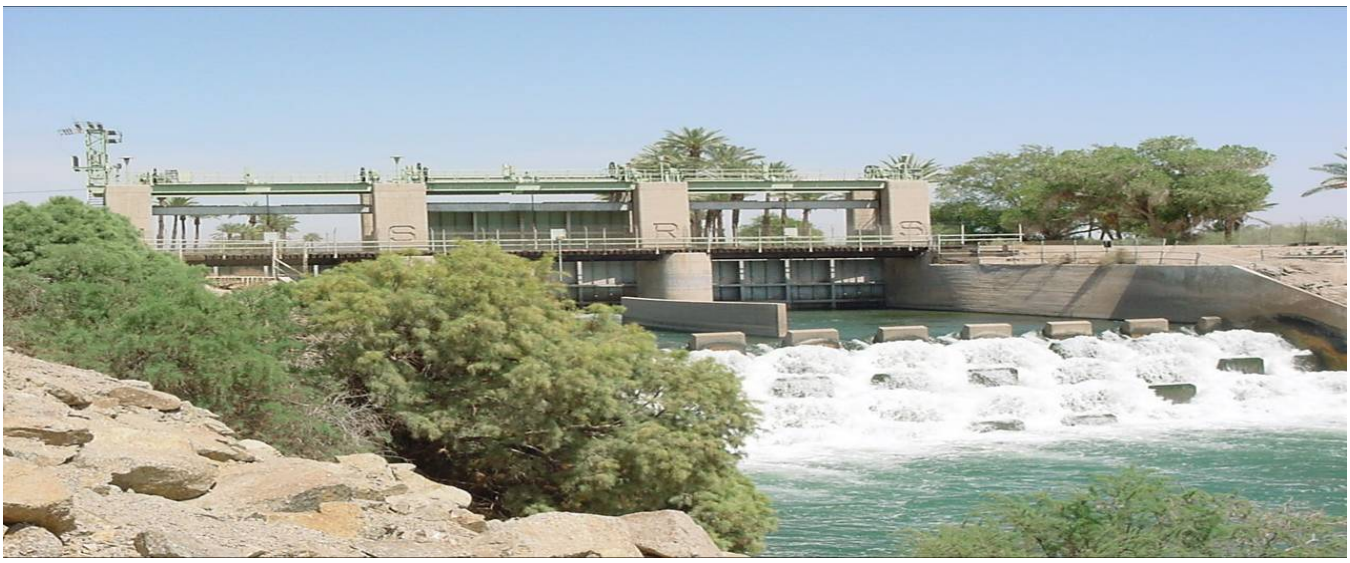
RECLAMATION

Managing Water in the West

Final Environmental Assessment for the Laguna Reservoir Restoration Project

Laguna Restoration Project
Lower Colorado Region



U.S. Department of the Interior
Bureau of Reclamation
Yuma Area Office
Yuma, Arizona

September 2006

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Final Environmental Assessment for the Laguna Reservoir Restoration Project

Laguna Reservoir Restoration Project
Lower Colorado Region

Prepared for:

Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85364
Contact: Julian DeSantiago: (928) 343-8259

Prepared by:

SAIC
525 Anacapa Street
Santa Barbara, CA 93101
Contact: Paul Cylinder, Ph.D.: (916) 730-1385

U.S. Department of the Interior
Bureau of Reclamation
Yuma Area Office
Yuma, Arizona

September 2006

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Executive Summary

This Environmental Assessment (EA) describes the potential environmental consequences resulting from a proposal by the United States (U.S.) Bureau of Reclamation (Reclamation) to allow for removal of sediment that has accumulated at the All-American Canal Headworks and the California Sluiceway channel by restoring the storage capacity of the Laguna Reservoir on the Colorado River such that sluicing flows from Imperial Dam may be safely captured. Reclamation has prepared this EA in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code (U.S.C.) §§ 4321-4370d, as implemented by the Council on Environmental Quality (CEQ) regulations, 40 Code of Federal Regulations (CFR) Parts 1500-1508 and the guidelines contained in the U.S. Department of the Interior Bureau of Reclamation Draft NEPA Handbook (Reclamation 2005a).

Purpose of and Need for the Proposed Action

Laguna Dam is located approximately 12 miles northeast of Yuma, Arizona, and five miles downstream from Imperial Dam, on the border of California and Arizona. The reservoir storage area is located within the existing floodplain of the Colorado River that is currently bound by Imperial Dam on the north side, Laguna Dam on the south side, Mittry Lake and the Old River channel on the east side, and the Laguna Settling Basin on the west side.

The Laguna Reservoir's original storage capacity was approximately 1,500 acre-feet (af) and was historically maintained by dredging approximately every ten years (since the 1940s) to prevent sediment accumulation. Sediment deposition has reduced the reservoir storage capacity to approximately 400 af at the present time.

The current reduced storage capacity within the Laguna Reservoir is insufficient to accommodate regular sluicing events which require releases of approximately 300 to 400 af of water per event and should occur two to three times per week. Sediment collected by the Imperial desilting works, along with water to move it, is discharged into the California Sluiceway. As sediment collects in the sluiceway, it is moved 3,000 feet downstream to a sediment settling basin in Laguna Reservoir using high rate, short duration sluicing flows of 8,000 to 14,000 cubic feet per second (cfs) of approximately 20 minutes in duration. The current frequency of sluicing events performed approximately every other week has resulted in accumulated sediment above Laguna Dam, which would require increasing amounts of water over time to remove sediment and prevent compaction.

In addition to affecting the ability to store sluicing flows, sediment deposition above Laguna Dam has resulted in nuisance vegetation growth near hydraulic features, which compromises the operational function of the reservoir and the structural integrity of the Dam. Woody vegetation has also grown across a significant portion of the Laguna Dam weir. Vegetation upstream of the

weir adversely affects the structural integrity of the weir and has blocked roughly two thirds of the structure's concrete outlet structure.

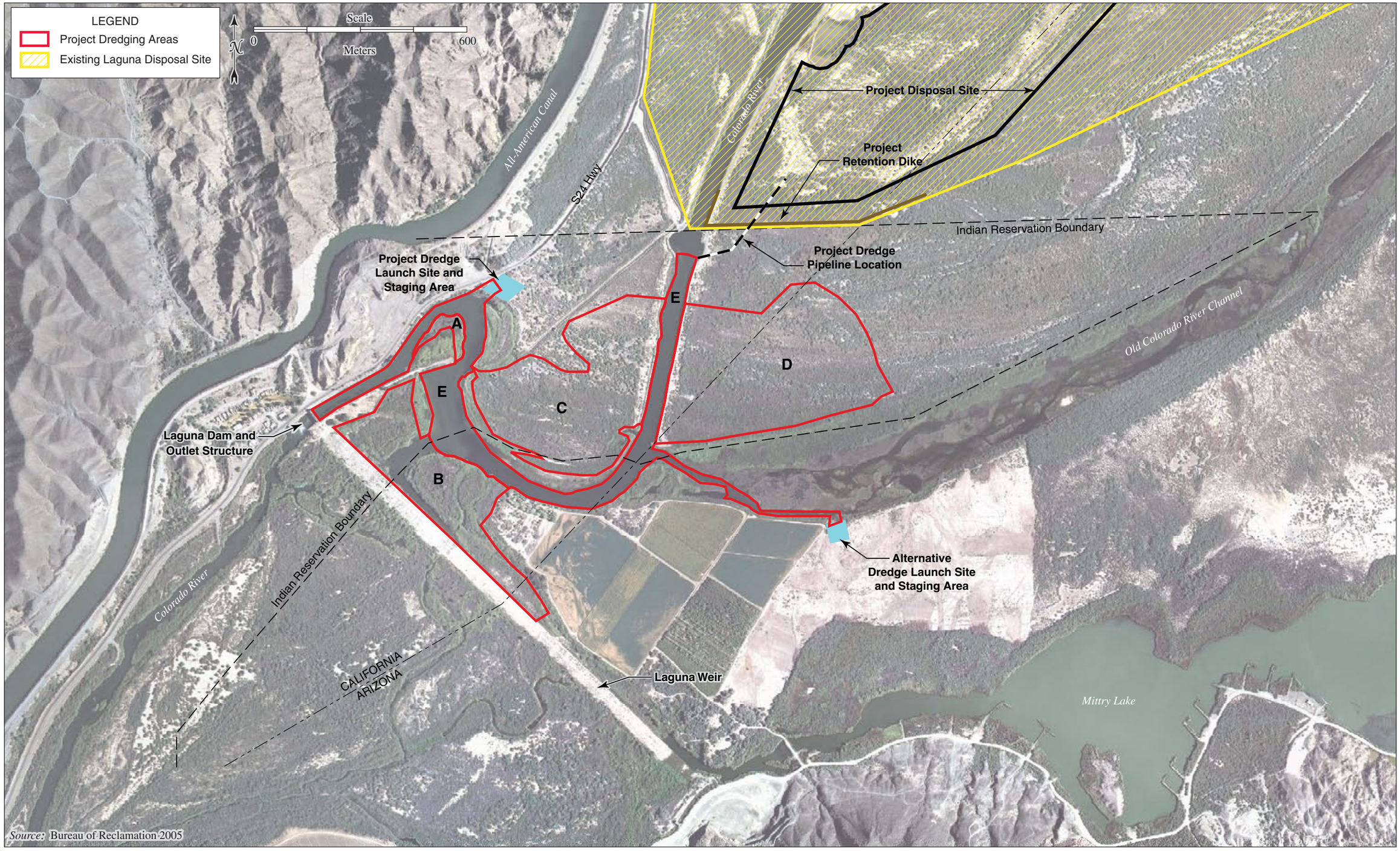
The purpose of the proposed dredging project above Laguna Dam is to provide increased water storage capacity to capture sluicing flows released from Imperial Dam and to maintain the operational integrity of Laguna Dam. This action would achieve the desired functional improvements to the reservoir and maintain the historic integrity of Laguna Dam and also avoid as much of the existing wetlands as possible.

Description of Alternative 1 — 1,500 Acre-Feet Storage Reservoir with Reduced Wetland Impact (Proposed Action)

Alternative 1, the Proposed Action, would increase storage behind Laguna Dam from approximately 400 af to 1,500 af by removing accumulated sediment through dredging behind Laguna Dam and weir, in the existing river channel, and in uplands adjacent to the open water channel of the Colorado River. The Proposed Action would include the removal of accumulated sediment and nuisance vegetation from a large segment of the weir. Additional capacity would be created by dredging approximately 27 acres behind the dam, two large upland areas equal to 88 acres adjacent to the open water channel of the Colorado River, and 34 acres of open water (see Figures ES-1 and ES-2). The dredging plan was designed to avoid as much of the existing wetlands as is practicable, while meeting the purpose and need for the project.

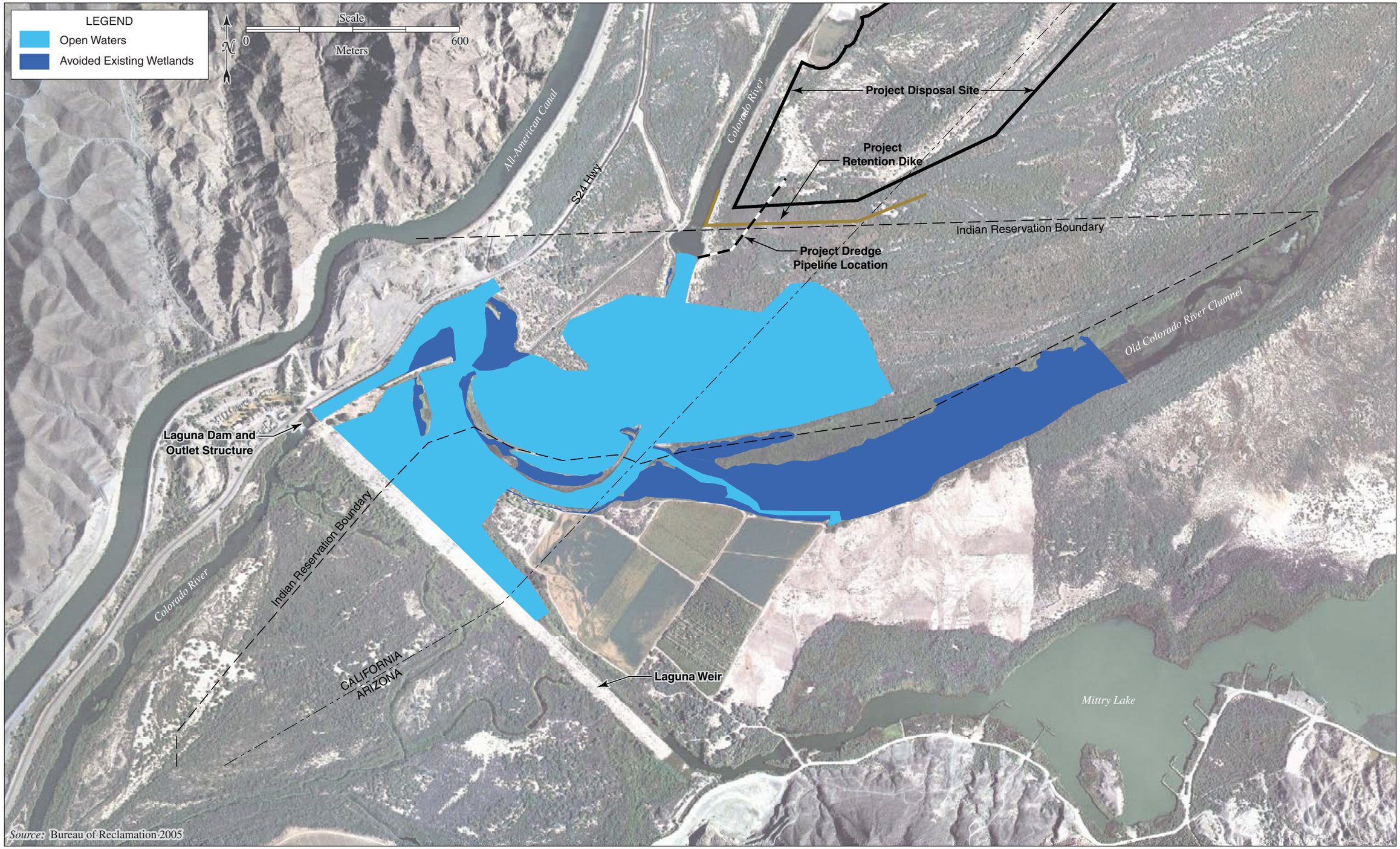
A total of 7.22 acres of marsh wetlands would be established to compensate for the loss of 7.22 acres of marsh wetlands that would result from the Proposed Action. Mitigation of Proposed Action impacts on wetlands would be achieved through avoidance measures included as part of the Project and restoration of 7.22 acres of wetlands at the Imperial National Wildlife Refuge (INWR).

The Proposed Action is a covered activity under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The LCR MSCP is an authorized and permitted conservation program under the Federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). All LCR MSCP requirements would be implemented to address impacts of the Project, and the LCR MSCP conservation measures are incorporated by reference into the EA.



Source: Bureau of Reclamation 2005

Figure ES-1. Project Layout Associated with Alternative 1 (Proposed Action)



Source: Bureau of Reclamation 2005

Figure ES-2. Post-Project Conditions at Laguna Reservoir

Alternative 2 – 2,800 Acre-Feet Storage Reservoir

Alternative 2 is similar to Alternative 1, except the storage capacity behind Laguna Dam would increase to 2,800 af instead of 1,500 af. The island at the entrance to the gated outlet structure would be removed, rather than a small portion, to allow unrestricted flow through the gated structures and preclude future constriction of the outlet structure. Alternative 2 increases the amount of dredging in the upland areas, so that approximately 212 acres of uplands would be converted to open water versus 88 acres under Alternative 1. The conservation measures of the LCR MSCP would apply to this alternative as a covered activity. This alternative, however, may not be fully covered under the LCR MSCP because of the larger extent of dredging activity under this alternative (final storage of 2,800 af) than was anticipated for the Project as a covered activity under the LCR MSCP (final storage of 1,500 af – the same as Alternative 1).

Alternative 3 – 1,500 Acre-Feet of Storage without Wetland Avoidance Measures

Alternative 3 is similar to Alternative 1, except dredging footprints were designed to maximize functional improvements to the reservoir with the least amount of overburden instead of minimizing impacts to wetlands. This alternative would convert 16.1 acres of wetlands to open water instead of 7.22 acres as proposed under Alternative 1. Similar to Alternative 2, the entire island at the entrance to the gated structures and channel would be removed to allow unrestricted flow through the gated structures and preclude future constriction of the outlet structure. The area in front of the weir would primarily be dredged on the California side, similar to Alternative 1. Upland dredging would be similar to Alternative 1. The conservation measures of the LCR MSCP would apply to this alternative as a covered activity.

No-Action Alternative

Under the No-Action Alternative, no sediment dredging or vegetation removal would occur in the Laguna Reservoir, and the storage capacity behind the dam would remain at levels severely below its pre-1983 capacity. Without sufficient storage behind Laguna Dam, the reservoir would require draining at a higher frequency to contain sluicing flows, and sluicing flows would continue downstream causing large fluctuations in flows below Laguna Dam. Vegetation upstream of the weir would continue to adversely affect the structural integrity of the weir. If vegetation continues to grow across the remaining open section of the outlet structure, it would completely block flows from routing through the outlet structure when the reservoir rises during a 50 to 100 year flooding event. The No-Action Alternative would allow existing wetlands to remain, and it is anticipated that new or expanded wetlands would result as continued sediment import raises the bottom elevation of open water habitat. Under No-Action conditions,

eventually the reservoir would fill with sediment and vegetation, and there would be very little to no open water.

Alternatives Considered But Eliminated

Reclamation considered and screened a range of alternatives in developing the Proposed Action. Various alternatives were considered and rejected due to engineering, funding, and/or environmental constraints. The following alternatives were considered but eliminated from further consideration:

- Dredging Other Locations to Capture Sediment
- Construct a New Detention Structure Below Laguna Dam
- Mechanical Sediment Removal
- Laguna Dam Modifications
- Decommissioning Laguna Dam

Summary of Environmental Impacts

The analysis presented in this EA indicates that implementation of the Proposed Action or other alternatives would not result in significant impacts for any resource area. The No-Action Alternative, however, may be associated with potentially significant impacts. While all impacts under each alternative (except for the No-Action Alternative) were evaluated as No Significant Impact, the Proposed Action would have the least impact to wetland habitats, while achieving the project objectives. The environmental consequences associated with implementation of these alternatives, after implementation of applicable mitigation measures, are presented and compared in Table ES-1 below.

