower Colorado River Operations and Maintenance, nor have any effect on the efforts by the LCRMSCP or others to obtain water for fish and wildlife. Reclamation agreed to accelerate conservation efforts for the bonytail chub and manage flood control releases to provide freshening flows through FWS refuges. FWS concurred with Reclamation's determinations of effect during informal consultation for the Final Rule concluded on August 19, 1998 (Appendix C of Reclamation FPEA for the offstream storage rule, October 1999).

Reclamation notified FWS, by memorandum dated August 1, 2001, that the Proposed Action/Preferred Alternative is consistent with the previously evaluated scenarios, that no additional impacts on threatened and endangered species would occur, and that no further consultation was necessary. The estimated recovery period of ICUA has shifted into the future from that originally identified in the BA and consultation, and as a result, the future recovery of ICUA will be included as a covered action in the LCRMSCP.

Reclamation also consulted with the National Marine Fisheries Service, Southwest Region by letter dated June 22, 1998. Since the U.S. has no authority or discretion regarding the flow of water to the Colorado River delta, a section 7 consultation on the potential effects of its lower Colorado River operations and maintenance on the endangered Totoaba was not required.

Likewise, because actions under the proposed Rule will not change the delivery of treaty water to Mexico, Reclamation determined that section 7 consultation on the Totoaba is not required on the proposed Rule. This consultation included the BA analyzing the effects from the most likely storage and retrieval scenarios.

Coachella Valley Water District

Implementation of the remainder of the CVWMP would involve the potential for disturbance of biological resources, including creosote scrub and desert wash vegetation, through construction of pipelines, reservoirs, and other facilities associated with the conservation of water within the CVWD service area. It is anticipated that these impacts, along with those from the elements of the CVWMP that are also considered part of the IA, would be mitigated on a site-by-site basis and would not be cumulatively significant.

Imperial Irrigation District

Lining the AAC and Coachella Canal has the potential for localized impacts to wetland habitat due to the reduction in seepage that would result. There is also a potential for wildlife to enter the canals and not be able to escape from the canals. Each of the respective environmental documents for these projects has provided measures to mitigate these site-specific impacts, and they would not contribute to a cumulative impact in the project area.

No other substantial impacts that could contribute to a cumulative impact have been identified within the IID service area.

Salton Sea

If implemented, the SSRP would be expected to result in a beneficial impact through the retention of the fish and wildlife values of the Sea. The feasibility and overall impact of this restoration is not known with certainty at this time pending additional studies and a revised Salton Sea Document.

Hydroelectric Power

Power is the last priority in regard to river operations as stated in project-specific legislation, and under the Law of the River (described in Chapter 1, section 1.2.2). Reclamation is the Federal agency authorized to generate hydroelectric power at Hoover, Davis, and Parker powerplants. BIA is the Federal agency authorized to generate hydroelectric power at Headgate Rock powerplant. Hydroelectric power production can be considered in terms of capacity and energy. As described in section 3.3, capacity of a hydroelectric plant is a function of the operational strategies of the upstream and downstream reservoirs, and energy is a function of the amount of water through the turbines or powerplant. Therefore, any long-term change to River operations, including reservoir levels, dam releases, or change in points of delivery of water may impact hydroelectric power production. The cumulative projects that may change River operations, including reservoir levels, dam releases, or change in points of delivery of Colorado River above and beyond the proposed project include the ISG, PVID Program, and the Rule for Offstream Storage (the change in delivery of Colorado River water due to AAC and Coachella Canal Lining Projects is considered part of the proposed action).

Implementation of these projects could ultimately result in water transfers up to a cumulative total of 1.574 MAFY (the amount considered within the Biological Assessment for the Interim Surplus Criteria, USBR 2000a). Depending on the specific locations of the changed points of diversions may increase hydroelectric power and therefore have a beneficial impact at some facilities, or decrease hydroelectric power and therefore have a negative impact at other hydroelectric power facilities along the lower portion of the Colorado River.

Land Use

The proposed action would not cause any adverse change to land use, nor are adverse land use changes expected to result from any of the cumulative projects. The IID/SDCWA Water Conservation and Transfer Agreement could result in land fallowing, as could the IOP, but this would not be considered a substantial impact to land use.

Recreational Resources

The projects that were assessed as part of the cumulative analysis would not individually have substantive, adverse impacts on recreational resources within the project study area. As noted in section 4.2.1, however, cumulative impacts to Lake Mead and Lake Powell would be greater than for the proposed action alone. Lake Powell's elevation would fall below the 3,612-foot impact threshold for recreational facilities as much as 3 percent more often if all of the cumulative projects were implemented. Lake Mead could be as much as 20 feet lower in any given year, which could impact the use of docks, launch ramps, and other public use facilities.

These impacts are largely attributable to the ISG, and Reclamation has made a number of environmental commitments as part of the environmental review process for this action (USBR 2000b). These include initiating a bathymetric survey of Lake Mead in fiscal 2001 and coordinating with the Lake Mead National Recreation Area to identify critical facility elevations and navigational hazards that would be present under various reservoir surface elevations. Additionally, Reclamation will continue to monitor River operations, reservoir levels, and water supply and make this information available to the Colorado River Management Work Group, agencies, and public. This operational information will provide the Lake Mead National Recreation Area and the Glen Canyon National Recreation Area with probabilities for future reservoir elevations to aid in management of navigational aids, recreational facilities, other resources, and fiscal planning. Reclamation also is continuing to consult and coordinate with the Glen Canyon National Recreation Area and the Navajo Nation on the development of Antelope Point as a resort destination.