Table ES-1. Summary of Impacts

Resource Area	***Alternative 1 (Proposed Action)***	***Alternative 2***	***Alternative 3***	***No-Action Alternative***
Aesthetics	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact
Air Quality	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Biological Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Cultural Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Environmental Justice	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Hazards/Hazardous Materials	No Significant Impact	No Significant Impact	No Significant Impact	No Impact

Table ES-1. Summary of Impacts (continued)

Resource Area	*Alternative 1 (Proposed Action)*	*Alternative 2*	*Alternative 3*	*No-Action Alternative*
Hydrology/Water Quality	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Indian Trust Assets	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Land Use	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Noise	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Public Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Socioeconomics	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Topography, Geology, Soils, and Mineral Resources	No Significant Impact	No Significant Impact	No Significant Impact	No Impact

Summary of Proposed Mitigation Measures

The following is a summary of proposed mitigation measures.

- Aesthetics – Security and night lighting shall be directed downward and inward through use of standard light shields or hoods toward the area to be illuminated, in order to minimize offsite light and glare.
- Air Quality – To ensure that the Proposed Action produces less then significant air quality impacts, Reclamation shall comply with the requirements of Regulation VIII, as outlined in Chapter 3.2 of this EA.
- Biological Resources – The Project is a covered activity under the LCR MSCP and accompanying biological and conference opinion for Federal covered actions. With incorporation of Avoidance and Minimization Measures (AMM3 and AMM6) and project design components to avoid and minimize impacts on wetlands, the expansion of open water habitat within the project area, and compensatory mitigation for all marsh wetlands affected by the Proposed Action, impacts on wildlife, aquatic areas and wetlands would be less than significant.
- Cultural Resources – Project activities within 100 feet of the Laguna Dam shall be monitored by an archeologist that meets the Secretary of the Interior's professional qualification standards for archeology.
- Hydrology – While no significant impacts are anticipated, Reclamation would install a staff gage in the portion of the Old River channel behind Laguna Reservoir. The gage shall be located so as to be accessible for interested agencies to monitor water surface elevations in the Old River channel.

- Hazards – Pursuant to NPDES requirements, a Storm Water Pollution Prevention Plan (SWPPP) shall be in place prior to dredging and pipeline construction. The SWPPP shall include standard Best Management Practices (BMPs), such as temporary spill containment booms and absorbent pads, to be utilized in accordance with an established spill contingency plan.
- Geology and Water Quality – Pursuant to NPDES requirements, a SWPPP shall be in place prior to road grading, pipeline construction, and disposal operations. The SWPPP shall include standard BMPs, including erosion control features such as straw wattles, silt fences, revegetation, minimization of grading (to the extent possible), construction of surface water velocity reducers, and installation of erosion control barriers around stockpiled soil. Such measures shall be implemented in accordance with an established erosion control plan.

1.0 Purpose and Need

1.1 Introduction

This Environmental Assessment (EA) has been prepared by the Bureau of Reclamation (Reclamation) in accordance with the National Environmental Policy Act (NEPA) (42 United States Code [USC] Section 4321 to Section 4347) and the Council on Environmental Quality (CEQ) NEPA Regulations (42 USC 4371 et seq.). The proposed Laguna Reservoir Restoration Project (Project) is intended to allow for removal of sediment that has accumulated at the All-American Canal Headworks and the California Sluiceway channel by restoring the storage capacity of the Laguna Reservoir on the Colorado River such that sluicing flows from Imperial Dam may be safely captured. Reclamation manages multiple facilities along the Colorado River to control floods, deliver water for beneficial uses in the United States (U.S.) and Mexico, and generate electrical energy.

Laguna Reservoir's storage capacity prior to 1983 was maintained at approximately 1,500 acre-feet (af), but flood-deposited sediment has reduced the storage capacity to approximately 400 af. The Project is designed to restore the reservoir's capacity to 1,500 af through the excavation of accumulated sediments in the basin area immediately upstream of Laguna Dam.

The purposes of the EA are to:

- Disclose to decision-makers and the public the Project's potential environmental effects;
- Identify ways to avoid or reduce potential adverse effects through alternatives or mitigation measures; and
- Enhance agency coordination and public participation in the project review process.

Reclamation is the lead agency for the EA. Other agencies that may use the EA or information contained in the EA in approving various aspects of the Project are discussed in Chapter 5.

1.2 Project Location

Laguna Dam is located approximately 12 miles northeast of Yuma, Arizona, and five miles downstream from Imperial Dam, on the border of California and Arizona (Figure 1-1). The reservoir storage area is located within the existing floodplain of the Colorado River that is currently bound by Imperial Dam on the north side, Laguna Dam on the south side, Mittry Lake and the Old River channel on the east side, and the Laguna Settling Basin on the west side (Figure 1-2).

1.3 Background

Laguna Dam, completed by Reclamation in 1909, is a rock-filled dam with a structural height of 19 feet and a length of 4,840 feet (dam and weir). It was originally built to create a diversion structure and desilting works for the old Yuma Main Canal on the California side of the river and the North Gila Canal on the Arizona side of the river. In 1948, the outlet works for the Yuma Main Canal were sealed and water for the Yuma Project was diverted through the All-American Canal at Imperial Dam, built in 1938 and located about 5 miles upstream from Laguna Dam. In 1953, the outlet works for the North Gila Canal were sealed and diversions to the North Gila Valley began through the Gila Gravity Main Canal, which also diverts at Imperial Dam. Laguna Reservoir's original storage capacity was approximately 1,500 af and was historically maintained by dredging approximately every ten years (since the 1940s) to prevent sediment accumulation. Sediment deposition has reduced the reservoir storage capacity to approximately 400 af at the present time (see Figure 1-3 for views of the Laguna Reservoir over time).

1.4 Purpose and Need for Proposed Action

The purpose of the proposed dredging project above Laguna Dam is to provide increased water storage capacity to capture sluicing flows released from Imperial Dam and to maintain the operational integrity (function ability) of Laguna Dam. The current reduced storage capacity within the Laguna Reservoir is insufficient to accommodate regular sluicing events which require releases of approximately 300 to 400 af of water per event and should occur two to three times per week. Sediment collected by the Imperial desilting works, along with water to move it, is discharged into the California Sluiceway. As sediment collects in the sluiceway, it is moved 3,000 feet downstream to a sediment settling basin in Laguna Reservoir using high rate, short duration sluicing flows of 8,000 to 14,000 cubic feet per second (cfs) of approximately 20 minutes in duration. The current frequency of sluicing events performed approximately every other week has resulted in accumulated sediment above Laguna Dam which would require increasing amounts of water over time to remove sediment and prevent compaction.

In addition to affecting the ability to store sluicing flows, sediment deposition above Laguna Dam has resulted in nuisance vegetation growth near hydraulic features, which compromise the operational function of the reservoir and the structural integrity of the Dam, including features of historical value. Laguna Dam is used as a regulating structure for Laguna Reservoir. Vegetation growth and silt capture upstream of Laguna Dam gate structure's concrete outlet channel (outlet structure) located at the California side of Laguna Dam (Figure 1-2) has blocked about two thirds of the channel. Woody vegetation has also grown across a significant portion of the Laguna Dam weir. Vegetation upstream of the weir adversely affects the structural integrity (accelerating structural deterioration) of the weir and causes the water surface elevation to rise further above the design water surface elevation during floods, creating a larger impoundment and thus inundating a larger area than would otherwise occur. If vegetation continues to grow across the remaining open section of the outlet structure, it would completely block flows from entering the outlet structure when the reservoir rises during a 50 to 100 year flooding event, further increasing the water surface elevation upstream of Laguna Dam.

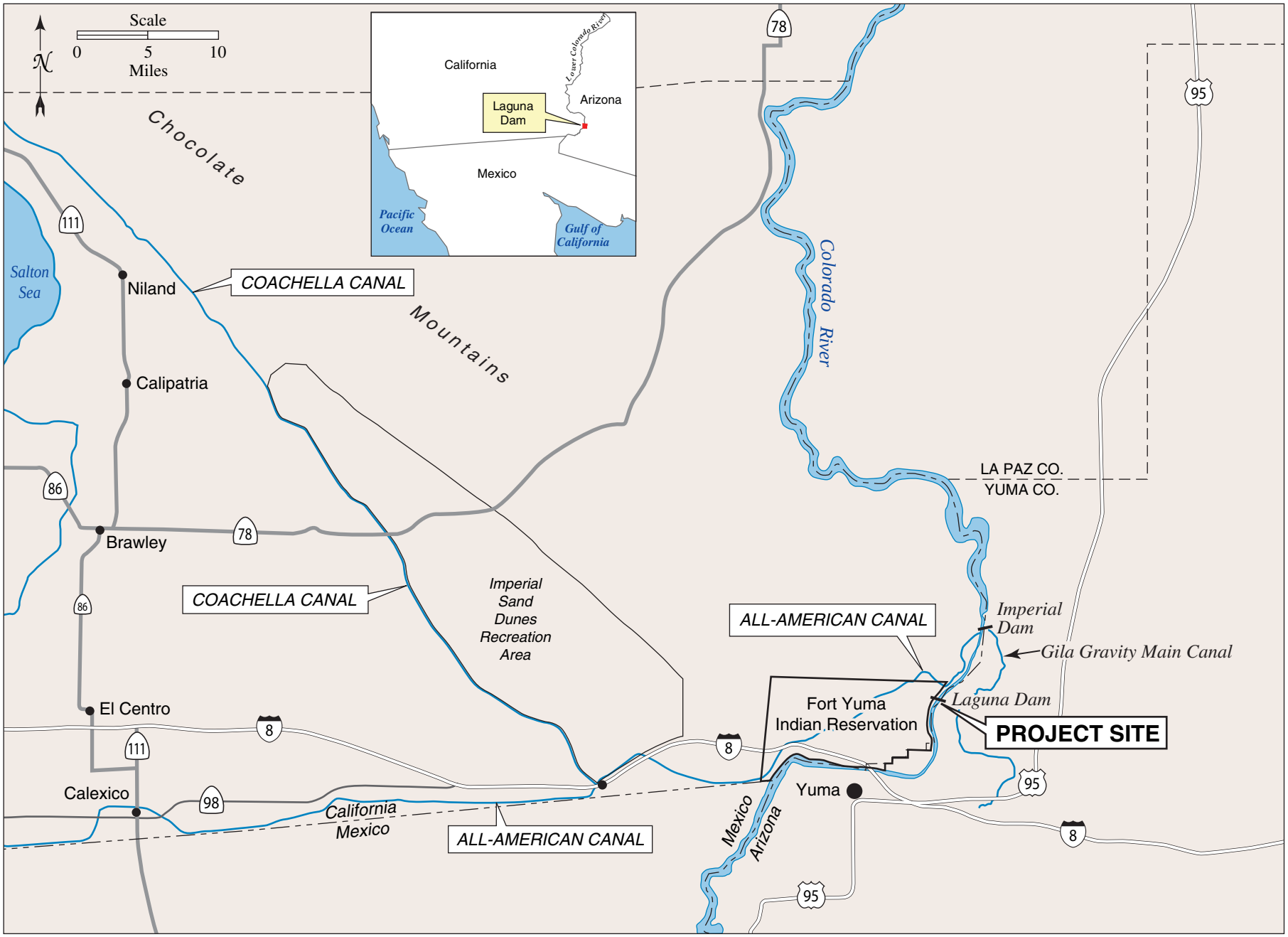


Figure 1-1. General Location of the Laguna Reservoir Restoration Project

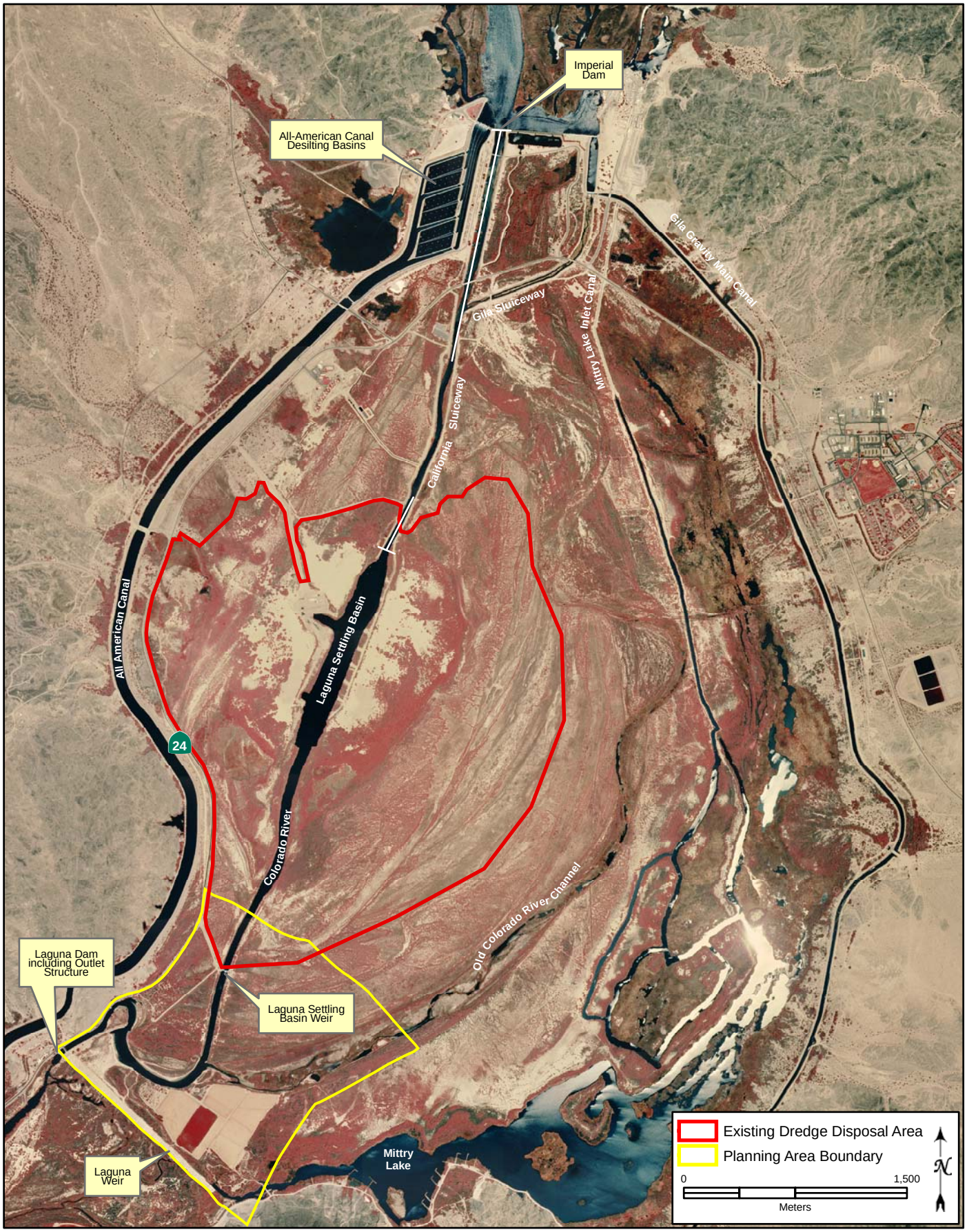
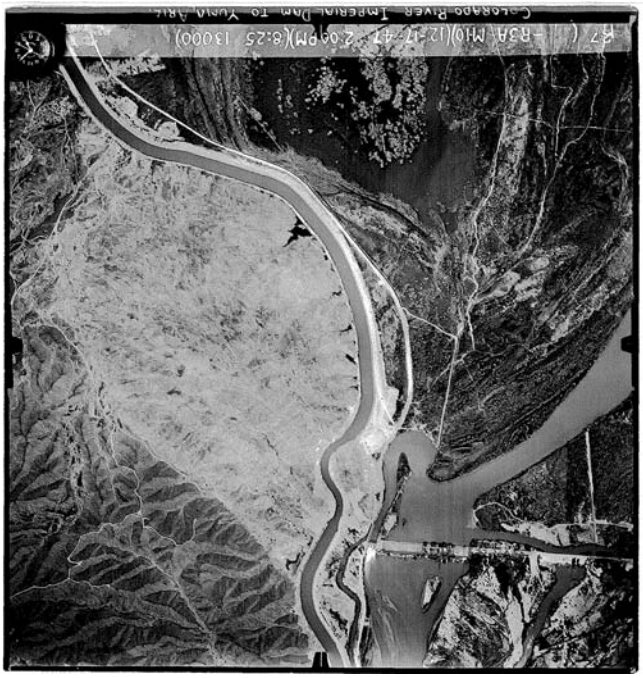
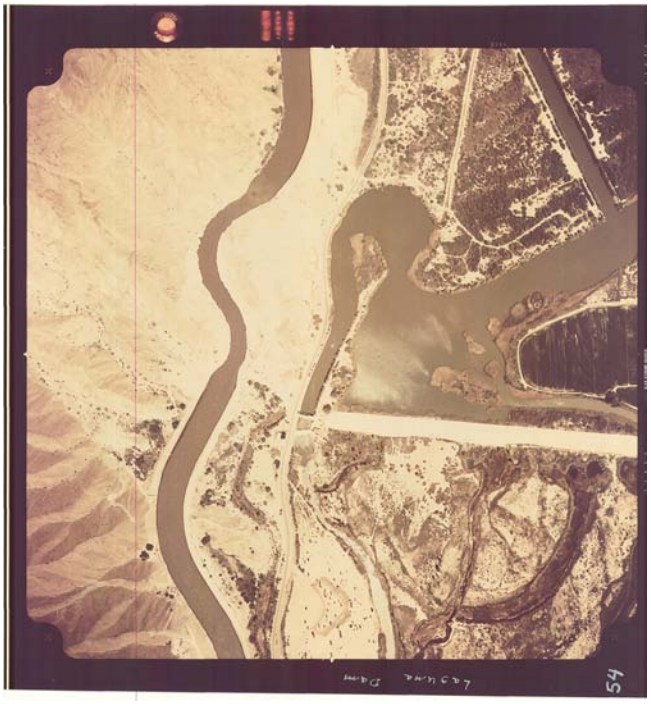


Figure 1-2. Locator Map



Air photo dated December 17, 1947.