Agricultural Resources

As documented in section 3.5, Agricultural Resources, there have been substantial decreases in the amount of agricultural land that is in production in some portions of the project study area, with some counties experiencing low to moderate increases in total agricultural land in production. Most California counties experienced a decline, although the percentage of reduction has been relatively small. Mohave and Yuma Counties in Arizona and Clark County, Nevada have experienced moderate to high reductions in agricultural land. One exception to this trend has been La Paz County, Arizona, which has experienced a 22.9 percent increase in agricultural land during a recent 10-year period.

Two of the projects considered as part of the cumulative analysis have potential impacts involving agricultural lands within the project study area: the MSCP and the PVID Program. The MSCP would likely result in some amount of land being converted from agricultural use to habitat. In the case of the PVID Program, agricultural lands may be taken out of production for periods of time. Thus, the projects considered in the cumulative analysis would have a combined cumulative impact involving temporary or permanent loss of agricultural lands. The proposed action could also result in the conversion of a relatively small amount of agricultural land along the Colorado River to habitat, which would contribute to the cumulative impact described above. IID's water conservation actions associated with the IID Water Conservation and Transfer Project could result in either rotational fallowing or permanent fallowing in the IID service area. Although the proposed action would contribute to a cumulative impact on agricultural resources, each of these combined impacts involve a series of incremental conversions that would not be considered substantive when considered together.

Socioeconomics

None of the projects described above is expected to create substantial changes to socioeconomic conditions, with the possible exception of the PVID Program, whose impacts are to be determined, and the IID/SDCWA Water Conservation and Transfer Agreement, which could result in a reduction of employment opportunities depending on the conservation methods selected. If the reduction in IID water use associated with the water transfer agreement was accomplished solely through land fallowing (300 KAFY of water would be conserved for transfer through fallowing), Imperial County could experience a net loss of 1,400 jobs, mostly in the agricultural sectors. Implementation of the SSHCS by IID would most likely employ additional fallowing in the IID service area, which would result in additional job loss in the agricultural sector. Employment opportunities would be created by construction projects and the SSRP also could result in an economic benefit to the local area. The proposed action would have negligible impacts to socioeconomic resources and would not contribute to a cumulative impact.

Environmental Justice

The projects that were included in the cumulative analysis for this EIS are not expected to add incremental adverse, disproportionate impacts to low-income and minority communities. As documented in section 3.8 (Environmental Justice), the proposed action would not create any direct substantive adverse impacts related to environmental justice; but water conservation actions carried out by IID pursuant to the QSA could have impacts on minority and low-income farm workers from fallowing, and on Hispanic populations from windblown dust from exposed Salton Sea sediments.

Cultural Resources

The projects included in the cumulative analysis have the potential to impact cultural resources where land surface disturbance is required. It is not possible to quantify these impacts because site-specific cultural resource surveys have not been conducted. However, because many of the projects involve actions on previously disturbed lands (such as farmlands), or relate to changes in Colorado River operations, which have been highly variable historically, impacts to cultural resources would tend to be reduced. Further, compliance with Section 106 of the National

Historic Preservation Act will require specific evaluation of impacted cultural resources, and development of mitigation plans.

Tribal Resources

As described in section 3.10, Tribal Resources, the issues of concern to tribal entities in the project study area are ITAs, water quality, biological resources, land use, cultural resources, hydroelectric power generation, recreation, and air quality. The proposed action would not impact water rights and therefore it would not contribute to a cumulative impact involving water rights. Significant cumulative impacts to ITAs are not anticipated. Neither the proposed action nor any of the cumulative projects would impact tribal water rights or have significant impacts on other ITAs.

The proposed action would contribute to cumulative water quality impacts involving increases in salinity along the Colorado River below Hoover and Parker Dams. However, it is assumed that the Colorado River Basin Salinity Control Program would ameliorate this impact and that salinity standards would continue to be met on the River. Drinking water quality of the Torres Martinez Band of Desert Cahuilla Indians and the Agua Caliente Band of Cahuilla Indians would be adversely affected by increased TDS from CVWD's groundwater recharge of Colorado River water. 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. Thus, a negligible cumulative impact to water quality is expected to impact tribal lands.

The cumulative impacts to biological resources in the project study area are expected to be minimized by implementation of the MSCP, which would provide long-term beneficial impacts to fish and wildlife species along the lower portion of the Colorado River. Although some short-term impacts may occur from these projects, the ultimate result is expected to be beneficial. For this reason, tribal resources relating to biological resources would not be cumulatively impacted.

The proposed action would not contribute to any cumulative land use impacts in the project study area. Therefore, there would be no cumulative impacts related to land use on tribal lands.

Each of the projects considered in the cumulative analysis has the potential to contribute to a cumulative impact involving the damage or loss of known and unknown cultural resources. Many historic properties are damaged or destroyed by both natural processes and human activities. The activities described herein are subject to environmental regulatory review and the issuance of permits and approvals from regulatory agencies. These activities include provisions for assessing and protecting important cultural resources and consulting with tribal entities prior to implementing projects. These regulatory processes would limit the magnitude of any potential cumulative impact relating cultural resources, including those located on tribal lands.