Air photo dated October 1979
(showing pre-1983 conditions).

Photograph taken November 2005.

Figure 1-3. Views of Laguna Reservoir over Time

1.5 Public Involvement and Scoping Process

Reclamation conducted scoping to provide interested individuals and organizations information about the project and opportunities to comment on the proposed action, alternatives, and potential issues. Details about the scoping process, comments received, and Reclamation responses are provided in Appendix A. Reclamation's coordination with resource agencies is on-going and will continue throughout the proposed project.

1.6 EA Organization

The Project (the Proposed Action) and alternatives considered as part of the NEPA process are described in detail in Chapter 2. Chapter 3 presents information on the affected environment; environmental impacts associated with implementation of the Project; and mitigation measures designed to avoid or substantially reduce potentially adverse environmental effects. Chapter 4 describes the cumulative impacts of the Project when combined with impacts of other past, present, and reasonably foreseeable future actions. Chapter 5 addresses other NEPA considerations, including compliance with environmental statutes, possible conflicts with land use plans, and the relationship between short-term uses of the environment and long-term productivity. Chapter 6 identifies preparers of the EA, and Chapter 7 contains a list of the persons and agencies consulted during preparation of the EA. Chapter 8 provides the list of those entities who received a copy of the Draft EA for review. Chapter 9 provides the reference list for the EA, and Chapter 10 identifies the acronyms used in the document.

Appendices are provided to include the following:

- Appendix A – Scoping Report
- Appendix B – Air Quality data
- Appendix C – Correspondence
- Appendix D – Brown & Caldwell Technical Memorandum & Laguna Dam Flow and Water Surface Elevation Data Tables
- Appendix E – Comments on Draft EA

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2.0 Alternatives Including the Proposed Action

2.1 Alternative 1 — 1,500 Acre-Feet Storage Reservoir with Reduced Wetland Impact (Proposed Action)

Under Alternative 1 (Proposed Action), Reclamation would increase storage behind Laguna Dam from approximately 400 af to 1,500 af by removing accumulated sediment through dredging behind Laguna Dam and weir, in the existing river channel, and in uplands, as shown in Figure 2-1. The dredging plan was designed to avoid as much of the existing wetlands as is practicable, while meeting the purpose and need for the project. The conservation measures of the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) would apply to this alternative as a covered activity.

Location of Proposed Dredging and Vegetation Removal Activities

Proposed sediment and vegetation removal would restore the operational effectiveness of existing structures, including the gated outlet structure and the weir. Under the Proposed Action, Reclamation would remove sediment and vegetation in the following areas (Figure 2-1):

- Remove approximately 1.4 acres of vegetation and sediment of the island at the entrance to the outlet structure (Area A) that currently restricts flows through the outlet structure. The majority of the island would be left intact to minimize impacts to the associated wetland area. The dredge cut would be approximately 10 feet deep.
- Dredge approximately 27 acres behind the dam and weir (Area B). The dredge cut would be approximately 10 feet deep. Dredging directly behind the dam would include a 50-foot buffer area from dam crest to dredge to ensure that no dam feature would be inadvertently impacted during dredging operations.
- Dredge 88 acres of upland area (Areas C and D). The dredge cut would be approximately 12.5 feet deep. The design for the upland dredging areas includes at least a 3-foot horizontal to 1-foot vertical slope (3:1 slope) for any new bankline cuts.
- Dredge approximately 34 acres within the existing open water channel (Area E). The approximate dredge cut would be 2.5 feet deep.

Calculations of final storage capacity were developed by using the assumption that each acre of any portion of the dredged area would provide 10 feet of storage depth. Therefore, the volume calculation that results is 150 acres x 10-foot depth = 1,500 af storage capacity. The total dredging volume for all areas would be approximately 2.3 million cubic yards of material. Dredging and vegetation removal activities would result in the removal of approximately 7.22

acres of existing wetlands. While this alternative includes some dredging at the mouth of the Old River channel impacts, on wetlands in the Old River channel would be avoided by restricting the dredging activity to the open water areas only. Avoidance of wetland areas along the Colorado River channel and the weir would be accomplished by creating a buffer zone between the dredging operation and the wetland vegetation equaling three times the depth of dredging cut. For example, if the depth of cut is 10 feet, the distance between the dredge and wetland vegetation would be 30 feet.

Table 2-1. Comparison of Dredging Areas among the Project Alternatives (acres)

Dredging Area	*Alternative 1 (Proposed Action)*	*Alternative 2*	*Alternative 3*	*No-Action Alternative*
A	1.4	3.5	4.0	0
B	27	29.5	25.5	0
C & D	88	212.3	84.6	0
E	34	34.8	34.0	0
Total Acreage Dredged	150	279.4	148.1	0

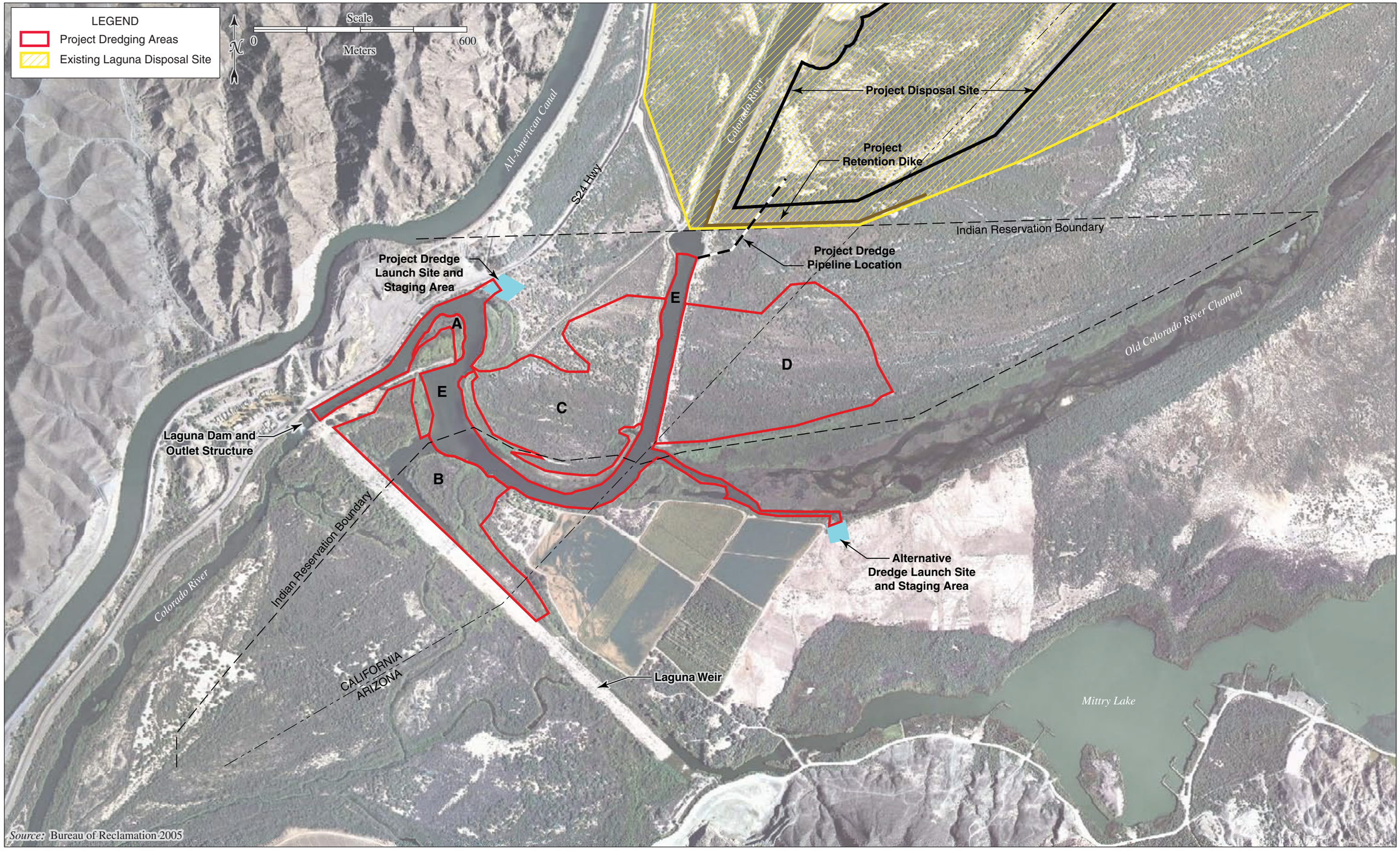
Vegetation Removal and Dredge Operations

Prior to dredging, Reclamation would clear and mulch vegetation using land-based equipment in uplands and an amphibious mower and/or excavator in inundated areas to clear a path for the dredge. A floating dredge with cutter head would be used to loosen sediment, and the sediment would then be blended with water and pumped through a temporary hydraulic pipeline to the disposal site (Figure 2-1). The pipeline from the water's edge to the disposal site would be placed adjacent to, or on, an existing service road leading to the disposal site where it is moved by equipment in the filling and spreading process. The total length of the pipeline would be approximately 1.5 miles.

During dredging, excavation depth would vary depending on the existing overburden. The bottom of the proposed excavated areas would be approximately 141 feet elevation and the maximum water depth would be about 10 feet. Dredging operations and vegetation clearing are expected to occur over a 36-month period, between July 2006 and June 2009. For a comparison of acreage dredged by area see Table 2-1.

Dredge Staging and Launching

The proposed dredge launch site is located on Security Zone lands (lands withdrawn by Reclamation) within the boundary of the Fort Yuma Indian Reservation (Figure 2-1). An existing boat ramp located at the site (see Figure 2-1) would be modified and expanded. The resulting launch ramp would measure 200 feet by 200 feet. Modification and expansion of the launch site would require vegetation clearing and grading of the area around the existing boat ramp and placing approximately 25 cubic yards of gravel material below the Ordinary High Water Mark. An additional area adjacent to the boat ramp (200 feet by 200 feet) would be cleared and set up as a staging and storage area for dredging operations. Existing access roads would be re-graded to support construction vehicles. Reclamation is also considering an alternative dredge launch site located on the Arizona side of the river (see Figure 2-1), which would need the same upgrades as described above.



Source: Bureau of Reclamation 2005

Figure 2-1. Project Layout Associated with Alternative 1 (Proposed Action)

Dredge Material Disposal Site

Dredged and excavated material would be disposed of within a small portion (approximately 116.1 acres) of the Laguna Disposal Site located north of the proposed dredging areas (Figure 2-1). The Laguna Disposal Site, which covers approximately 1,500 acres, is an existing Reclamation sediment disposal site that has been used since 1963. Other portions of the disposal site currently receive dredge material from both the Laguna and Imperial Desilting Basins.

A retention dike would be constructed along the southern boundary of the disposal site to prevent material from migrating outside the area. Containment of the dredged material would ensure no return of dredged river water directly to the river by allowing for the dredged river water to percolate into the ground water table before it reaches the river. The dike would be approximately 3,000 feet in length, 14 feet high, and would be constructed of compacted local material.

Reservoir Operation

During and after dredging, the Laguna Reservoir would operate similar to historic water surface elevations that have been maintained in the past (see data tables in Appendix D). Historically, water levels have ranged from 141.5 feet to 151.3 feet, although on some occasions elevations have reached as high as 153.5 feet (Brown & Caldwell 2006).

Future outflows from Laguna Reservoir are expected to be similar as observed in past years. The expected greater reservoir capacity would provide greater flexibility in managing and regulating these outflows (Brown & Caldwell 2006).

Maintenance Activities

Once restored, the Laguna Reservoir would be maintained by dredging and vegetation removal on an as-needed basis. Reclamation expects to maintain approximately 150 surface acres of the reservoir at a minimum average depth of 10.0 feet to maintain the proposed storage capacity. Dredge material would continue to be placed within the existing 1,500 acre Laguna Disposal Site. In addition, the dredge launch site and access roads would continue to be maintained, as needed, in support of Reclamation activities.

Habitat Restoration

A total of 7.22 acres of marsh wetlands would be established to compensate for the loss of 7.22 acres of marsh wetlands that would result from the Proposed Action. Mitigation of Proposed Action impacts on wetlands would be achieved through avoidance measures included as part of the Project and restoration of 7.22 acres of wetlands at the Imperial National Wildlife Refuge (NWR).

Reclamation has designed the Project to avoid and minimize impacts on wetlands through a reduced dredging area footprint in wetlands, locating dredging predominately in upland areas, and providing a buffer of 30 feet between the dredge operation and avoided wetlands.

Wetland restoration would be conducted under the Imperial Ponds Reconstruction and Expansion Project at the Imperial NWR immediately adjacent to the Colorado River approximately 10 miles north of the Laguna Reservoir site. This restoration project includes the expansion of ponds and associated marsh habitat in an area supporting existing ponds, marsh, and uplands that will result in a net gain of 2.00 acres of marsh wetlands. These 2.00 acres of wetlands would provide a portion of the mitigation for the loss of wetlands at the Project site. The Imperial Ponds Reconstruction and Expansion Project also includes the creation of 12 acres of marsh habitat on an upland site at Imperial NWR called "Field 18". Of the 12 acres of created wetlands created at Field 18, 5.22 acres would be designated to provide a portion of the compensatory mitigation for the loss of wetlands at the Project site. The combined total of 7.22 acres of wetlands restored and created at Imperial NWR provide compensation for the 7.22 acres of wetlands proposed for removal.

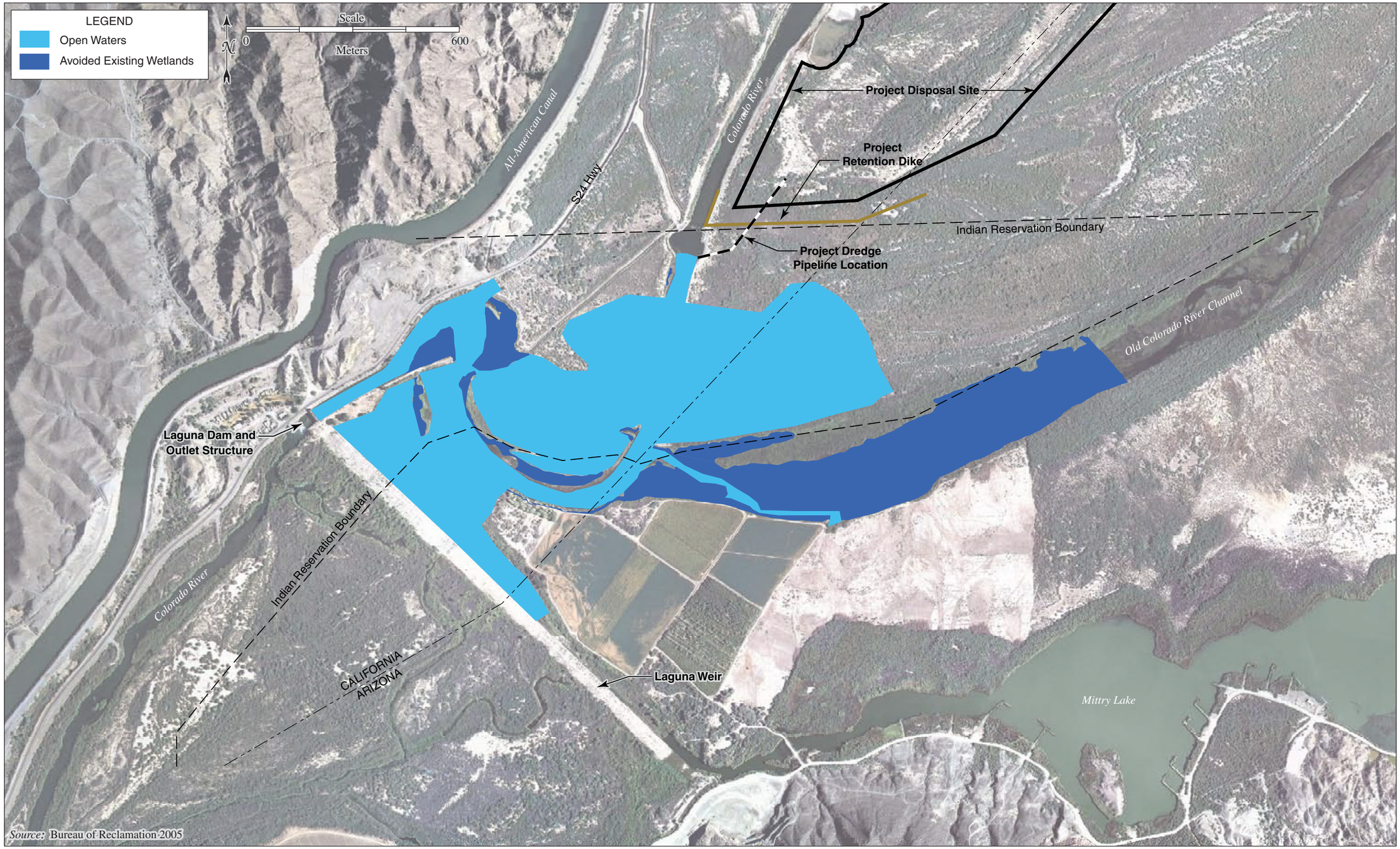
2.2 Alternative 2 — 2,800 Acre-Feet Storage Reservoir

Alternative 2 is similar to Alternative 1, except the storage capacity behind Laguna Dam would increase to 2,800 af instead of 1,500 af. Under this alternative, Reclamation proposes to remove sediment and vegetation in the following areas (Figure 2-3):

- Remove vegetation and sediment of the entire island (approximately 3.5 acres) at the entrance to the outlet structure (Area A) to allow unrestricted flow through the gated structures and preclude future constriction of the outlet structure. The dredge cut would be approximately 10 feet deep.
- Dredge approximately 29.5 acres behind the dam and weir (Area B). The design of Area B under Alternative 2 includes dredging a narrow channel behind the dam along the Arizona side of the weir that would not be dredged under Alternative 1. The dredge cut would be approximately 10 feet deep. Dredging directly behind the dam would include a 50-foot buffer area from dam crest to dredge to ensure that no dam feature would be inadvertently impacted during dredging operations.
- Dredge 212.3 acres of upland area (Areas C and D). The dredge cut would be approximately 12.5 feet deep.
- Dredge approximately 34.2 acres within the existing open water channel (Area E). The approximate dredge cut would be 2.5 feet deep.

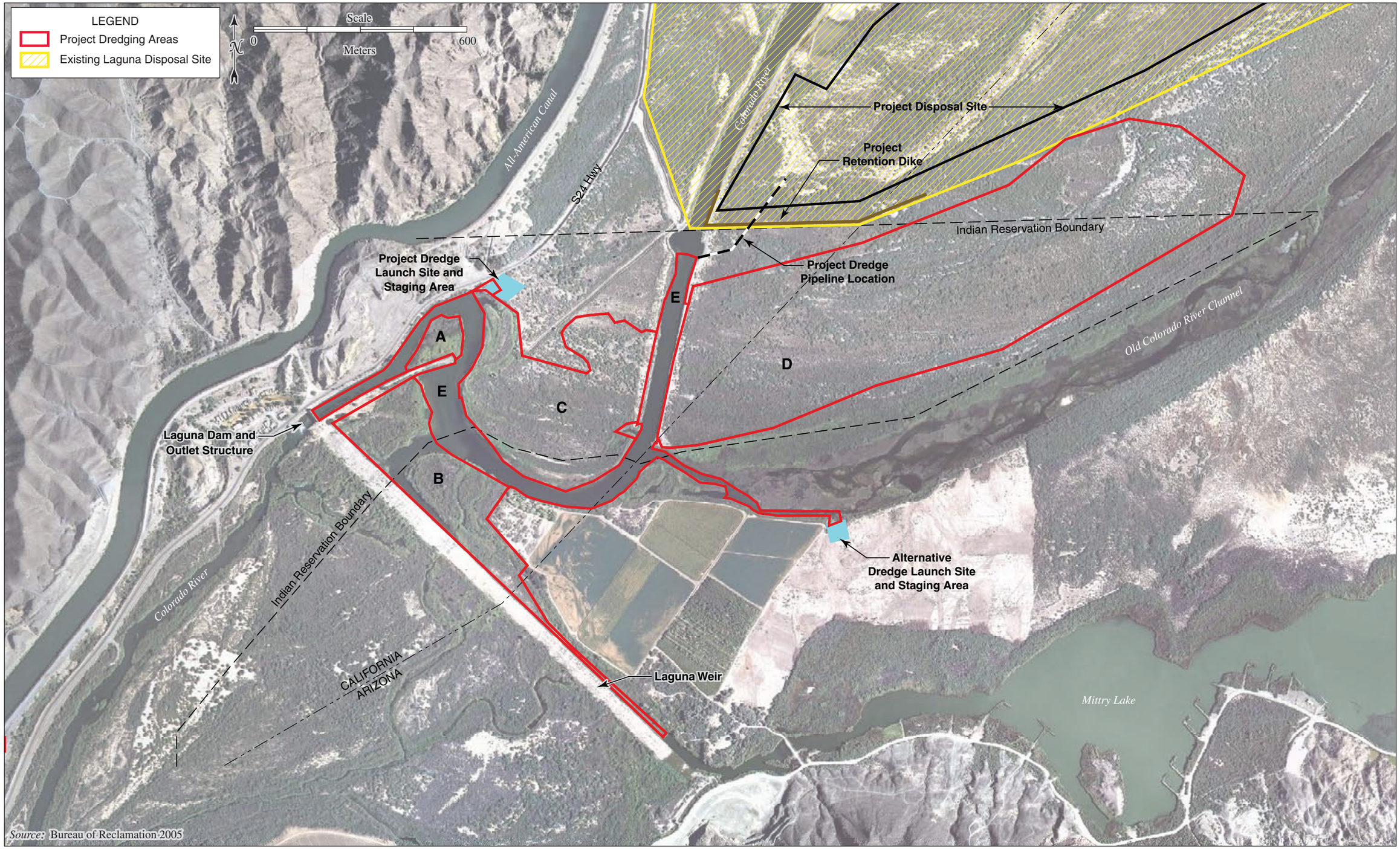
The total dredging volume for all areas would be over 4.8 million cubic yards of material. Approximately 16.0 acres of wetlands would be removed during dredging, primarily within Areas A, B, and C, rather than 7.22 acres of wetlands as proposed under Alternative 1. Dredge operations and staging, dredge material disposal, reservoir operation, and maintenance activities would be as described under Alternative 1.

The conservation measures of the LCR MSCP would apply to this alternative as a covered activity. This alternative, however, may not be fully covered under the LCR MSCP because of the larger extent of dredging activity under this alternative (final storage of 2,800 af) than was anticipated for the project as a covered activity under the LCR MSCP (final storage of 1,500 af, the same as Alternative 1).



Source: Bureau of Reclamation 2005

Figure 2-2. Post-Project Conditions at Laguna Reservoir



Source: Bureau of Reclamation 2005

Figure 2-3. Project Layout Associated with Alternative 2

2.3 Alternative 3 — 1,500 Acre-Feet of Storage without Wetland Avoidance Measures

Alternative 3 is similar to Alternative 1, except dredging footprints were designed to maximize functional improvements to the reservoir with the least amount of overburden instead of minimizing impacts to wetlands. Under this alternative, Reclamation proposes to remove sediment and vegetation in the following areas (Figure 2-4):

- Remove vegetation and sediment of the entire island (approximately 4.0 acres) at the entrance to the outlet structure (Area A) to allow unrestricted flow through the gated structures and preclude future constriction of the outlet structure, similar to Alternative 2. The dredge cut would be approximately 10 feet deep.
- Dredge approximately 25.5 acres behind the dam and weir (Area B), similar to Alternative 1. The dredge cut would be approximately 10 feet deep. Dredging directly behind the dam would include a 50-foot buffer area from dam crest to dredge to ensure that no dam feature would be inadvertently impacted during dredging operations.
- Dredge 84.6 acres of upland area (Areas C and D), similar to Alternative 1. The dredge cut would be approximately 12.5 feet deep. The design for the upland dredging areas includes at least a three foot horizontal to one foot vertical slope (3:1 slope) for any new bankline cuts.
- Dredge approximately 33.9 acres within the existing open water channel (Area E). The approximate dredge cut would be 2.5 feet deep.

The total dredging volume for all areas would be over 2.3 million cubic yards of material. This alternative would convert 16.1 acres of wetlands to open water instead of 7.22 acres as proposed under Alternative 1, but the two alternatives would achieve the same amount of overall reservoir capacity. Dredge operations and staging, dredge material disposal, reservoir operation, and maintenance activities would be as described under Alternative 1.

The conservation measures of the LCR MSCP would apply to this alternative as a covered activity.

2.4 No-Action Alternative

Under the No-Action Alternative, no sediment dredging or vegetation removal would occur in the Laguna Reservoir, and the storage capacity behind the dam would remain at levels severely below its pre-1983 capacity. Without sufficient storage behind Laguna Dam, the reservoir would require draining at a higher frequency to contain sluicing flows, and sluicing flows would continue downstream causing large fluctuations in flows below Laguna Dam. Vegetation upstream of the weir would continue to adversely affect the structural integrity of the weir. If vegetation continues to grow across the remaining open section of the outlet structure, it would completely block flows from routing through the outlet structure when the reservoir rises during

a 50 to 100 year flooding event. The No-Action Alternative would allow existing wetlands to remain, and it is anticipated that new or expanded wetlands would result as continued sediment import raises the bottom elevation of open water habitat. Under No-Action conditions, eventually the reservoir would fill with sediment and vegetation, and there would be very little to no open water.

The No-Action Alternative is not considered a practicable alternative because it does not meet the purpose and need for the proposed action. In this EA, the No-Action Alternative is equivalent to the baseline conditions described in Chapter 3, Affected Environment.

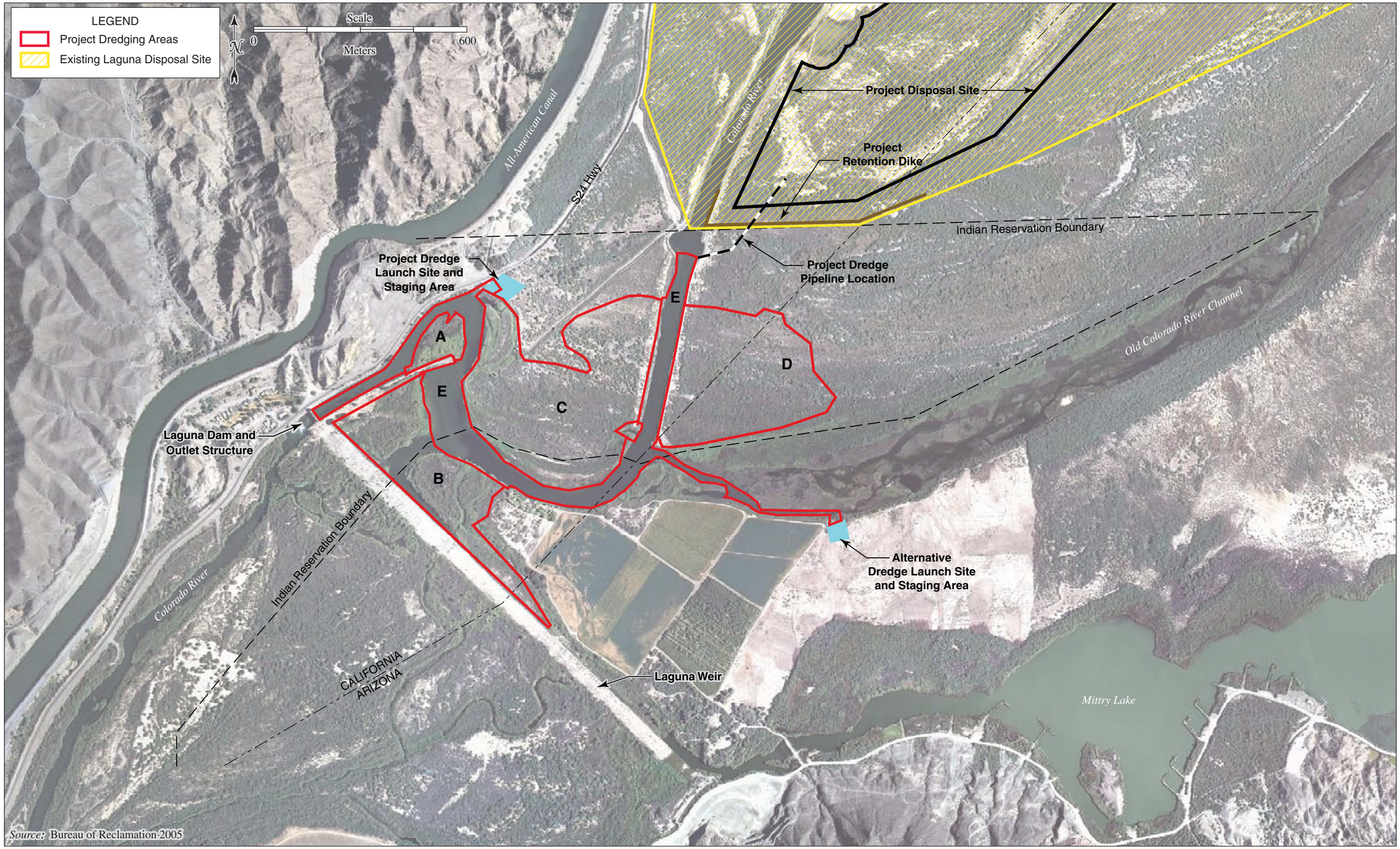
2.5 Alternatives Considered but Eliminated

Reclamation considered and screened a range of alternatives in developing the proposed action. This section contains descriptions of alternatives considered and provides reasons why these alternatives were eliminated from further consideration.

Dredging Other On-Site Locations

Several alternatives involving different dredging locations between Laguna and Imperial Dams were considered but eliminated due to excessive cost and environmental impacts. These alternatives include the following:

- Dredge the reservoir and create a large open water area immediately adjacent to the Old River channel. This alternative would provide the needed reservoir storage by excavating an area 300 feet by 7,000 feet at the edge of the Old River channel along with openings into the Old River channel. This alternative was eliminated due to anticipated impacts to large areas of high quality wetlands associated with the Old River channel.
- Dredge the reservoir and construct a flood flow channel from just downstream of Imperial Dam to Laguna Reservoir. This alternative would address the need to carry anticipated flood flows through Laguna Reservoir as well as provide additional reservoir storage. This alternative was eliminated due to the high construction costs, the relatively low expected benefits, and large environmental impacts, including impacts on wetlands.
- Dredge the reservoir and Old River channel and install weirs in the Old River channel. The weirs would address the issue of fluctuating water surface levels for wetlands in the Old River channel. This alternative was eliminated due to excessive environmental impacts on the Old River channel, including impacts to a large area of associated high quality wetlands.



Source: Bureau of Reclamation 2005

Figure 2-4. Project Layout Associated with Alternative 3

Off-site Construction Projects

A number of off-site alternatives were considered, but none could meet the purpose and need of the project. Two off-site construction project alternatives considered include the following:

- Construct a new settling basin above Imperial Dam. This alternative would provide for the capture of sediment before it reached Imperial Dam and the All-American Canal Desilting Basins. Relocating the settling basin would add considerable cost to the project and would result in increased environmental impacts. Even if the settling basin were relocated so that an alternate site could be used, additional hydraulic structures would need to be constructed to divert sluicing flows into and out of the new basin, adding even more cost to this alternative. Moving the settling basin and constructing new hydraulic control structures was considered an impracticable solution given structures already exist that meet the purpose and needs of the project. This alternative was eliminated due to the logistical feasibility, high cost, and high environmental impacts.
- Construct a new detention structure and reservoir downstream of the existing Laguna Dam. Such a structure could capture sluicing flows downstream of the existing Laguna Reservoir. This alternative would require the construction of new hydraulic structures. There is no ideal location for constructing a new water control detention structure or dam below the existing Laguna Dam. Even if there were a logistically practicable site, the cost to build such a structure would be considerable relative to on-site actions, and a new dam would require multiple federal approvals that would delay and potentially prevent implementation. Therefore, constructing a new dam downstream to capture sluicing flows was considered not practicable because of cost, site logistics, issues of availability, the fact that structures already exist that are capable of performing the desired functions, and impacts on agricultural areas.

Mechanical Sediment Removal

Sediment collected in the Laguna Settling Basin that requires periodic sluicing comes from three sources: the All-American Canal Desilting Basins, the Gila Gravity Main Canal Sluiceway, and from the backwater behind Imperial Dam. Of these three sources, sediment removed from the All-American Canal comprises approximately 95 percent of the sediment input to the river below Imperial Dam. Therefore, alternatives considered that would minimize the need for sluicing operations focused on reducing the amount of sediment introduced from the All-American Canal.

Two mechanical approaches (i.e., not using sluicing flows) were considered, but were determined to be either environmentally damaging or impractical compared to current sluicing operations. One approach would be to pump the All-American Canal slurry from the discharge point at the California Sluiceway to the disposal site. Another approach would be to dry the slurry at the dam and then truck the material to the disposal site and continuously distribute the material with bulldozers and other equipment.

- Pump slurry directly from Imperial Reservoir to dredge disposal site. This mechanical approach would take the high concentration slurry that is currently discharged into the sluiceway and pump it directly to the disposal area. This approach would require some

capital cost as well as operation and maintenance costs, but those costs would likely be manageable. Such an operation, however, would remove most of the water that enters the river below Imperial Dam. This water provides much of the downstream flow below Laguna Dam. Since this water and associated sediment would be discharged at the disposal site, the water would likely resurface downstream once the groundwater had surcharged sufficiently, but little to no water would flow between Imperial Dam and the Laguna Settling Basin rock weir about 3 miles downstream. The environmental impacts of this flow reduction would be substantially greater than that expected from dredging the existing reservoir at Laguna Dam. Therefore, this alternative was considered more environmentally damaging than other solutions and was screened from further consideration.

- Dry the sediment at Imperial Reservoir and truck it to the disposal area. This alternative approach contains inherent costs and hazards associated with a continual trucking operation. A new settling pond at Imperial Dam would be required to remove water from sediments to minimize hauling and handling costs. A cost effective method for removal of most of the water is not available. If complete dewatering could be accomplished and only the sediment volume had to be moved, an average of 140 tons of material per day would need to be mechanically moved to the disposal area and distributed. If a weight of 100 pounds per cubic foot is assumed, then 140 tons equates to about 105 cubic yards of material. The removal and disposal of that amount of material would cost an estimated $1.2 million a year. With the additional costs of trucks, loader, dozer, and the dewatering system, the total cost of this effort would be two to three times the cost of the Proposed Action. A continuous operation of this nature could result in substantial air quality issues from dust generation, would add additional traffic hazards along State Highway 24 (S-24), and would result in continual disturbance to humans and wildlife on a daily basis for an indefinite period. This alternative was considered impractical primarily due to cost and technical feasibility and was screened from further consideration.

Laguna Dam Modifications

Increasing the height of Laguna Dam could increase the storage capacity behind the dam. This alterative would include installation of a three-foot high inflatable bladder on top of Laguna Dam that would increase the dam elevation to approximately 154 feet above mean sea level. This alternative was eliminated due to the excessive environmental impacts that would result from the large area that would be inundated by a higher dam and due to the direct adverse impacts to the historic dam structure and appearance from such modifications.

Decommissioning Laguna Dam

A commenter in the scoping process suggested that the decommissioning of Laguna Dam should be considered as an alternative. The removal of Laguna Dam would not meet the project purpose as sluicing flows from Imperial Dam would be uncontrolled in downstream reaches and the operational flexibility provided by the Laguna Reservoir would be lost. With Laguna Dam removed, sediment would be initially flushed into the Yuma Division and the Alamo Canal in Mexico at Morelos Dam as the river sought a new elevation in the Laguna Division and downstream areas would be put at risk. The removal of Laguna Dam could result in very large

environmental impacts including the potential loss of wetlands and endangered species habitat in the Old River channel and draining of Mittry Lake. The reduction or loss of Mittry Lake would substantially impact recreational activities in this region. This alternative was not considered further because it would not meet the project purpose and because it would result in substantial environmental impacts, operational impacts, safety concerns, and reduction in recreational use.