The cumulative projects that may change River operations, including reservoir levels, dam releases, or change in points of delivery of Colorado River above and beyond the proposed project include the ISG, MSCP, PVID Program, and the Rule for Offstream Storage (the change in delivery of Colorado River water due to AAC and Coachella Canal Lining Projects is

considered part of the proposed action). Implementation of these projects could ultimately result in water transfers up to a cumulative total of 1.574 MAFY (the amount considered under MSCP) or more. Depending on the specific locations of the changed points of diversions, negative impacts to specific hydroelectric facilities, including Headgate Rock Dam, could occur.

Water conservation actions carried out by IID pursuant to the QSA could have impacts on air quality and recreational resources associated with the decline in water surface elevation of the Salton Sea, which are of concern to the Torres Martinez Band of Desert Cahuilla Indians. This could contribute to cumulative impacts, depending on the effectiveness of selected mitigation measures.

Air Quality

The TMDL Program would not be expected to cause air quality impacts, since it neither involves new construction nor physical activities that would result in air pollutant emissions in the project area. Some projects are expected to have short-term, construction-related impacts. These include the MSCP, Colorado River Basin Salinity Control Program, AAC Lining Project, Coachella Canal Lining Project and CVWMP, and Brawley Wetland Project. Construction impacts are usually localized. The proposed action would contribute to a cumulative short-term impact only if construction of these projects occurred at the same time and in the same general location. These projects, however, cover a broad geographic area, and it is unlikely that projects in the same area would be under construction at the same time. Moreover, air quality impacts from the proposed action are anticipated to be minor or readily mitigated through standard construction practices. Therefore, its contribution to a cumulative impact would be minimal.

The only potential for long-term impacts from the proposed action would occur from fugitive dust emissions due to the lowering of the water elevations of Lake Mead, Lake Powell, and the Salton Sea. This would be exacerbated by other projects, such as ISG and the PVID Program. The water elevation of the Salton Sea would decline as a result of the proposed action. If the SSHCS is implemented by IID, the water surface elevation of the Salton Sea would decrease below future baseline conditions after the year 2035. This effect would increase exposed shoreline and would produce potentially significant amounts of PM_{10} emissions. Since the project region presently does not attain the PM_{10} ambient air quality standards, this would be a significant cumulative air quality impact. The SSRP could diminish the impact, depending on the restoration measures that are proposed.

Changes in the water level of the Colorado River are expected to be within historic levels both with the proposed action and the projects considered in the cumulative impact analysis. No adverse impacts from fugitive dust are anticipated.

Transboundary Impacts

Hydrology

For analysis purposes, the mean and maximum values of the range of estimated future overrun account balances under each modeled IOP scenario were used to evaluate the potential effect on Lake Mead flood control releases and excess flows to Mexico in the Cumulative Condition. The

probability of excess flows to Mexico would be similar under the Combined Cumulative IA and IOP Analysis and the Baseline for Cumulative Analysis. In some years probability of excess flow would be greater and in some years lower, but probability of excess flow per the Baseline for Cumulative Analysis and Combined Cumulative IA and IOP scenarios (assuming an average IOP account balance of 66 KAF) never differs by more than 3.5 percent. If maximum IOP account balance was held (331 KAF), the probability of a flood release could be decreased by 1 to 4.7 percent.

The probability of occurrence of excess flow of 250 KAF and 1 MAF is similar for the Combined Cumulative IA and IOP scenarios and the Baseline for Cumulative Analysis. The probability that excess flows to Mexico will exceed 250 KAF differs by no more than 5.9 percent between the combined IA and IOP and Baseline for Cumulative Analysis. Likewise, the probability that excess flows will exceed 1 MAF differs by no more than 3.5 percent.

Overall the results of the comparison between the Combined Cumulative IA-IOP scenarios and the Baseline for Cumulative Analysis found that the magnitude of observed excess flows is essentially the same. For example in years 2006, 2016, 2026 and 2050, the magnitude of the observed excess flows of the Combined Cumulative IA-IOP scenarios and the Baseline for Cumulative Analysis are essentially the same, albeit with a slight change in the frequency. There is a positive effect seen in the lower excess flow range (excess flows less than 1.0 MAFY) related to the effect of the water transfers modeled as part of the IA conditions. A negative effect is seen in the higher range of the excess flows (excess flows greater than 1.0 MAFY) attributable to the IOP modeled criteria. The observed increases in magnitude between the Combined Cumulative IA-IOP scenarios and the Baseline for Cumulative Analysis ranged from approximately 2 KAF to approximately 148 KAF with the average being around 88 KAF. The observed decreases in magnitude ranged from approximately 1.3 KAF to approximately 742 KAF with the average being around 230 KAF.