2.6 Summary of Impacts

The analysis presented in this EA indicates that implementation of the Proposed Action or other alternatives would not result in significant impacts for any resource area. The No-Action Alternative, however, may be associated with potentially significant impacts. The environmental consequences associated with implementation of these alternatives, after implementation of applicable mitigation measures, are presented and compared in Table 2-2. For a detailed description and analysis, refer to Chapter 3.0, Affected Environment and Environmental Consequences.

Table 2-2. Summary of Impacts

Resource Area	***Alternative 1 (Proposed Action)***	***Alternative 2***	***Alternative 3***	***No-Action Alternative***
Aesthetics	No Significant Impact	No Significant Impact	No Significant Impact	No Significant Impact
Air Quality	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Biological Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Cultural Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Environmental Justice	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Hazards/Hazardous Materials	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Hydrology/Water Quality	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Indian Trust Assets	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Land Use	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Noise	No Significant Impact	No Significant Impact	No Significant Impact	No Impact

Table 2-2. Summary of Impacts (continued)

Resource Area	***Alternative 1 (Proposed Action)***	***Alternative 2***	***Alternative 3***	***No-Action Alternative***
Public Resources	No Significant Impact	No Significant Impact	No Significant Impact	Potentially Significant Impact
Socioeconomics	No Significant Impact	No Significant Impact	No Significant Impact	No Impact
Topography, Geology, Soils, and Mineral Resources	No Significant Impact	No Significant Impact	No Significant Impact	No Impact

3.0 Affected Environment

Chapter 3 includes baseline information for each resource potentially affected by the Proposed Action, as well as a discussion of environmental consequences of the No-Action Alternative and Proposed Action and alternatives. Mitigation measures are identified as needed for impacts.

Reclamation has determined that implementation of the Proposed Action would result in negligible impacts to transportation. Actions generating vehicle trips relate only to the arrival of dredging and other associated equipment at the beginning of the project, removal of equipment at the end of each project activity, and the daily arrival and departure of persons operating the dredge equipment. Dredging activities would not alter or encroach upon any public roadways. Therefore, transportation issues are not discussed further in this EA.

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3.1 Aesthetics

This section addresses the potential temporary aesthetic impacts resulting from construction dredging and maintenance activities, as well as long-term impacts from creation of a larger capacity storage reservoir.

3.1.1 Affected Environment

Visual resources consist of the natural and manmade features that give a particular environment its aesthetic qualities, referred to as its landscape character. Landscape character is evaluated to assess whether a Proposed Action would appear compatible with the existing setting or would contrast noticeably with the setting and appear out of place. Visual resources also have a social setting, which includes public values, goals, awareness, and concern regarding visual quality. Social setting is addressed as visual sensitivity, or the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource.

The project site is accessible through existing recreational access points (i.e., Mittry Lake Wildlife Area and Betty's Kitchen Wildlife Area and Interpretive Trail), and fishing and picnic areas are located on the margin of the reservoir within the project area. There is also a small recreational trailer park located across S-24 near the Laguna Dam. Recreational uses are generally considered to have high visual sensitivity.

Visual resources within the project area generally include open space, agricultural areas, large expanses of open waterways, and wetland, marsh, and desert upland habitats located in and near the Colorado River floodplain. Most of the landscape appears natural (undisturbed) with very few human-made landscape alterations, and as such, many opportunities exist for undisturbed views. Prominent vegetation includes agricultural land and patches of desert scrub, salt cedar, cottonwood-willow, and other riparian lands. Other visible water development in the area consists of the All-American Canal west of the project site, as well as the Colorado River and Old Colorado River north and east of the site. Due to the generally flat topography in the vicinity of the project area and limited intervening development, views are possible when located at higher elevations to the west or at sites immediately near the Laguna Dam and reservoir. Due to overall distance and tall vegetation, views from Mittry Lake recreational areas are not expected.

Few sources of light and minimal built structures contribute to offsite glare. Relatively undisturbed, expansive views of the nighttime sky are expected to be readily available due to the small amount of intervening night lighting sources. However, sources of light and glare associated with headlights and window reflection from passing vehicles on S-24 (a California state highway) and reservoir access routes are expected at times. In addition, the existing Laguna Dam facility has some low lighting for security and pedestrian access.

3.1.2 Environmental Consequences and Mitigation Measures

3.1.2.1 Alternative 1 — Proposed Action

The Proposed Action was evaluated with regard to its potential to create visual impacts resulting from changes in scenic vistas, changes or damage to scenic resources, or degrading the visual character of a site, taking into account the public's anticipated perception of the existing visual resources onsite, and their visual setting. Potential impacts to aesthetic resources would result primarily from removal of wetland areas and other mature vegetation to expand the capacity of an existing reservoir area. Impacts from potential light sources were also considered, although no components of the Project would require substantial lighting.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

Environmental Consequences Dredging and ongoing maintenance activities would be visible from offsite vantage points, including nearby recreational areas, and would temporally reduce the visual quality of the reservoir area. Impacts from dredging and material stockpiling could last from several months to several years, although only portions of the reservoir area would be under development at any one time. While these activities could degrade the existing visual character or quality of a site, the impact would be temporary both during initial dredging of the expanded reservoir, as well as during maintenance dredging activities. Although the proposed dredging and maintenance activities would be recognized within current views, the Project would be consistent with the existing water development throughout the project area. Therefore, the majority of existing views would remain undisturbed following Project implementation and significant impacts to scenic views or vistas would not occur.

Expanding the reservoir area would enhance the scenic quality of the land, consistent with nearby waterways. Expanding reservoir capacity, and the potential for recreational uses on the water, would also visually link other waterways in the project vicinity. The expansion of open water areas could lead to increases in boating opportunities in the project area, which could increase wave action on adjacent habitats. Reclamation may pursue boat speed restrictions in the project area.

During construction and maintenance dredging activities, temporary use of lighting may be required, resulting in potential offsite glare, particularly if any dredging activities occur at night. If dredging were to occur at night requiring the use of night lighting, it is expected that presently unobstructed views of the nighttime sky would be adversely affected in a limited area. In addition, the use of site lighting on key areas and walkways for security purposes, could result in light and glare impacts.

Mitigation Measures With implementation of the following mitigation measure, potential offsite light and glare impacts during construction and maintenance activities would be less than significant:

- Security and night lighting shall be directed downward and inward through use of standard light shields or hoods toward the area to be illuminated, in order to minimize offsite light and glare.

3.1.2.2 Alternative 2

Under this alternative, approximately 16.0 acres of wetland area would be removed and converted to open water, and increased dredging activity and storage would be required to expand reservoir capacity to 2,800 acre-feet. Dredging activities also would occur closer to the Old Colorado River Channel, the Mittry Lake Wildlife Area, and other nearby recreational areas. Compared to the Proposed Action, this alternative would have greater visual impacts due to the increased dredging and maintenance activity, although with implementation of the mitigation measure provided for Alternative 1, aesthetic impacts would remain less than significant.

3.1.2.3 Alternative 3

Under this alternative, approximately 16.1 acres of wetland area would be removed and converted to open water, although dredging activity and storage would be the same as for the Proposed Action. Compared to the Proposed Action, this alternative would have greater visual impacts because additional wetland area would be removed to accommodate the same reservoir storage capacity as for the Proposed Action. Although this increased loss in vegetation could impact the scenic quality of the reservoir area, impacts would remain less than significant, with implementation of the mitigation measure provided for Alternative 1, due to the overall benefit of providing new open waterway.

3.1.2.4 No-Action Alternative

Under the No-Action Alternative, excavation and vegetation removal activities would not occur and the storage capacity of the reservoir would not be enlarged. If sedimentation is allowed to continue, the reservoir could fill completely with sediment and vegetation, leaving very little to no open water. Therefore, the long-term beneficial effects associated with the Project would not result under this alternative.

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3.2 Air Quality

Air emissions produced by the Project mainly may affect air quality within the Counties of Imperial, California and Yuma, Arizona. The following section describes the existing air quality within these regions and the air regulations that would apply to the Proposed Action and its alternatives.

3.2.1 Affected Environment

The U.S. Environmental Protection Agency (USEPA) establishes the National Ambient Air Quality Standards (NAAQS), which represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The USEPA designates all areas of the U.S. as having air quality better than or equal to (attainment) or worse than (nonattainment) the NAAQS. A nonattainment designation generally means that a primary NAAQS has been exceeded more than once per year in an area. The southwest portion of Yuma County, Arizona is in "moderate" nonattainment for the national PM_{10} (respirable particulate matter) standard. This area is known as the Yuma PM_{10} nonattainment area. Otherwise, the remainder of the project area attains all NAAQS.

State and local agencies may establish air quality standards and regulations of their own, provided these are at least as stringent as the Federal requirements. The Arizona Department of Environmental Quality (ADEQ) has adopted the NAAQS for purposes of regulating air quality in Arizona. The state of California has adopted the California Ambient Air Quality Standards (CAAQS), which are established by the California Air Resources Board (ARB). In regard to the CAAQS, Imperial County is presently in "marginal" nonattainment for the 8-hour ozone (O_3) standard, and is presently in nonattainment for O_3 and PM_{10}. Otherwise, the project region attains all other national and state ambient air quality standards.

3.2.1.1 Regulatory Setting

The Federal Clean Air Act of 1969 (CAA) and its subsequent amendments establish air quality regulations and the NAAQS and delegate the enforcement of these standards to the states. The ADEQ regulates sources of air emissions within Arizona. In California, the ARB enforces air pollution regulations and sets guidelines to attain and maintain the national and state ambient air quality standards within the state of California. These guidelines are found in the California State Implementation Plan (SIP). The Imperial County Air Pollution Control District (ICAPCD) regulates sources of air emissions within Imperial County. The following section provides a summary of the air quality rules and regulations that apply to the Proposed Action.

ADEQ Rules and Regulations The ADEQ develops rules and regulations to regulate stationary sources of air pollution in Arizona. Since the project site occurs within an area that does not attain the NAAQS for PM_{10}, ADEQ Rule 18-2-14 states that a Federal agency cannot support an activity unless the agency determines that the activity will conform to the most recent USEPA-approved SIP within the region of the proposed project. This means that federally-supported or funded activities will not (1) cause or contribute to any new air quality standard violation, (2) increase the

frequency or severity of any existing standard violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. Therefore, Reclamation is required to perform conformity applicability analyses to determine if the Proposed Action would exceed the PM_{10} *de minimis* threshold of 100 tons per year.

ICAPCD Rules and Regulations The ICAPCD develops the *Rules and Regulations of the Imperial County Air Pollution Control District* to regulate stationary sources of air pollution in the County (ICAPCD 2005). The purpose of Regulation VIII is to reduce PM_{10} emissions generated from anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate PM_{10} emissions. Since the project area within Imperial County is in marginal nonattainment for the O_3 NAAQS, Rule 925 states that the Proposed Action would conform to the SIP if its annual emissions remain below 100 tons of nitrogen oxides (NOx) or volatile organic compounds (VOCs). The ICAPCD relies on the project proponent to comply with all applicable ICAPCD rules and to implement mitigation measures identified in the CEQA Air Quality Handbook to reduce air quality impacts to an insignificant level (ICAPCD 2005). The air quality mitigation measures discussed below include the ICAPCD requirements that would attain this objective.

3.2.2 Environmental Consequences and Mitigation Measures

The following presents an analysis of the air quality impacts associated with the Project. Emission sources would include combustive and fugitive dust (PM_{10}) emissions generated by the proposed dredging and support activities.

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. The ADEQ and the ICAPCD have not established criteria for assessing the significance of air quality impacts for NEPA purposes. Therefore, in order to assess the significance of air quality impacts under NEPA, impacts would be potentially significant if project emissions exceed the thresholds that trigger a conformity determination, as described above (100 tons per year for VOC, NO_x, or PM_{10}). While the project region attains the ambient air quality standards for carbon monoxide (CO) and sulfur dioxide (SO_2), this analysis also adopts the conformity thresholds of moderate nonattainment areas for these pollutants (100 tons per year) as significance criteria. This is a conservative approach, as the CO and SO_2 thresholds are designed to assess the potential for emission sources to impact a nonattainment area for these pollutants. If project emissions were determined to increase ambient pollutant levels from below to above a national or state ambient air quality standard, these emissions would be significant.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.2.2.1 Alternative 1 — Proposed Action

Environmental Consequences Air pollutant emissions produced from the proposed dredging and support activities were estimated using the most current emission factors and methods, then compared to the criteria identified above to determine their significance. Based upon activity and scheduling data estimated for the Proposed Action (Reclamation 2005f), the analysis estimated total and peak annual emissions for the (1) initial dredging project and (2) maintenance dredging activities. For the first scenario, peak annual emissions would occur during the second year of operation and only would include dredging and demobilizing activities. For the second scenario, it is assumed that all activities would occur within the same year and, therefore, would contribute to peak annual emissions.

Factors used to estimate emissions from construction and dredging equipment were obtained from the *ARB OFFROAD Model* (ARB 1999) and the USEPA *AP-42* document (USEPA 1995 and 1996). Details of emission source data and calculations used to estimate emissions from the Proposed Action are included in Appendix B of this EA.

A summary of the annual emissions that would occur from initial project dredging and maintenance dredging is presented in Tables 3-1 and Table 3-2, respectively. As indicated in these tables, project air emissions would remain below all emission significance thresholds for both the initial and maintenance dredging.

Table 3-1. Peak Annual Emissions for Initial Dredging Activities - Proposed Action

Project Activity	***Peak Annual Emissions (Tons)***				
	VOC	CO	NO_x	SO_x	PM_{10}
Dredging	3.46	15.06	42.39	0.58	5.21
Demobilizing/Dredge and Piping	0.00	0.02	0.05	0.00	0.00
Peak Year Emissions	**3.46**	**15.08**	**42.45**	**0.58**	**5.21**
NEPA Significance Thresholds	**100**	**100**	**100**	**100**	**100**
Note: Peak annual emissions period only would include dredging and demobilizing/dredge and piping activities.					

Table 3-2. Peak Annual Emissions for Maintenance Dredging Activities - Proposed Action

Project Activity	***Peak Annual Emissions (Tons)***				
	VOC	CO	NO_x	SO_x	PM_{10}
Vegetation Removal	0.01	0.05	0.14	0.00	0.49
Launch Ramp Construction	0.01	0.04	0.11	0.00	0.00
Mobilizing/Dredge and Piping	0.00	0.02	0.05	0.00	0.00
Maintenance Dredging	2.19	9.83	27.50	0.38	3.26
Access Road Construction and Maintenance	0.00	0.01	0.03	0.00	0.04
Demobilizing/Dredge and Piping	0.00	0.02	0.05	0.00	0.00
Annual Emissions	**2.22**	**9.96**	**27.89**	**0.39**	**3.79**
NEPA Significance Thresholds	**100**	**100**	**100**	**100**	**100**
Note: Peak annual emissions period would include all activities.					

Conformity Applicability Analysis Tables 3-3 and 3-4 summarize the annual conformity emissions that would occur from initial project dredging and maintenance dredging, respectively, associated with the Proposed Action. These data are relevant for use in the project conformity applicability analysis for either Imperial or Yuma Counties within the project region. Consistent with the conformity guidelines, the dredge booster pump emissions are not included in this analysis, as this source would require an ICAPCD air permit and, therefore, would conform to the SIP. The data in Tables 3-3 and 3-4 show that emissions associated with each set of activities (1) would not exceed any conformity *de minimis* threshold for the project region and (2) would not be regionally significant, as they would be substantially less than 10 percent of any air pollutant estimated for the Imperial and Yuma Counties emissions inventory. Therefore, the Proposed Action would conform to the applicable SIPs and would not trigger a conformity determination. Appendix B presents the emission calculations associated with the project conformity applicability analysis.

Table 3-3. Peak Annual Conformity Emissions for Initial Dredging Activities — Proposed Action

Project Activity	***Peak Annual Emissions (Tons)***		
	VOC	NOx	PM10
Dredging	3.35	40.26	5.16
Demobilizing/Dredge and Piping	0.00	0.05	0.00
Peak Year Emissions	**3.36**	**40.31**	**5.16**
Conformity Thresholds	**100**	**100**	**100**
Note: Peak annual emissions period only would include dredging and demobilizing/dredge and piping activities.			

Table 3-4. Peak Annual Conformity Emissions for Maintenance Dredging Activities — Proposed Action

Project Activity	***Peak Annual Emissions (Tons)***		
	VOC	NOx	PM10
Vegetation Removal	0.01	0.14	0.49
Launch Ramp Construction	0.01	0.11 05	0.00
Mobilizing/Dredge and Piping	0.00	0.05	0.00
Maintenance Dredging	2.04	24.65	3.19
Access Road Construction and Maintenance	0.00	0.03	0.04
Demobilizing/Dredge and Piping	0.00	0.05	0.00
Annual Emissions	**2.07**	**25.04**	**3.72**
Conformity Thresholds	**100**	**100**	**100**
Note: Peak annual emissions period would include all activities.			

Mitigation Measures To ensure that the Proposed Action produces less then significant air quality impacts, Reclamation shall comply with the requirements of Regulation VIII, as outlined in the following rules:

- Rule 800 – General Requirements for Control of Fine Particulate Matter
- Rule 801 – Construction and Earthmoving Activities
- Rule 802 – Bulk Materials
- Rule 803 – Carry-out and Track-out
- Rule 804 – Open Areas
- Rule 805 – Paved and Unpaved Roads
- Rule 806 – Conservation Management Practices

In addition to a variety of dust control measures outlined in these rules, ICAPCD Rule 801 requires the development of a dust control plan for construction sites of 5 acres or more for non-residential developments. Reclamation should consult with the ICAPCD to ensure project compliance with the requirements of Regulation VIII. Reclamation shall also implement the feasible mitigation measures identified in Section 7.1 of the ICAPCD *CEQA Air Quality Handbook* (Construction Equipment and Fugitive PM_{10} Mitigation Measures) that are not part of the Regulation VIII requirements.

To ensure that the Project produces less then significant air quality impacts within the Arizona project region, Reclamation shall comply with the following requirements of ADEQ Rule 18-2-804, roadway and site cleaning machinery:

- Limit visible emissions exceeding 40 percent opacity from roadway and site cleaning machinery to less than 10 seconds. The start up of cold equipment may have visible emissions for the first 10 minutes.
- Take reasonable precautions, including use of dust suppressants and removal of dirt from paved streets, to prevent particulate matter from becoming airborne.

Successful implementation of the above requirements would reduce Project air quality impacts to less then significant levels.