Other projects, such as the offstream storage rule and the storage and retrieval of Colorado River water under interstate release agreements could have similar impacts to excess flows to Mexico. During development of the offstream storage rule, Reclamation addressed NEPA compliance from a programmatic approach because many of the details of specific interstate agreements could not be ascertained at that time. The FPEA analyzed the most likely scenario that AWBA would store 1.2 MAF of Colorado River water offstream in Arizona for the benefit of an entity in Nevada. The potential effects to Mexico of storing water under a storage and interstate release agreement are discussed in section 4.2.2. In a normal year, the delivery of Colorado River water to Mexico will be 1.5 MAF and there will be no surplus or flood control release water. The diversion of treaty water by Mexico is made at Morelos Dam and there are no scheduled flows below this diversion point under normal conditions. Surplus water is also diverted at Morelos Dam, and there are no scheduled flows below this point except when flood control releases occur. The waters of the Colorado, once delivered to Mexico pursuant to the United States-Mexico Water Treaty of 1944, are the exclusive property of the sovereign nation of Mexico. DOI has no control over how Colorado River water is used once it reaches the international border. Further, the United States-Mexico Water Treaty of 1944 contains no provisions requiring Mexico to provide water for environmental protection nor any requirements relating to Mexico's use of that water. Finally, the 1964 Supreme Court decree enjoined Reclamation from releasing water to Mexico in excess of the quantity identified in the

United States-Mexico Water Treaty of 1944 except for flood control purposes. Flood control releases are those water releases made in accordance with the February 8, 1984 Field Working Agreement between DOI, Reclamation, and USACE for Flood Control Operation of Hoover Dam and Lake Mead, Colorado River, Nevada-Arizona. Flood control releases reflect regional climatic conditions and are required when forecasted inflow exceeds available storage space in Lakes Mead and Powell and allowable space in other upper basin reservoirs. These releases are not guaranteed nor are they a dependable water supply below the international boundary. These releases are in excess of U.S. needs and represent water that has the potential to flow to the Gulf of California. Reclamation modeled the probability of flood control releases over the potential storage years under the Rule. For the storage years between 1999-2015, flood control releases to Mexico would range between 1.310-0.544 MAFY without the Rule and 1.310-0.541 MAFY with the Rule. The probability of flood control releases is reduced on average by 0.83 percent from 2002-2016 when AWBA would be storing up to 1.2 MAF of retrievable water for the benefit of SNWA. The offstream storage of this 1.2 MAF of water is projected to reduce the average amount of flood control releases to Mexico by 23 KAFY from 1999-2015 (USBR 1996). The U.S. has no authority or discretion regarding the flow or use of flood control releases once it reaches the international border, and this water may or may not reach the Gulf. The small reduction in flood control releases does not represent a significant impact on minority and low-income communities along the Mexican border or near the Gulf of California..

Biological Resources

As noted above, excess flows below Morelos Dam are generally similar under the Cumulative Analysis and Baseline for Cumulative analysis conditions. The exception to this is the 18-year period between 2002 and 2019 where the excess flows observed under the Cumulative Analysis would be slightly lower than those observed under the baseline for Cumulative Analysis conditions.

Potential minor reductions in the frequency of excess flows below Morelos Dam resulting from the IOP would be unlikely to substantively reduce the amount of water available for groundwater recharge in the areas adjacent to the main channel of the Colorado River over an extended period of time. This is particularly true since Reclamation believes that groundwater recharge in these areas is more a result of percolation induced by agricultural irrigation, drainage water, and the more frequent, but lower-volume, excess flows that are attributable to unused water delivery orders (by users in the Lower Division States) that make it past Morelos Dam. Scouring flows are required to expose new seed beds to allow cottonwood and willow to regenerate. No significant change to these types of flows is anticipated. Therefore, no substantive cumulative impacts to vegetation are anticipated.

4.3 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

With implementation of the IA and QSA, IID and CVWD would implement conservation actions and construction activities, which would have short-term impacts on the environment. These impacts include such things as construction-related air pollutant emissions and noise and temporary disturbances to biological communities. The IA would ultimately result in a settlement of water rights issues that would increase the predictability of water use for water

diverted from the Colorado River by the participating agencies in California. This predictability is expected to have a stabilizing effect on the use of water in the region by ensuring that all parties stay within their annual allocations, thus ensuring long-term productivity.

Adoption of the IOP would not result in short-term uses of the environment to any great degree, but would contribute to the overall predictability of water use through requiring paybacks for overuse of water.

Implementation of biological conservation measures would have short-term construction-related impacts, such as air pollutant emissions, noise, and temporary disturbances to biological communities. However, the long-term benefits of these measures would be substantial since habitat for federally listed species would be monitored for quality, improved, and/or increased, and species augmentation through fish stocking and breeding would occur. Improvement of habitat for federally listed species would also have long-term benefits for native species that are not federally listed.

4.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments are decisions impacting non-renewable resources such as soils, wetlands, and waterfowl habitat. Such decisions are considered irreversible because their implementation would impact a resource to the point that renewal can occur only over a long period of time or at great expense or because they would cause the resource to be destroyed or removed. The term irreversible describes the loss of future options and applies to the impacts of using nonrenewable resources or resources that are renewable only over a long period of time.

Implementation of the IA and QSA would result in the commitment of resources as part of the overall regional agreement for limiting California water use to the State's apportionment of 4.4 MAFY in a normal year. Although the delivery of Colorado River water in Arizona, California, and Nevada is for permanent service under the Law of the River and contracts with the U.S., the changed distribution of water during the 75-year duration of the QSA can be seen as an irreversible action during that 75-year period.

The primary area within the region that would experience substantial and most likely irreversible change would be the Salton Sea ecosystem and the lands and resources adjacent to the Sea. With implementation of the IA, the surface elevation could drop and the salinity would increase more rapidly than under baseline conditions; these environmental impacts would impact the Salton Sea and associated resources and would be considered irreversible. However, as noted in this EIS, a similar impact to the Salton Sea could occur under baseline conditions without implementation of the IA. If IID implements the SSHCS, Sea elevations would be maintained at or above baseline conditions until at least the year 2035. After that time, reduced inflow would cause the Sea to decline to about elevation -240 feet msl by the year 2077, compared to the baseline elevation of -235 feet msl.

The IA would also cause a lowering of the Colorado River between Parker Dam and Imperial Dam. The lost opportunity to produce power at Parker and Headgate Rock Dams with the transferred water would be considered an irretrievable commitment. Implementation of

biological conservation measures would result in the monitoring, improvement, and/or creation of habitat along the Colorado River. These activities would have a positive ecological effect along the River, although the new habitat areas would not necessarily be considered irreversible. The IOP would not cause an irreversible commitment of resources since the IOP is an administrative policy that establishes a procedure for Lower Basin water users to pay back water used beyond their legal entitlement.

An irretrievable commitment of natural resources means loss of production or use of resources as a result of a decision. It represents opportunities foregone for the period of time that a resource cannot be used. "Irretrievable" also refers to the permanent loss of a resource including production, harvest, or use of natural resources. Certain aspects of the IA would result in the irretrievable commitment of resources. Construction associated with water conservation actions and other activities within the IID and the CVWD service areas would consume fossil fuels, which are a finite source of energy that cannot be regenerated. The same commitment of resources would be associated with construction of habitat areas with adoption of biological conservation measures. Adoption of the IOP would not result in an irretrievable commitment of resources.

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CHAPTER 5

REFERENCES

5.0 REFERENCES

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CHAPTER 6

GLOSSARY OF TERMS

6.0 GLOSSARY OF TERMS

70R Alternative	The 70R Alternative assumed a 70-percentile inflow into the system subtracting out consumptive uses and system loses and checking the results to see if all of the water could be stored or if flood control releases from Lake Mead would be required. If flood control releases from Lake Mead would be required, surplus water would be made available to the Lower Basin beyond 7.5 MAF. The notation 70R refers to the specific inflow where 70 percent of the historical natural runoff is less than this value (17.4 MAF) for the Colorado River basin at Lee Ferry.
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.
Annual Operating Plan (AOP)	The AOP describes how Reclamation will manage River resources over the 12-month period, consistent with the Long Range Operating Criteria and the *Arizona v. California 1964 Supreme Court Decree*. The AOP is prepared annually by Reclamation in cooperation with the Basin States, appropriate Federal agencies, Indian tribes, State and local agencies and the general public, including governmental interests as required by Federal law. As part of the AOP process, the Secretary makes annual determinations regarding the availability of Colorado River water for deliveries to the Lower Division States as described below.
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.
Colorado River Basin Project Act of 1968	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).
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.
Interim Surplus Guidelines (ISG)	The Secretary has developed specific ISG that will provide mainstream users of Colorado River water, particularly those in California that 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 (from 2002 to 2016). The guidelines facilitate California's transition to use of a reduced supply of Colorado River 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.

Lees 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.
Maximum Contaminant Level (MCL)	The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the level below which there is no known or expected risk as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards per National Primary Drinking Water Regulations (NPDWRs or primary standards) and apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water.
Maximum Contaminant Level Goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
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
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.

Primary Drinking Water	Enforceable standards per the National Primary Standards Drinking Water Regulations, applicable to public water systems designed to protect public health by limiting the levels of contaminants in drinking water.
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	In the case of Indian reservations, rights based on the doctrine of Indian reserved rights, and in the case of Federal establishments other than Indian reservations, a Federal reservation of water for use on property under Federal jurisdiction.
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 for this EIS.
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 (or San Luis Rey 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
Secondary Drinking Water Standards	Non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. The EPA recommends secondary standards to water systems but does not require systems to comply.
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.

CHAPTER 7

ACRONYMS

7.0 ACRONYMS

AAC	All-American Canal
ACEC	Area of Critical Environmental Concern
AF	Acre-feet
AFY	Acre-feet per year
AOP	Annual Operating Plan
AQD	Air Quality Division of the Arizona Department of Environmental Quality
APE	Area of Potential Effect
ARB	Air Resources Board
ASC	Archaeological Consulting Services
ASM	Arizona State Museum
AWBA	Arizona Water Banking Authority
BA	Biological Assessment
BACT	Best Available Control Technology
BCPA	Boulder Canyon Project Act
BIA	United States Bureau of Indian Affairs
BLM	United States Bureau of Land Management
BMI	Basic Management, Inc.
BMP	Best Management Practice
BO	Biological Opinion
CAA	Federal Clean Air Act of 1969
CAAQS	California Ambient Air Quality Standards
CA DHS	California's Department of Health Services
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District

CDC	California Department of Conservation
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CITES	Convention on International Trade in Endangered Species
CFR	Code of Federal Regulations
cfs	Cubic feet per second
cm	centimeters
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
CRIT	Colorado River Indian Tribes
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
DEA	Draft Environmental Assessment