3.2.2.2 Alternative 2

Air pollutant emissions produced from the dredging and support activities associated with Alternative 2 were estimated with the same methods used for the Proposed Action (section 3.2.2.1). A summary of the annual emissions that would occur from initial dredging under Alternative 2 is presented in Table 3-5. As for maintenance dredging activities, it is expected that the magnitude of activities and resulting emission from Alternative 2 would be nearly identical to those estimated for the Proposed Action as shown in Table 3-2. As indicated in these tables, air emissions from Alternative 2 would remain below all emission significance thresholds for both dredging activities. As a result, with the implementation of proposed mitigation measures identified under Alternative 1, air emissions from Alternative 2 would produce less than significant air quality impacts.

Table 3-5. Peak Annual Emissions for Initial Dredging Activities - Alternative 2

Project Activity	***Peak Annual Emissions (Tons)***				
	VOC	CO	NO_X	SO_X	PM_{10}
Dredging	4.80	20.87	58.74	0.81	7.22
Peak Year Emissions	4.80	20.87	58.74	0.81	7.22
NEPA Significance Thresholds	**100**	**100**	**100**	**100**	**100**
Note: Peak annual emissions based upon one-third of the total dredging emissions.					

3.2.2.3 Alternative 3

Air pollutant emissions associated with the dredging and support activities from Alternative 3 would be nearly identical to those estimated for the Proposed Action. Summaries of the annual emissions that would occur from initial dredging and maintenance dredging activities are presented in Tables 3-1 and Table 3-2, respectively. As indicated in these tables, air emissions from Alternative 3 would remain below all emission significance thresholds for both dredging activities. As a result, with the implementation of proposed mitigation measures identified under Alternative 1, air emissions under Alternative 3 would produce less than significant air quality impacts.

3.2.2.4 No-Action Alternative

Under the No-Action Alternative, Reclamation would not conduct dredging operations at the Laguna Reservoir. Therefore, the No-Action Alternative would produce less than significant impacts to air quality.

3.3 Biological Resources

Biological information for this section is derived from several sources including the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) documents (Final Habitat Conservation Plan, Biological Assessment, Environmental Impact Statement/Environmental Impact Report prepared by the LCR MSCP in 2004; Biological and Conference Opinion prepared by United States Fish and Wildlife Service [USFWS] in 2005); wetland delineation and habitat mapping report for the project area (SWCA 2002); aerial photos; Reclamation GIS data for the project area (Reclamation 2005f); California Natural Diversity Database (CNDDB) (2005); and existing scientific literature for sensitive species. For the purposes of this discussion, habitat mapping conducted by Reclamation in 2005 using standard Anderson and Ohmart (1984) land cover classification for the lower Colorado River has been incorporated. Wetland delineation and specific wetland plant community descriptions follow SWCA (2002).

The project area is located above Laguna Dam in Reach 6 of the LCR MSCP planning area. Areas potentially affected by the Project include those areas above the dam that would be dredged to increase storage capacity, the existing dredge material disposal site where future dredge material resulting from the Project would be disposed, and other areas where project activities would occur (e.g., access facilities, construction staging areas). Changes in operation of the basin resulting from additional storage capacity would not substantially affect water levels or fluctuations in water levels beyond historical values.

3.3.1 Affected Environment

3.3.1.1 Regulatory Setting

Endangered Species Act (16 U.S.C. 1531 et seq.) The purpose of the ESA is to conserve and recover federally listed endangered and threatened species and the ecosystems upon which they depend. Federal agencies that engage in actions that may affect species listed under the ESA are required under ESA section 7 to consult with the USFWS to determine if their actions could jeopardize the continued existence of the species or destroy or adversely modify designated critical habitat. ESA Section 9 prohibits the taking of a listed species without authorization from the USFWS. USFWS defines "take" to include the harassment, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or the attempt to engage in such conduct. Harm can include habitat modification or degradation that kills or injures wildlife. ESA section 7 provides a means by which USFWS authorizes incidental take of listed species.

Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) and Executive Order 13186 The Migratory Bird Treaty Act (MBTA) governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overuse. The MBTA also prohibits the take, possession, import, export, transport, selling, purchase, barter, or

offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11).

Executive Order (EO) 13186 (effective January 10, 2001), outlines the responsibilities of Federal agencies to protect migratory birds, in accordance with the MBTA, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, ESA, and NEPA. This order specifies the following:

- The USFWS as the lead for coordinating and implementing EO 13186;
- Requires Federal agencies to incorporate migratory bird protection measures into their activities; and
- Requires Federal agencies to obtain permits from USFWS before any "take" occurs, even when the agency intent is not to kill or injure migratory birds.

Clean Water Act and Executive Order 11990 The Federal Water Pollution Control Act and subsequent amendments, collectively known as the Clean Water Act (CWA) (33 USC § 1251 et seq.), were enacted by Congress to restore and maintain the chemical, physical, and biological integrity of U.S. waters. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material into waters of the U.S., including wetlands. Under the CWA, wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. EO 11990, dated 24 May 1977 and amended by EO 12608 on 9 September 1987, requires Federal agencies to minimize the destruction, loss, or degradation of wetlands and to enhance their natural and beneficial values.

Rivers and Harbors Act Section 10 of the Rivers and Harbors Act of 1899 (33 USC 401, et seq.) requires Congressional approval for the building of any wharf, pier, jetty, and other structures in navigable waters. Section 10 also requires the approval of the USACE for any excavation or fill within navigable waters. The Rivers and Harbors Act covers construction, excavation, or deposition of materials in, over, or under navigable waters. Activities such as dredging, disposing of dredged materials, excavating, filling, or construction of structures in navigable waters require a Section 10 permit from USACE.

Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667e) The Fish and Wildlife Coordination Act and subsequent amendments provides that whenever the waters or channel of a body of water are modified by a department or agency of the U.S., the department or agency first shall consult with the USFWS and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur, with a view to the conservation of wildlife resources. The Act provides that land, water and interests may be acquired by federal construction agencies for wildlife conservation and development. In addition, real property under jurisdiction or control of a Federal agency and no longer required by that agency can be utilized for wildlife conservation by the state agency exercising administration over wildlife resources upon that property.

Biological and Conference Opinion for LCR MSCP A biological and conference opinion for the LCR MSCP was prepared in 2005 by USFWS, addressing the effects to 27 species for which six Federal agencies and 24 Permit Applicants from Arizona, California, and Nevada requested incidental take coverage under Section 7 and Section 10 of the ESA. The biological and conference opinion determined that the Proposed Actions described herein are not likely to jeopardize the continued existence of listed, candidate, or other covered species, and are not likely to destroy or adversely modify designated or proposed critical habitat.

The USFWS biological and conference opinion addresses impacts from the Proposed Laguna Reservoir Restoration Project as part of the LCR MSCP covered Federal actions and includes incidental take statements for species known to be in the vicinity of the Project including the Federally listed endangered Yuma clapper rail (*Rallus longirostris yumanensis)*, Federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus)*, and Federal candidate for listing yellow-billed cuckoo (*Coccyzus americanus)*.

3.3.1.2 Vegetation

Plant communities within the planning area are represented in Figure 3-1 (the planning area includes the Colorado River between Imperial Dam and Laguna Dam for context) and Table 3-6 (from LCR MSCP 2004b; Reclamation 2005f). Land cover types within the project planning area are described below.

Table 3-6. Land Cover Types Within the Project Planning Area[1]

Community Type	*Acres*
Agriculture[2]	72.3
Arrowweed	158.7
Backwater	7.8
Marsh (includes compositional types 1, 5, and 6)	100.2
Open Water	163.7
Saltcedar-III (includes structural types III, IV, and V)	879.0
Saltcedar Honey Mesquite[2]	8.6
Saltcedar Screwbean Mesquite[2]	5.1
Cottonwood/Willow III	32.4
Cottonwood/Willow IV	5.8
[Total Cottonwood-Willow]	[38.2]
Undifferentiated	291.2
Non-classified[2]	0.9
Total	**1,725.7**

1. The planning area includes the Colorado River and its historic floodplain between Imperial Dam and Laguna Dam for context.

2. These land cover types do not occur within the Project footprint and are provided here for context as land cover types in the vicinity.

Arrowweed The arrowweed land cover type historically formed dense, monotypic, linear belts or small stands of vegetation along drier portions of the Colorado River floodplain, adjacent to stands of cottonwood-willow (Ohmart et al. 1988). It is characterized by nearly monotypic stands of arrowweed (*Pluchea sericea*) within the riverine corridor. In addition to this location,

it is found along canyon bottoms and irrigation ditches, around springs, and in washes with sandy or gravelly channels (Holland 1986; D. Brown 1994; Sawyer and Keeler-Wolf 1995).

Arrowweed reproduces both by seed and vegetatively. The seeds are tiny (less than 0.04 inches) and have small bristles that facilitate their dispersal (McMinn 1939). Establishment from seed occurs on newly exposed, damp alluvial soils. Once established, arrowweed spreads laterally by underground rhizomes, forming continuous stands that tend to inhibit the establishment of other riparian species and remaining dominant in the absence of disturbance. Arrowweed shoots withstand moderate flooding, and although they are unable to withstand strong scouring from floods, they recolonize open alluvial deposits readily by resprouting from roots and buried stems (Stromberg et al. 1991). Arrowweed survives at greater water table depths and tolerates greater soil salinities than Fremont cottonwood or Goodding's willow (Ohmart et al. 1988, Busch and Smith 1995). As a result, it has replaced cottonwood-willow vegetation in some areas that are subject to groundwater pumping (Holland 1986). However, it has been displaced by saltcedar in other areas (Turner and Karpiscak 1980).

Arrowweed dominates the area behind Laguna Dam and is the most prolific land cover category present.

Backwater This land cover type includes all areas of open water not associated with the active river channel with little to no emergent vegetation. Under existing conditions, backwaters include oxbow lakes, abandoned river channel pools, floodplain ponds and lakes, secondary river channel pools, and hydrologically isolated coves on reservoirs. Backwaters may be remnant features historically created by river processes or may be manmade. Backwaters may be permanent or temporary, drying completely during some seasons or years. Connections with the river may be open or in various degrees of closure, connected to the river by culverts, weirs, porous dikes, and groundwater. They can vary in size from less than 1 acre to more than 100 acres.

Marsh Marsh vegetation, typically emergent non-woody plants, occurs in areas of prolonged inundation. Historically, it was found along oxbow lakes and in backwater areas along the Colorado River. Today, it also occurs around relatively stable reservoirs, such as Laguna Reservoir, that have minimal daily and annual fluctuations in water level (Ohmart et al. 1988, D. Brown 1994). The most common components of this association are cattail (*Typha latifolia*, bulrush or tule (generally *Scirpus californicus*), and common reed (*Phragmites australis*); however, this community also includes open water, sandbars, and mudflats formed when the Colorado River is low. Cattails occur in shallow water up to 3 feet deep and are found on sloping, generally stable substrates. Bulrushes can grow adjacent to cattails but also in deeper water, up to five feet, and can extend as high as 10 feet above the surface. Riparian scrub species such as saltcedar and arrowweed are also common components of the marsh community at the upper elevation limits of the marsh.

In the vicinity of the project area, this community ranges from nearly 100 percent cattail/bulrush with small amounts of common reed and open water, to more sparse versions with few trees and grasses interspersed, as well as nearly solid cover of common reed with little open surface.

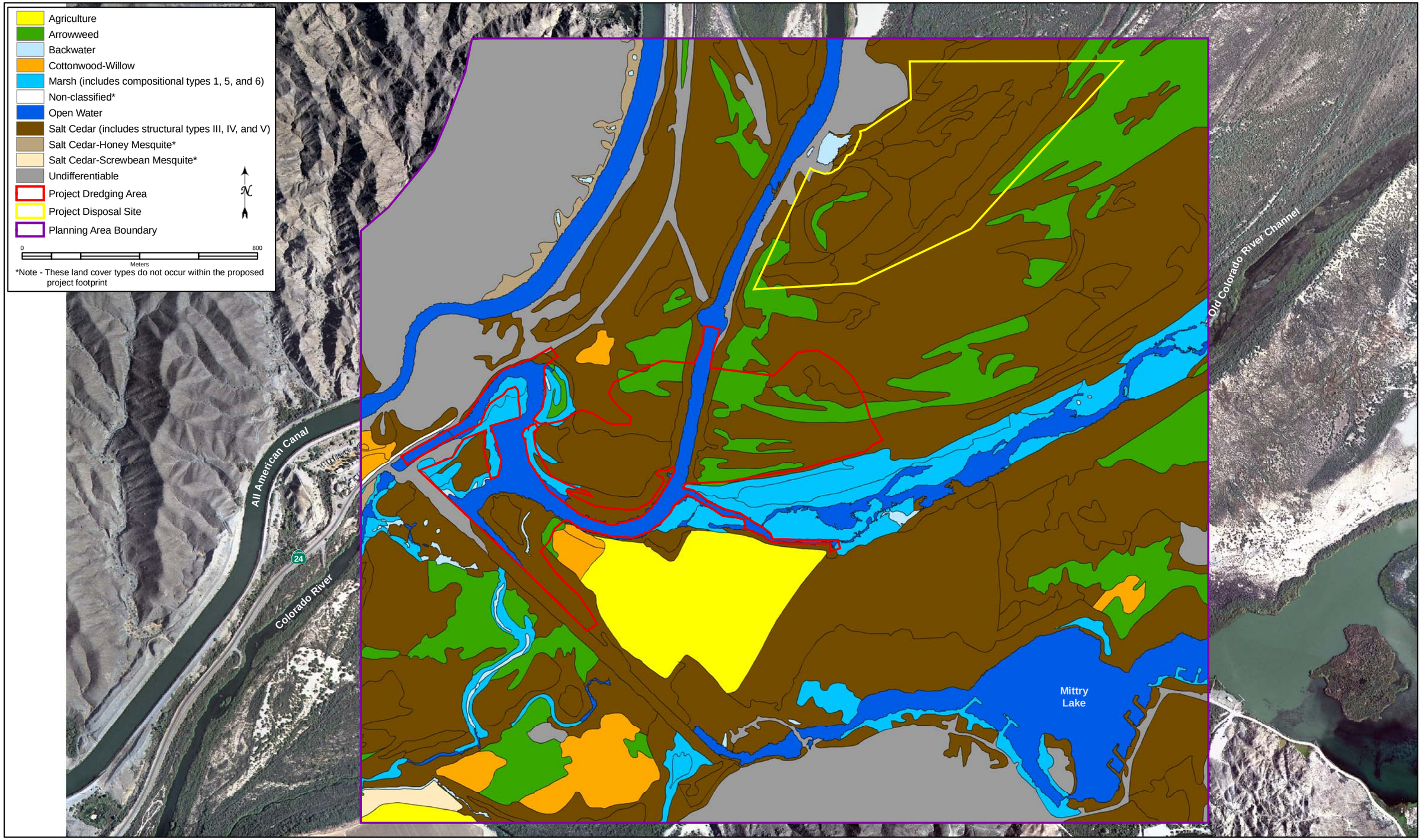

Figure 3-1. Land Cover Types in the Vicinity of the Proposed Project Area

Saltcedar The saltcedar land cover type is dominated by nearly monotypic stands of saltcedar that are less than 16-feet tall, comprising approximately 80 to 100 percent of the total trees in this category, with the ground layer typically sparse. Because of its pervasive nature, saltcedar is found interspersed within every other riparian land cover type. Saltcedar is the common name applied to several nonnative species of shrubs to medium-size trees of the genus *Tamarix* that have aggressively displaced native riparian vegetation along the Colorado River. The most commonly invasive species are *Tamarix chinensis*, *T. parviflora*, and *T. ramosissima*. The related "athel," a larger tree that has been widely planted along the Colorado River, may also be included in areas mapped as saltcedar. This association generally occurs as a monoculture of saltcedar shrubs or trees. Saltcedar generally occurs in sandy or gravelly braided washes, streams, or ditches, or along the banks of rivers or lakes, often in areas where high evaporation increases soil salinity. Saltcedar is also a prolific seeder and, although the seed remains viable for only a few weeks, it is produced over a long period (March through October) relative to native riparian species. The seeds are minute and readily dispersed long distances by wind and water (DeLoach et al. 2000; Lovich 2000). Germination and establishment occur on open sites where soil moisture is high for a prolonged period. Saltcedar growth is extremely rapid and tends to preclude the establishment of native riparian species on such sites (Ohmart et al. 1988; Lovich 2000). Once established, saltcedar persists to the exclusion of native riparian species because it promotes conditions that it tolerates better than the native species. Saltcedar takes up and excretes salts, increasing soil salinity, and it increases fire frequency by producing large amounts of litter (DeLoach et al. 2000).

Cottonwood/Willow The cottonwood-willow plant community is made up of winter-deciduous trees that reach about 60 feet in height (Holland 1986; Rowlands et al. 1995). Fremont cottonwood (*Populus fremontii*) and Goodding's willow (*Salix gooddingii*) are the dominant tree species, although other species of willows may be present as well; and willows are usually more abundant than cottonwoods. The trees form a closed to open canopy with a variable understory on deep, well-watered, loamy alluvial soils on floodplains of the Colorado River and its major tributaries (Holland 1986). This plant community requires periodic winter or spring flooding to create new silt beds for cottonwood and willow seed germination, and the dominant trees do not tolerate permanent inundation (Ohmart et al. 1988, Brown 1994). As a result of flow stabilization, stands of the cottonwood-willow community remaining along the Colorado River are primarily decadent and show little evidence of seedling recruitment (Brown 1994).

This land cover type is not found within the proposed project area and occurs only negligibly (0.02 acre) within the footprint of Alternative 2.

Open Water This land cover type includes all areas of open water associated with the active river channel, including reservoir pools and backwaters.

Other Land Cover Types Other land cover types in the vicinity of the project area include undifferentiable areas, which are upland areas that support no major plant community and are generally bare ground, yet undeveloped. Agricultural fields also occur east of the project area

3.3.1.3 Wildlife

This section of the Colorado River supports numerous species of wildlife (birds, mammals, fish, reptiles, and amphibians), including both resident species and migratory visitors. Woody riparian vegetation and uplands and, to some extent, agriculture provide habitat for common mammals such as mule deer (*Odocoileus hemionus*), burro (*Equus asinus*) (a non-native mammal), coyote (*Canis latrans*), bobcat (*Felis rufus*), Audubon cottontail (*Sylvilagus audubonii*), several species of rodents and bats, striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*) (Anderson and Ohmart 1984b).