DHS	California Department of Health Services
DOF	California Department of Finance
DOI	United States Department of the Interior
DWR	California Department of Water Resources
EA	Environmental Assessment
ECM	Environmental Compliance Memorandum
EES	Enhanced Evaporation System
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Federal Endangered Species Act
ESM	Environmental Statement Memorandum
F1	First Generation or Wild-Born
FEIS	Final Environmental Impact Statement
FPEA	Final Programmatic Environmental Assessment
FWS	United States Fish and Wildlife Service
GLO	Government Land Office
HCP	Habitat Conservation Plan
I-10	Interstate 10
IA	Implementation Agreement
ICAPCD	Imperial County Air Pollution Control District
ICUA	Intentionally Created Unused Apportionment
ID-1	Improvement District No. 1
IID	Imperial Irrigation District
IOP	Inadvertent Overrun Policy

ISG	Interim Surplus Guidelines
IUCN	International Union for Conservation of Nature and Natural Resources
ITA	Indian Trust Asset
KAF	Thousand acre-feet
KAFY	Thousand acre-feet per year
kWh	Kilowatt-hours
LCRAS	Lower Colorado River Accounting System
LMNRA	Lake Mead National Recreation Area
LROC	Long-Range Operation of Colorado River Reservoirs
LVWCAMP	Las Vegas Wash Comprehensive Adaptive Management Plan
LVWCC	Las Vegas Wash Coordination Committee
MAF	Million acre-feet
MAFY	Million acre-feet per year
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDAQMD	Mojave Desert Air Quality Management District
mg/L	milligrams per liter
MODE	Main Outlet Extension Drain
MOU	Memorandum of Understanding
MPN/100 ml	Membrane filter count per 100 milliliters
MSCP	Multi-Species Conservation Program
msl	Mean sea level
MW	Megawatts
MWD	The Metropolitan Water District of Southern California
MWh	Megawatt-hours

M&I	Municipal and Industrial
NAAQS	National Ambient Air Quality Standards
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
NWR	National Wildlife Refuge
O_3	Ozone
OHV	Off-highway Vehicle
O&M	Operation and Maintenance
P-DP	Parker-Davis Project
PEIR	Programmatic Environmental Impact Report
PHG	Public Health Goal
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
PUP	Priority Use Power
PVID	Palo Verde Irrigation District
PXAO	Phoenix Area Office

QSA	Quantification Settlement Agreement
RCPG	Regional Comprehensive Plan and Guide
ROD	Record of Decision
ROI	Region of Influence
RV	Recreational Vehicle
RWQCB	California 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
SCIP	San Carlos Irrigation Project
SCP	Colorado River Basin Salinity Control Program
SDCAPCD	San Diego County Air Pollution Control District
SDCWA	San Diego County Water Authority
SH	State Highway
SHPO	State Historic Preservation Officer
SIB	Southerly International Boundary
SIP	State Implementation Plan
SIRA	Storage and Interstate Release Agreement
SNWA	Southern Nevada Water Authority
SRA	State Recreation Area
SSA	Salton Sea Authority
SSHCS	Salton Sea Habitat Conservation Strategy
SSRP	Salton Sea Restoration Project
SWP	State Water Project

SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
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
USGS	United States Geological Survey
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile organic compound
WACOG	Western Arizona Council of Governments
WAPA	Western Area Power Administration
WRC	Water Resources Chapter
YPRD	Yuma Project Reservation Division
$\mu g/m^3$	Micrograms per cubic meter

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CHAPTER 8

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8.0 LIST OF PREPARERS

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CHAPTER 10

DISTRIBUTION LIST

10.0 DISTRIBUTION LIST

FEDERAL AGENCIES

Advisory Council on Historic Preservation, Washington, D.C.

Assistant Secretary for Indian Affairs, Washington, D.C.

Bureau of Indian Affairs, Colorado River Agency, Parker, Arizona

Bureau of Indian Affairs, Department of Land and Water, Phoenix, Arizona

Bureau of Indian Affairs, Fort Yuma Agency, Yuma, Arizona

Bureau of Indian Affairs, Hopi Agency, Keams Canyon, Arizona

Bureau of Indian Affairs, Jicarilla Agency, Dulce, New Mexico

Bureau of Indian Affairs, Navajo Area Office, Gallup, New Mexico

Bureau of Indian Affairs, Office of Trust Responsibilities, Washington, D.C.

Bureau of Indian Affairs, Pacific Region, Sacramento, California

Bureau of Indian Affairs, Papago Agency, Sells, Arizona

Bureau of Indian Affairs, Pima Agency, Sacaton, Arizona

Bureau of Indian Affairs, Salt River Agency, Scottsdale, Arizona

Bureau of Indian Affairs, Southern California Agency, Riverside, California

Bureau of Indian Affairs, Southern Paiute Field Office, St. George, Utah

Bureau of Indian Affairs, Southern Ute Agency, Ignacio, Colorado

Bureau of Indian Affairs, Southwest Regional Office, Albuquerque, New Mexico

Bureau of Indian Affairs, Truxton Canon Field Office, Valentine, Arizona

Bureau of Indian Affairs, Uintah and Ouray Agency, Ft. Duchesne, Utah

Bureau of Indian Affairs, Ute Mountain Ute Agency, Towaoc, Colorado

Bureau of Indian Affairs, Zuni Agency, Zuni, New Mexico

Bureau of Land Management, Sacramento, California

Bureau of Land Management, Washington, D.C.

Bureau of Reclamation, Lower Colorado Region Native American Affairs Office, Phoenix, Arizona

Bureau of Reclamation, Yuma Area Office, Yuma, Arizona

Council on Environmental Quality, Washington, D.C.

Department of Energy, Washington, D.C.

Department of the Interior, Office of Environmental Affairs, San Francisco, California

Environmental Protection Agency, Region IX, San Francisco, California

Environmental Protection Agency, Washington, D.C.

Fish and Wildlife Service, Bill Williams River National Wildlife Refuge, Parker, Arizona

Fish and Wildlife Service, Cibola National Wildlife Refuge, Cibola, Arizona

Fish and Wildlife Service, Ecological Services, Carlsbad, California

Fish and Wildlife Service, Ecological Services, Phoenix, Arizona

Fish and Wildlife Service, Havasu National Wildlife Refuge, Needles, California

Fish and Wildlife Service, Imperial National Wildlife Refuge, Yuma, Arizona

Fish and Wildlife Service, Pacific Regional Office 1, Portland, Oregon

Fish and Wildlife Service, Sonny Bono Salton Sea National Wildlife Refuge, Calopatria, California

Fish and Wildlife Service, Washington, D.C.

Geological Survey, Sacramento, California

International Boundary and Water Commission, U.S. Section, (USIBWC), Headquarters, El Paso, Texas

International Boundary and Water Commission, U.S. Section, USIBWC Field Office, Yuma, Arizona

National Environmental Coordinator, Soil Conservation Service, Department of Agriculture, Washington, D.C.

National Park Service, Glen Canyon NRA, Page, Arizona

National Park Service, Lake Mead National Recreation Area, Boulder City, Nevada

National Park Service, Washington, D.C.

National Park Service, Water Resources Division, Fort Collins, Colorado

Office of Environmental Policy and Compliance, Washington, D.C.

Office of Management and Budget, Washington, D.C.

Western Area Power Administration, Lakewood, Arizona

Western Area Power Administration, Phoenix, Arizona

Western Area Power Administration, Washington, D.C.

U.S. CONGRESS

U.S. House of Representatives, Arizona, Ed Pastor

U.S. House of Representatives, Arizona, J.D. Hayworth

U.S. House of Representatives, Arizona, Jeff Flake

U.S. House of Representatives, Arizona, John Shadegg

U.S. House of Representatives, California, Darrell Issa

U.S. House of Representatives, California, Susan Davis

U.S. House of Representatives, California, Bob Filner

U.S. House of Representatives, California, Duncan L. Hunter

U.S. House of Representatives, California, Jerry Lewis

U.S. House of Representatives, California, Joe Baca

U.S. House of Representatives, California, Ken Calvert

U.S. House of Representatives, California, Mary Bono

U.S. House of Representatives, California, Randy "Duke" Cunningham

U.S. House of Representatives, Nevada, Jim Gibbons

U.S. House of Representatives, Nevada, Shelley Berkley

U.S. Senate, Arizona, Senators John McCain and John Kyl

U.S. Senate, California, Senators Barbara Boxer and Diane Feinstein

U.S. Senate, Nevada, Senators John Ensign and Harry Reid

STATE AGENCIES

Arizona Department of Water Resources, Phoenix, Arizona

Arizona Game and Fish Department, Phoenix, Arizona

Arizona State Historic Preservation Officer, Phoenix, Arizona

California Coop Fishery Research Unit, Humboldt State University, Arcata, California

California Environmental Protection Agency

California Office of Environmental Affairs

California State Historic Preservation Officer

California State Regional Water Quality Control Board, Colorado River Basin Region, Palm Desert, California