The Colorado River corridor also provides important habitat for migratory birds, both upland species and waterfowl, as well as habitat for resident species. Woody riparian vegetation and wetlands provide habitat for a variety of raptors that include sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus johannis*), common blackhawk (*Buteogallus anthracinus*), Harris' hawk (*Parabuteo unicinctus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), and peregrine falcon (*Falco peregrinus*). Other common birds include snowy egret, black-crowned night heron, green heron, and several species of flycatchers, and woodpeckers. Backwaters and reservoirs provide resting and foraging habitat for waterfowl and shorebirds.

Reptiles and amphibians are represented by several species of lizards, snakes, toads, and frogs, many of which are native to the area. Most of these use upland and riparian areas, but the amphibians require water for reproduction. Two native fish inhabit the Lower Colorado River including razorback sucker (*Xyrauchen texanus*) and bonytail (*Gila elegans*), along with at least 23 non-native fish species introduced into the river in California (LCR MSCP 2004b). No native fish are known to be present within the project area, south of Imperial Dam.

Saltcedar communities comprise approximately 57 percent (Table 3-6) of the vegetation cover within the Project Planning Area. Non-native saltcedar does not support the high diversity of wildlife as the native woody riparian communities that were historically present along the Lower Colorado River (e.g., cottonwood-willow forest). Saltcedar stands in the project area, however, provide nesting habitat and cover for some bird species (e.g., white-winged dove). Saltcedar stands that maintain moist surface soils during the spring and summer support a greater diversity of nesting birds than saltcedar stands that do not support these conditions (LCR MSCP 2004). With the exception of saltcedar located immediately adjacent to the Laguna Reservoir and the river channel, patches of saltcedar in the project area typically do not support moist surface soil conditions.

Sensitive wildlife are described in section 3.3.1.6.

3.3.1.4 Fisheries

Native fish are not known to occur within the project area. However, several species of non-native sport fish are likely using open water and fringe wetlands for hunting, cover, and rearing. Sport fishing opportunities are present within and in the vicinity of the project area at Betty's Kitchen, Mittry Lake, and other areas along the Lower Colorado River. Non-native sport fish

that may be present include largemouth bass, crappie, sunfish, channel catfish, flathead catfish, striped bass, and tilapia (Arizona Game and Fish Department 2005).

3.3.1.5 Wetlands and Other Waters of the United States

Activities in waters of the U.S. and navigable waters are regulated by the USACE under Section 404 Clean Water Act and Section 10 Rivers and Harbors Act. Non-tidal waters of the U.S. include all waters used or with potential to be used in interstate commerce up to the ordinary high water and associated wetlands. Wetlands are specific types of waters of the U.S. identified as special aquatic sites. Wetlands and other waters of the U.S. were delineated at the project site by SWCA Environmental Consultants (SWCA 2002). For the purposes of analysis and context, the planning area for wetlands are based on those areas mapped and delineated by SWCA (2002). Figure 3-2 presents wetlands and other waters of the U.S. within the planning area, and Table 3-7 provides a summary of the extent of these resources. Wetlands and other waters of the U.S. were identified and delineated in the vicinity of the project area based on the USACE 1987 delineation manual (Environmental Laboratory 1987) and verified by USACE. Wetland delineation forms and a detailed description of the sampling method are included in SWCA (2002).

Table 3-7. Waters of the U.S. in the Vicinity of the Proposed Action*

Type	*Area (acres)*
Other waters of U.S.	55.1
Wetlands	74.4
Total	**129.4**
*Wetlands were mapped by SWCA (2002).	

Jurisdictional wetlands within the project area are generally dominated by cattail, phragmites (also called common reed), and bulrush marsh communities adjacent to the present and old Colorado River channels. More limited areas of these wetlands support saltcedar, arrowweed, and coyote willow as dominant cover.

3.3.1.6 Rare, Threatened, Endangered, and Sensitive Species

This section addresses rare, threatened, endangered, and sensitive species having the potential to occur in the vicinity of the project area based on the availability of suitable habitat and/or known occurrences. All rare, threatened, endangered, and sensitive species potentially present in the vicinity of the project area and the extent of their habitats are presented in Table 3-8. Most of these species are covered under the LCR MSCP HCP. As described in the biological and conference opinion, two federally listed species have the potential to occur within the project area and potentially be affected by the project: Yuma clapper rail (*Rallus longirostris yumanensis*), and southwestern willow flycatcher (*Empidonax trailii extimus*). Federally listed species having the potential to occur within the project area are described in more detail below, including status of the species and presence within the project area.

Several other federally listed species are known to occur in other reaches of the river, but are not evaluated as part of this project due to lack of suitable habitat and/or historic records. The desert tortoise (*Gopherus agassizii*) occurs in creosote dominated desert scrub habitats, and no suitable habitat or designated critical habitat occurs within the project area. No native fish are known to occur within this section of the river (LCR MSCP 2004c). The yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a federal candidate for listing and has been recorded in the general project vicinity (LCR MSCP 2004c). The cuckoo is typically associated with large stands of mature cottonwood-willow riparian habitat. Although the Proposed Action could result in a loss of 0.02 acre of cottonwood-willow woodland, impacts to this species are not expected due to the small size of the disturbance and the fact that this habitat is not associated with a large stand of mature cottonwood-willow riparian.

The bald eagle (*Haliaeetus leucocephalus*) also has the potential to occur within the project area. The bald eagle is considered a rare to uncommon visitor to the Lower Colorado River, with the nearest confirmed breeding habitats along the Bill Williams River near Alamo Dam in Arizona. Within the project area, use by this species would likely be limited to foraging in open water and limited upland areas. The Proposed Action is not likely to affect this species, with the exception of increasing areas suitable for open water foraging, which would be beneficial. As a result, this species is not evaluated further.

Yuma Clapper Rail The Yuma clapper rail was listed as an endangered species on March 11, 1967, under legislation enacted in 1966 (Public Law 89-669). Only populations in the U.S. were listed, and those in Mexico were not. There is no critical habitat for the species. The Yuma Clapper Rail Recovery Plan (USFWS 1983) was signed in 1983 and the Yuma clapper rail is protected under the MBTA.

The Yuma clapper rail is a marsh bird found in dense cattail or cattail-bulrush marshes along the Lower Colorado River from the Southerly International Boundary to the lower Muddy River in Nevada and to the Virgin River in Utah above those rivers' confluence with Lake Mead. Significant populations are found in the Imperial Valley near and around the Salton Sea in California, and along the lower Gila River and Phoenix Metropolitan area in Arizona. The populations in Mexico are found along the Lower Colorado River in the delta, marshes associated with tributaries to the Lower Colorado River, and the Cienega de Santa Clara (Hinojosa-Huerta *et al*. 2000). Survey detections for the U.S. habitats have fluctuated between 467 and 809 over the last 10 years (USFWS 2005). Those figures represent birds counted, and are not statistical population estimates. The population in Mexico was estimated statistically at 6,300 birds in 2000 (Hinojosa-Huerta et al. 2001), but declined to 4,850 by 2002, likely due to overgrowth of cattails (Hinojosa-Huerta et al. 2003). Changes in water flow between 2002-2003 improved habitat quality and counts of rails increased.

Yuma clapper rails may be somewhat migratory, although the extent to which birds move seasonally is not known. They are capable of significant movements, and dispersal away from existing population centers is a source of individuals to augment or initiate outlier populations. Life history information for the species is summarized in the Recovery Plan (USFWS 1983) and other papers (Todd 1986, Eddleman 1989).

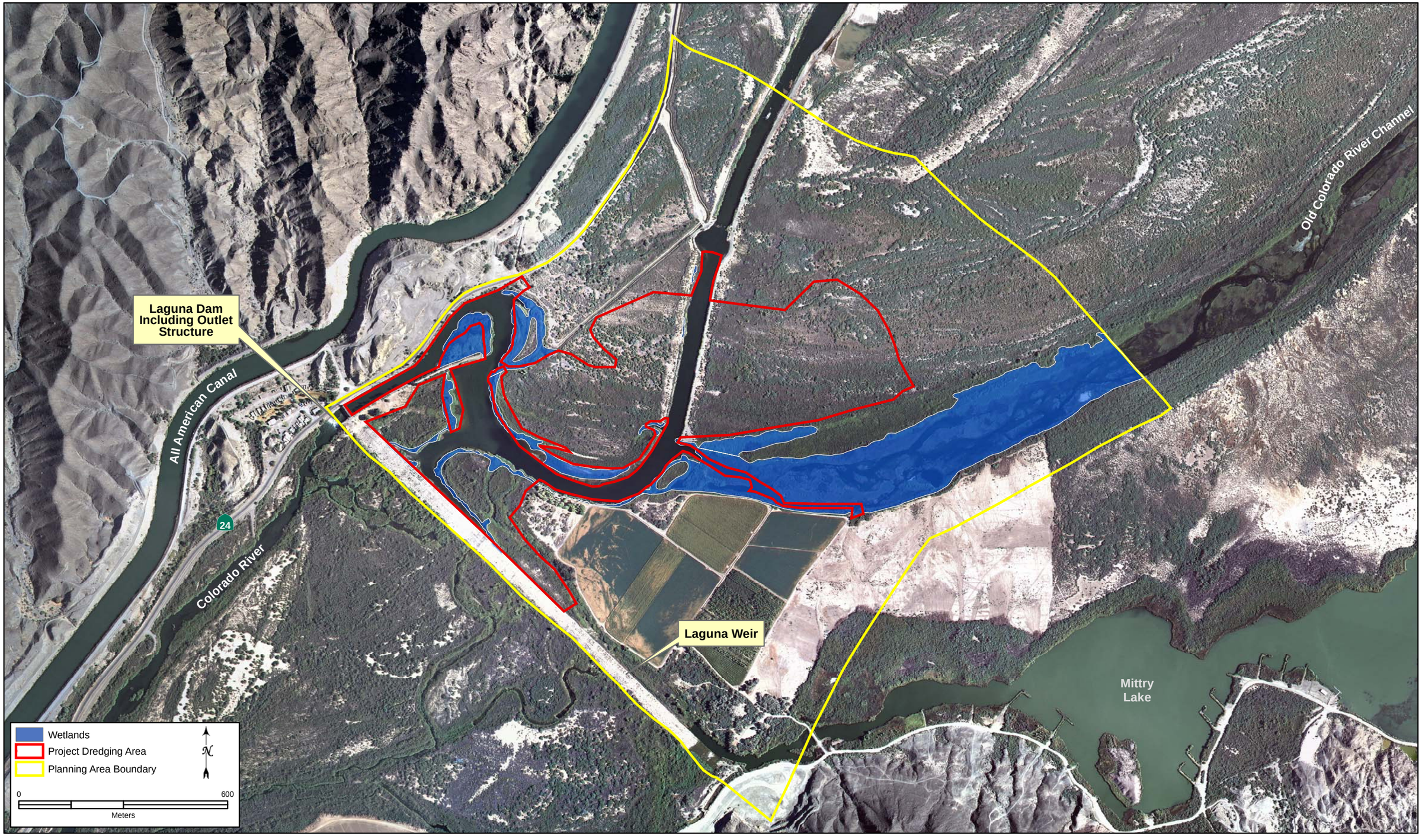

Figure 3-2. Wetlands in the Vicinity of the Proposed Action

Table 3-8. Rare, Threatened, Endangered, and Sensitive Species Having the Potential to Occur within the Project Area[a]

Common and Scientific Name	*Status (Federal)*	*Status (California)*	*Habitat Definition[c]*	*Extent of Habitat in Project Area (acres)[d]*
LCR MSCP HCP Covered Species				
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	—	CSC	Cottonwood -Willow I-VI	38.2
Yuma clapper rail *Rallus longirostris yumanensis*	FE	CT	Marsh 1-7	100.15
California black rail *Laterallus jamaicensis coturniculus*	—	CT	Marsh 1-7	100.15
Yellow-billed cuckoo *Coccyzus americanus*	FC	CE	Cottonwood -Willow I-III	32.4
Gila woodpecker *Melanerpes uropygialis*	—	CE	Cottonwood -Willow I-V in patches of at least 50 acres	-
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	CE	Reclamation delineated southwester n willow flycatcher habitat	-
Vermilion flycatcher *Pyrocephalus rubinus*	—	CSC	Cottonwood -Willow I-V	38.2
Arizona Bell's vireo *Vireo bellii arizonae*	—	CE	Cottonwood -Willow III-IV and Honey Mesquite III	38.8
Sonoran yellow warbler *Dendroica petechia sonorana*	—	CSC	Cottonwood -Willow I-IV and Reclamation delineated southwester n willow flycatcher habitat	38.2

Table 3-8. Rare, Threatened, Endangered, and Sensitive Species Having the Potential to Occur within the Project Area[a] (continued)

Common and Scientific Name	*Status (Federal)*	*Status (California)*	*Habitat Definition[c]*	*Extent of Habitat in Project Area (acres)[d]*
Western least bittern *Ixobrychus exilis hesperis*	—	CSC	Marsh 1-7	100.15
Summer tanager *Piranga rubra*	—	CSC	Cottonwood -Willow I-II	-
Other Species				
Cooper's hawk *Accipiter cooperi*	—	CSC	Forages primarily in riparian woodlands	1,089.6[e]
Bald eagle *Haliaeetus leucocephalus*	FT/PD	CE	Forages within a variety of aquatic open water habitats	163.7[f]

[a] Species list derived from LCR MSCP 2004b, c; CNDDB 2005; SWCA 2004.
[b] FC = Federal candidate for listing under the Endangered Species Act (ESA).
FE = listed endangered under the ESA.
FT = listed threatened under the ESA.
PD = proposed for delisting under the ESA.
CE = listed as endangered under the California Endangered Species Act (CESA).
CT = listed as threatened under the CESA.
CSC= California Species of Concern.
[c] Habitat definitions for LCR MSCP HCP covered species are based on the Anderson and Ohmart (1984) vegetation classification system and covered species habitat models presented in the LCR MSCP HCP (LCR MSCP 2004).
[d] Derived from Table 3-6.
[e] Includes the woody riparian land cover types in Table 3-6.
[f] Includes open water in Table 3-6.

Threats to the Yuma clapper rail population in the U.S. include the loss of marsh habitats to channelization or other river maintenance, lack of long-term management of existing marshes to maintain their suitability as habitat, lack of protection for habitat areas related to land ownership and water supply issues, and the presence of environmental contaminants such as selenium in the Lower Colorado River and Salton Sea.

The Yuma clapper rail is known to occur in the project vicinity, including the Old River channel (AGFD and BLM annual survey data).

Southwestern Willow Flycatcher The southwestern willow flycatcher (*Empidonax traillii extimus*) was federally listed as an endangered species by the USFWS on 27 February 1995

(USFWS 1995). Critical habitat was designated for the species on October 19, 2005 (50 CFR § 17). No critical habitat for this species has been designated along the Lower Colorado River. A final recovery plan has been published.

The southwestern willow flycatcher is a neotropical migrant. It arrives in breeding habitat as early as mid-May and may be present until mid-August. The breeding range of this flycatcher extends from southern California, east to western Texas, north to extreme southern Utah and Nevada, and south to extreme northern Baja California del Norte and Sonora (Unitt 1984). Migration routes and wintering range for the southwestern willow flycatcher are not well known; it is thought that this species winters in Mexico, Central America, and perhaps northern South America. In the last 50 years, the southwestern willow flycatcher has declined precipitously. Since 1992, more than 800 historic and new locations have been surveyed range wide to document the status of the species.

The southwestern willow flycatcher inhabits riparian areas along rivers, streams, and other wetlands. It nests in typically even-aged, structurally homogeneous, dense stands of trees and shrubs approximately 13-23 feet (4 to 7 meters) tall with a high percentage of canopy cover and dense foliage from 0-13 feet (0 to 4 meters) above the ground (Brown 1988) often near standing water (Zeiner et al. 1990). Historic breeding records and museum collections indicate a sizable population of southwestern willow flycatchers may have existed along the extreme southern stretches of the Lower Colorado River region (Unitt 1987). SWCA Environmental Consultants performed southwestern willow flycatcher surveys throughout 2003 (SWCA 2004).

Potential southwestern willow flycatcher breeding habitat has not been identified within the project area during habitat and species surveys conducted by Reclamation along the Lower Colorado River (SWCA 2003). In the vicinity of the project area, the closest 2003 observed southwestern willow flycatcher locations are approximately one-half mile east of the site around Mittry Lake, and north of the site approximately two miles. Historic locations also exist approximately one mile east associated with Mittry Lake (SWCA 2003). The Mittry Lake site was dominated by dense canopy saltcedar bordered by cattail and bulrush marsh to the south and upland disturbed areas to the north (SWCA 2003). No historic or current sitings within the project area were identified as part of the 2003 reporting.

3.3.2 Environmental Consequences and Mitigation Measures

Impacts on biological resources are considered significant if they could result in:

- substantial reduction in vegetative communities and the wildlife habitats they support;
- permanent reduction in the regional extent of wetlands;
- substantial direct loss or disturbance of wildlife; or
- permanent loss of habitat for rare, threatened, and endangered species.

3.3.2.1 Alternative 1 — Proposed Action

Environmental Consequences

Vegetation and Wildlife Habitat Table 3-9 presents land cover types within the footprint of the Proposed Action. Under this alternative, approximately 116.6 acres of vegetation would be lost (does not include open water habitats to be deepened [33.8 acres]) as a result of dredging operations. The loss of vegetation represents a decrease in nesting and foraging habitat for common and sensitive wildlife species associated with the Colorado River.

The most abundant vegetation type within the project area, saltcedar (approximately 89.3 acres), is a non-native community that occurs throughout the Lower Colorado River area and is a target community for restoration to native habitats. Saltcedar also dominates the existing dredge material disposal area where project-related materials would be disposed. Although this type provides some habitat value for generalist wildlife species, it is considered a low-value habitat for sensitive species known to the area and of no value to southwestern willow flycatcher due to dry surface soil conditions at the project site (LCR MSCP 2004c). As a general rule, southwestern willow flycatcher nests are rarely more than a few dozen meters away from water or saturated soils (Sogge and Marshall 2000). The loss of 89.3 acres of saltcedar would represent only a negligible fraction (about 1.4% of the total saltcedar land cover type between Imperial Dam and Yuma and about 0.15% of the total saltcedar land cover type on the lower Colorado River) of this land cover type in the project vicinity, which is invasively expanding within and adjacent to the project area.