California State Water Resources Control Board

Colorado Office of the Attorney General

Nevada Department of Conservation and National Resources, Carson City, Nevada

Colorado River Board of California, Glendale, California

Colorado River Commission of Nevada, Las Vegas, Nevada

Colorado Water Conservation Board, Denver, Colorado

Nevada Department of Fish and Game, Reno, Nevada

Nevada Department of Wildlife, Las Vegas, Nevada

Nevada State Historic Preservation Officer

New Mexico Interstate Stream Commission

Utah Division of Water Resources, Salt Lake City, Utah

Wyoming State Engineer, Cheyenne, Wyoming

Wyoming Water and National Resources Division

TRIBES

Agua Caliente Band of Cahuilla Indians, Palm Springs, California

Augustine Band of Mission Indians, Coachella, California

Cabazon Band of Mission Indians, Indio, California

Chemehuevi Indian Tribe, Chemehuevi Valley, California

Cocopah Indian Tribe, Somerton, Arizona

Colorado River Indian Tribes, Parker, Arizona

Fort McDowell Mohave-Apache Indian Community, Fountain Hills, Arizona

Fort Mojave Indian Tribe, Needles, California

Gila River Indian Community, Sacaton, Arizona

Havasupai Tribe, Supai, Arizona

Hopi Indian Tribe, Kykotsmovi, Arizona

Hualapai Tribe, Peach Springs, Arizona

Jicarilla Apache Nation, Dulce, New Mexico

Kaibab Paiute Tribe, Freedonia, Arizona

La Jolla Band of Luiseno Indians, Pauma Valley, California

Las Vegas Paiute Tribe, Las Vegas, Nevada

Moapa Paiute Tribe, Moapa, Nevada

Morongo Band of Mission Indians, Banning, California

Navajo Nation, Window Rock, New Mexico

Northern Ute Tribe, Fort Duchesne, Utah

Pahrump Paiute Tribe, Pahrump, Nevada

Paiute Tribe of Utah, Cedar City, Utah

Pala Band of Mission Indians, Pala, California

Pauma/Yuima Band of Mission Indians, Pauma Valley, California

Pechanga Indian Tribe, Temecula, California

Pueblo of Zuni, Zuni, New Mexico

Quechan Indian Tribe, Yuma, Arizona

Rincon Band of Mission Indians, Valley Center, California

San Carlos Apache Tribe, San Carlos, Arizona

San Pasqual Band of Diegueno Indians, Valley Center, California

Shivwits Band of Paiutes, St. George, Utah

Southern Ute Indian Tribe, Ignacio, Colorado

Tohono O'odham Nation, Sells, Arizona

Tonto Apache Tribe, Payson, Arizona

Torres Martinez Band of Desert Cahuilla Indians, Thermal, California

Twenty-Nine Palms Band of Mission Indians, Coachella, California

Ute Mountain Ute Tribe, Towaoc, Colorado

Yavapai Apache Indian Tribe, Camp Verde, Arizona

Yavapai Prescott Indian Tribe, Prescott, Arizona

ENVIRONMENTAL ORGANIZATIONS

Center for Biological Diversity, Santa Ysabel, California

Defenders of Wildlife, Albuquerque, New Mexico

Environmental Defense, Rocky Mountain Office, Boulder, Colorado

Friends of Arizona Rivers, Phoenix, Arizona

Glen Canyon Action Network, Moab, Utah

Grand Canyon Trust, Flagstaff, Arizona

Living Rivers, Scottsdale, Arizona

National Audubon Society-California, Sacramento, California

National Wildlife Federation, San Diego, California

Natural Resources Defense Council, California

Pacific Institute, Boulder, Colorado

Sierra Club, Crested Butte, Colorado

Southwest Rivers, Flagstaff, Arizona

WATER AGENCIES, ORGANIZATIONS AND IRRIGATION DISTRICTS

Central Arizona Water Conservation District, Phoenix, Arizona

Central Utah Water Conservancy District, Orem, Utah

Coachella Valley Water District, Coachella, California

Colorado River Water Conservation District, Glenwood Springs, Colorado

Highlander "C" Irrigation District, Yuma, Arizona

Imperial Irrigation District, Imperial, California

Palo Verde Irrigation District, Blythe, California

San Diego County Water Authority, San Diego, California

Southern Nevada Water Authority, Las Vegas, Nevada

The Metropolitan Water District of Southern California, Los Angeles, California

Upper Colorado River Commission, Salt Lake City, Utah

Vista Irrigation District, Vista, California

Yuma Mesa Irrigation and Drainage District, Yuma, Arizona

LIBRARIES

Bureau of Reclamation, Denver Office Library, Building 67, Room 167, Denver Federal Center, 6th and Kipling, Denver, Colorado 80225

Bureau of Reclamation, Lower Colorado Regional Office, Nevada Highway and Park St., Boulder City, Nevada 89006

Bureau of Reclamation, Phoenix Area Office, 2222 W. Dunlap Ave., Suite 100, Phoenix, Arizona 85021

Bureau of Reclamation, Southern California Area Office, 27710 Jefferson Ave., Suite 201, Temecula, California 92590-2628

Bureau of Reclamation, Upper Colorado Regional Office, 125 S. State St., Salt Lake City, Utah 84138-1102

Bureau of Reclamation, Yuma Area Office, 7301 Calle Agua Salada, Yuma, Arizona 85364-9763

Department of the Interior, Natural Resources Library, 1849 C St., NW, Washington, D.C. 20240

Henderson District Public Library, 280 S. Water St., Henderson, Nevada 89015

Lake Havasu City Library, 1787 McCulloch Blvd. North, Lake Havasu City, Arizona 86403

Los Angeles Central Library, 630 W. 5th St., Los Angeles, California 90071

Mohave County Library, 1170 Hancock Rd., Bullhead City, Arizona 86442

Palo Verde Valley Library, 125 W. Chanslor Way, Blythe, California 92225

Parker Public Library, 1001 S. Navajo Ave., Parker, Arizona 85344

Phoenix Public Library (Burton Barr Central), 1221 N. Central Ave., Phoenix, Arizona 85004

Salt Lake City Public Library, 209 E 500 S, Salt Lake City, Utah 84111

San Bernardino County Library, 1111 Bailey Ave., Needles, California 92363

San Diego Central Library, 820 E St., San Diego, California 92101

Yuma County Library, 350 S. 3rd Ave., Yuma, Arizona 85364

OTHERS

Anonymous

Arizona Municipal Power Users Association, Phoenix, Arizona

Arizona Municipal Water Users Association, Phoenix, Arizona

Arizona Power Authority, Phoenix, Arizona

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Mr. Wayne Cook, Upper Colorado River Commission, Salt Lake City, Utah

Mr. William DuBois, California Farm Bureau, Sacramento, California

Mr. Gary Hansen, Parker, Arizona

Mr. Carlos Marin, US-IBWC, El Paso, Texas

Mr. Mason D. Morisset, Seattle, Washington

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