Table 3-9. Land Cover Types Within the Project Footprint

Community Type	*Alternative 1 (Proposed Action)*	*Alternative 2*	*Alternative 3*
Proposed Dredge Areas	**Extent in Acres**		
Arrowweed	20.5	42.1	18.9
Backwater	0.6	0.7	0.7
Marsh (includes compositional types 1, 5, and 6)[1]	5.9	14.4	14.4
Open Water	33.8	33.9	33.9
Saltcedar-III (includes structural types III, IV, and V)[1]	89.3	186.9	78.8
Cottonwood/Willow IV	-	<0.1	-
Undifferentiated	0.3	0.6	0.5
Total	**150.4**	**278.7**	**147.2**
Proposed Dredge Disposal Area			
Arrowweed	8.2	73.1	8.2
Saltcedar	107.8	189.6	107.8
Undifferentiated	0.2	0.2	0.2
Total	**116.2**	**262.9**	**116.2**
Grand Total	**266.6**	**541.6**	**263.4**

***Source*:** Reclamation GIS data **(**Reclamation 2005d)

1. Extent of marsh is based on regional land cover GIS from Reclamation and does not represent a jurisdictional wetland delineation (see table 3-10 for jurisdictional wetland impacts). Marsh compositional types and saltcedar structural types follow LCR MSCP (2004b).
2. Value within project footprint less than 0.1 acre.

Similar to saltcedar, the loss of arrowweed and marsh habitats (approximately 20.5 acres and 5.9 acres respectively), would represent only a small fraction of comparable types present both north and south of the project area. Thousands of acres of these land cover types are presently associated with the Lower Colorado River. As a result of dredging, the loss of vegetation would be replaced by open water habitat, which would provide foraging habitat for some of the species and increase habitat for many additional species currently present within the project area.

Potential indirect effects on vegetation and the wildlife habitat it supports include effects that could be associated with changes from the existing pattern of fluctuating reservoir surface elevations. Although the range of water surface elevations would be within the historic range of the reservoir operating levels, the average and minimum water surface elevations could be lower during some months (Appendix D). The potential for lower average and minimum water surface elevations are not expected to result in the loss of marsh vegetation along the reservoir margins or in the Old River channel because the maximum monthly water surface elevations would be as great or greater than under existing conditions. Consequently, marsh vegetation would continue to survive as a result of being wetted or inundated frequently throughout each month of the growing season.

Changes in reservoir operations could result in reduction in flow releases from Laguna Dam (see Appendix D); however, because minimum daily flows with the Proposed Action are similar to minimum flow releases recorded from 2000-2005, potential affects on riparian and marsh vegetation and the wildlife habitat they support are expected to be minimal.

Although proposed dredging activities would reduce the amount of vegetation present, losses would not represent a substantial reduction in land cover types present in the vicinity of the project area or the habitats they provide for common wildlife species. Therefore, impacts are less than significant. Impacts on sensitive wildlife species and sensitive habitat are evaluated under *Rare, Threatened, Endangered, and Sensitive Species.*

Wildlife Impacts on wildlife would include direct impacts associated with loss of habitat as well as indirect and temporary impacts associated with dredging and disposal (related to both replacing storage capacity and future maintenance dredging). Permanent loss of habitat would also affect wildlife species in the area, resulting in the loss of cover, foraging, and nesting habitat. Approximately 116.6 acres (total area within the proposed dredging footprint [150.4 acres] minus existing open water habitats [33.8 acres]) of habitat would be converted from upland and wetland communities to open water as a result of dredging activities. An additional 116.0 acres of saltcedar and arrowweed land cover types would potentially be lost at the dredge disposal site as a result of disturbance associated with the dredge disposal. Vegetation within the disposal area is expected to return to the same cover type within a short period of time; however, some areas would be periodically disturbed by the disposal of dredge material from future maintenance dredging. The increase in open water would provide additional foraging habitat, particularly for bird species in the area; however, cover and nesting areas would be reduced. The Proposed Action would result in the loss of habitat within the project area; however, as noted above, all community types are abundant in the vicinity and the loss would represent only a small fraction of suitable habitat in the area and are of the lowest quality habitat available in the project area (McKernan and Braden 2001). In addition, measures implemented under in the LCR MSCP to improve habitats along the Lower Colorado River would reduce the level of impact

associated with the Proposed Action. Therefore, the effects on wildlife of the loss of habitat that result with implementation of the Proposed Action would be less than significant.

Temporary impacts including noise associated with dredging, increased human presence and other project-related activity would decrease the value of adjacent habitats and reduce the ability of wildlife to forage and nest in the area. These effects would be temporary, would cease when the project is completed, and are concentrated in the non-native habitats which typically provide less habitat value. Maintenance dredging would occur only in those areas previously dredged to maintain the proposed storage capacity and would result in temporary periodic disturbances (generally every 10 years; but could be as often as every 4 years) within the dredge area and the dredge disposal area. Some of the functional value of the habitat would return after the conversion to open water habitat allowing many species of wildlife to return to the area. As a result of the temporary nature of the Proposed Action and the likelihood that wildlife would return to the area when the project is complete, impacts resulting from project-related activities would be less than significant.

The Proposed Action could affect common and sensitive wildlife as a result of grubbing vegetation in areas to be dredged, and disposal of sediment in the existing disposal area. Loss of individuals would be greatest if vegetation clearing components of the Proposed Action occur during the breeding season of migratory and resident birds. However, Avoidance and Minimization Measures (AMM) presented in the LCR MSCP require that all surface clearing activities occur outside of the breeding season of sensitive wildlife species, and minimize impacts on covered species habitats as noted below (AMM3, AMM6 [LCR MSCP 2004b]).

- *AMM3—To the extent practicable, avoid and minimize disturbance of covered bird species during the breeding season.* To the extent practicable, to avoid and minimize potential impacts on covered bird species, vegetation management activities (e.g., periodic removal of emergent vegetation to maintain canals and drains) associated with implementation of covered activities and the LCR MSCP that could result in disturbance to covered bird species will not be implemented during the breeding season to prevent injury or mortality of eggs and young birds unable to avoid these activities.
- *AMM6—Avoid or minimize impacts on covered species habitats during dredging, bank stabilization activities, and other river management activities.* To the extent practicable, before initiating activities involved with river maintenance projects, measures will be identified and implemented that avoid or minimize take of covered species where such activities could otherwise result in take. Such measures could include alternative methods to achieve project goals, timing of activities, pre-activity surveys, and minimizing the area of effect, including offsite direct and indirect effects (e.g., avoiding or minimizing the need to place dredge spoil and discharge lines in covered species habitats; placing dredge spoils in a manner that will not affect covered species habitats).

Because vegetation clearing and grubbing would be conducted outside of the bird breeding season and non-breeding individuals would likely disperse in response to noise and equipment, the potential adverse effects on wildlife in these areas would be reduced. Effects of dispersal of wildlife to other habitat areas are expected to be minimal because only a few individuals, representing a small proportion of species populations present in the vicinity of the project area,

would be affected and the duration of disturbances would be temporary and localized. Therefore, impacts that could result in the loss or disturbance of wildlife with implementation of the Proposed Action would be less than significant.

Aquatic Habitats and Biota. The Proposed Action involves dredging activities in approximately 39.6 acres of waters of the U.S., including 7.22 acres of jurisdictional wetlands (Table 3-10).

Table 3-10. Waters of the U.S. Affected by the Proposed Action (acres)[1]

	ALTERNATIVE 1 (PROPOSED ACTION)		ALTERNATIVE 2		ALTERNATIVE 3	
Type	***Impacts***	***Created Area***	***Impacts***	***Created Area***	***Impacts***	***Created Area***
Open Water	32.4 (deepened)	116.6	34.1 (deepened)	245.5	34.0 (deepened)	113.3
Wetlands	7.2 (removed)	0	16.0 (removed)	0	16.1 (removed)	0
Total Waters of the U.S.	39.6	116.6	50.1	245.5	50.1	113.3

1. Values based on GIS data from verified wetlands delineation (SWCA 2002).

The Proposed Action has been designed to avoid and minimize impacts on wetlands through a reduced dredging area footprint in wetlands and the location of dredging predominately in upland areas. The Project would result in creation of approximately 116.6 acres of new open water habitat. The 7.22 acres of wetlands expected to be removed by the Proposed Action are predominately marsh habitats dominated by bulrush, cattail, and phragmites. The ecological functions primarily provided by these wetlands are wildlife habitat and silt stabilization (entrapment).

As noted above, the Proposed Action would include the creation of approximately 116.6 acres of new open water habitat. An increase in open water habitat may induce additional erosion potential, resulting from increase wave action (resulting from larger surface area of open water and increased recreational opportunities in the area). No data exists to determine if additional surface area and/or increased recreational use of the area would substantially increase wave action and result in adverse effects on fringe communities. Water levels associated with operations would continue to remain within historic levels. In addition, this area will likely be maintained as a “no wake” or regulated recreation area to further reduce the potential effects on fringe communities. Open water habitat would continue and improve functional use for many aquatic species that forage in open water areas. Open water habitat would also be improved for sportfishes (non-native fish) and game in the vicinity of the project area.

The water surface elevations are anticipated to be similar to the historic operating levels for Laguna Reservoir (Appendix D). Consequently, deepening of the reservoir would create areas of deeper water that would maintain or increase the area of thermal refugia available to fish during hot summer periods. As described above for vegetation and wildlife habitats, fish habitats below Laguna Dam are expected to be minimally affected by changes in flow releases from Laguna

Dam because minimum releases under the Project would be similar to minimum flows released under current conditions (see Appendix D).

The Project, including the disposal of dredge material at the existing disposal area, is a covered activity under the LCR MSCP and accompanying biological and conference opinion for Federal covered actions. The LCR MSCP is an authorized and permitted conservation program under the ESA and CESA. The LCR MSCP provides for the conservation of habitat that offsets the habitat impacts of all covered activities, including the Project, and contributes to the recovery of various endangered and threatened species of fish, wildlife, and plants. The LCR MSCP provides for mitigation of the loss of all marsh habitat affected by covered activities under the final Biological Opinion (USFWS 2005).

The LCR MSCP marsh types essentially encompass the Section 404 jurisdictional wetlands at the Project site and the LCR MSCP provides for full mitigation of impacts on marsh habitat, including additional marsh habitat creation to contribute the recovery of the endangered Yuma clapper rail and to help preclude the listing of other sensitive species.

Under the Proposed Action, a total of 7.22 acres of marsh wetlands would be established to compensate for the loss of 7.22 acres of Section 404 jurisdictional wetlands. Mitigation of impacts of the Proposed Action on jurisdictional wetlands would be achieved through:

- avoidance measures included as part of the Project;
- restoration of wetlands for a net gain of 2.00 acres within expanded ponds at the Imperial National Wildlife Refuge (NWR); and
- creation of 5.22 acres of wetlands in an upland area at the Imperial NWR[1].

With incorporation of project design components to avoid and minimize impacts on wetlands, the expansion of open water habitat within the project area, and compensatory mitigation for all marsh wetlands affected by the Proposed Action, impacts on aquatic areas and wetlands would be less than significant.

Rare, Threatened, Endangered, and Sensitive Species Potential impacts on the habitats of rare, threatened, endangered, and sensitive species that could be present in the project area are presented in Table 3-11. Two federally listed species, Yuma clapper rail and southwestern willow flycatcher, are known to occur in the vicinity of the project area. Project components, including temporary degradation of habitat from increased activity levels, direct loss of habitat, and potential mortality of individuals from grubbing of vegetation prior to dredging, all have the potential to result in the take of Yuma clapper rail. Yuma clapper rail is known to inhabit marsh and backwater areas associated with the existing and historic river channels. Increased noise levels and the presence of dredge equipment and human activity would temporarily degrade the quality of habitat in the area and potentially result in the abandonment of nest areas, decrease of nesting pairs, and/or decrease in reproductive success.

Although the specific level of take cannot be quantified, approximately 6 acres of habitat for Yuma clapper rail (comprised of backwater and marsh habitat) would be removed as a result of

[1] The 5.22 acres of created wetland constitutes a portion of 18 acres of LCR MSCP marsh to be created at this site.

the Proposed Action, and replaced with open water habitat. Loss of wet habitats would reduce the area available for future nesting and cover; however, as noted above, the Proposed Action has been designed to avoid the highest quality habitats and removal of surface vegetation associated with dredging would occur outside of the breeding season for the Yuma clapper rail.

Table 3-11. Extent of LCR MSCP Covered Species and Other Sensitive Species Habitat that Could be Removed under the Project Alternatives[a]

Community Type	*Alternative 1 (Proposed Action)*	*Alternative 2*	*Alternative 3*
	(IN ACRES)		
LCR MSCP HCP Covered Species			
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	-	<0.10	-
Yuma clapper rail *Rallus longirostris yumanensis*	5.9	14.4	14.4
California black rail *Laterallus jamaicensis coturniculus*	5.9	14.4	14.4
Yellow-billed cuckoo *Coccyzus americanus*	-	-	-
Gila woodpecker *Melanerpes uropygialis*	-	-	-
Southwestern willow flycatcher *Empidonax traillii extimus*	-	-	-
Vermilion flycatcher *Pyrocephalus rubinus*	-	<0.10	-
Arizona Bell's vireo *Vireo bellii arizonae*	-	<.10	-
Sonoran yellow warbler *Dendroica petechia sonorana*	-	<.10	-
Western least bittern *Ixobrychus exilis hesperis*	5.9	14.4	14.4
Other Species			
Cooper's hawk *Accipiter cooperi*	225.8	491.8	214.2
Bald eagle *Haliaeetus leucocephalus*	-[b]	-[b]	-[b]
Summer tanager *Piranga rubra*	-	-	-

[a] Derived from Table 3-9 based on land cover types that may support suitable habitat. Species habitat definitions are provided in Table 3-8.

[b] Implementation of the Proposed Action would result in a net increase of 133.4 acres of foraging habitat for bald eagle.

The southwestern willow flycatcher has the potential to occur in several community types including riparian, saltcedar, and marsh areas; however, based on Reclamation surveys (SWCA 2003), southwestern willow flycatcher breeding habitat is not present in the project area and most of the area to be removed is not suitable for nest initiation (generally the saltcedar land

cover type) because it does not have the potential to support surface water or saturated soils at least part time (SWCA 2002). This species has been observed east and north of the project area approximately one-half mile away at its closest point (Mittry lake area). As noted above, the project area is not known to support breeding habitat; however, roosting and foraging habitat does exist including cottonwood-willow, saltcedar and marsh areas associated with existing and historic river channels. Approximately 95.8 acres of these roosting and foraging habitats would be removed as a result of the Proposed Action and replaced with open water habitat. Implementation-related activities (e.g., operation of equipment) could result in temporary disturbance to individual flycatchers if present near work areas.

Other sensitive bird and wildlife species occurring within and adjacent to the project area would respond similarly to project activities as described for the Yuma clapper rail and southwestern willow flycatcher. Potential effects of implementation-related activities on rare, threatened, endangered, and sensitive species during the breeding season, however, would be avoided with implementation of LCR MSCP measures AMM3 and AMM6 (described above).

As noted above, the Proposed Action, including the disposal of dredge material at the existing disposal location, is a covered activity under the LCR MSCP, which includes the creation of habitat for the Yuma clapper rail, southwestern willow flycatcher, and other LCR MSCP covered species listed in Table 3-12. These habitats would be created all along the lower Colorado River and are expected to result in an overall increase in the numbers and distribution of these species and other sensitive and common species protected by the MBTA, and contribute to the recovery of both Yuma clapper rail and southwestern willow flycatcher populations. The LCR MSCP Biological Assessment (LCR MSCP 2004c) and Biological Opinion (USFWS 2005) assessed the impacts and provided for mitigation and contribution to recovery for species listed, proposed for listing, and candidates for listing under ESA potentially affected by the Project, including Yuma clapper rail and southwestern willow flycatcher.

Conservation measures and policies presented in the LCR MSCP HCP are currently in place and are not contingent upon the Proposed Action. Ongoing measures include maintenance of existing habitat; creation of new habitat; avoidance and minimization of impacts on habitat; population enhancement of specific species; and monitoring, research, and adaptive management goals. With implementation of the LCR MSCP conservation measures, impacts of the Proposed Action on Yuma clapper rail, southwestern willow flycatcher, and other sensitive wildlife including those species protected under the MBTA, therefore, would be less than significant.

3.3.2.2 Alternative 2

Impacts under this alternative would be comparable but greater to those identified under the Proposed Action. Impacts on marsh wetland habitats and on sensitive and federally listed wildlife species would increase (loss of marsh habitat would increase from approximately 5.9 to 14.4 acres; arrowweed would increase from approximately 20.5 acres to 42.1 acres). This alternative would also increase total loss of saltcedar habitat from approximately 89.3 acres to 186.9 acres (see Table 3-9). Impacts on jurisdictional features would be similar but greater than the Proposed Action because of the additional loss of marsh habitat type.

Table 3-12. Extent of Habitats to be Created under the LCR MSCP for LCR MSCP Covered Species with potential to be affected by Project Alternatives

Covered Species	*Acres of Created Habitat*
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	76
Yuma clapper rail *Rallus longirostris yumanensis*	512
California black rail *Laterallus jamaicensis coturniculus*	130
Yellow-billed cuckoo *Coccyzus americanus*	4,050
Gila woodpecker *Melanerpes uropygialis*	1,702
Southwestern willow flycatcher *Empidonax traillii extimus*	4,050
Vermilion flycatcher *Pyrocephalus rubinus*	5,208
Arizona Bell's vireo *Vireo bellii arizonae*	2,983
Sonoran yellow warbler *Dendroica petechia sonorana*	4,050
Western least bittern *Ixobrychus exilis hesperis*	512

This alternative would be considered a partially covered project under the LCR MSCP, and would benefit from existing measures in place including maintenance of existing habitat; creation of new habitat; avoidance and minimization of impacts on habitat; and population enhancement of specific species including Yuma clapper rail and southwestern willow flycatcher; and monitoring, research, and adaptive management goals. However, this alternative would result in adverse impacts greater than those for the Proposed Action and would require additional USFWS consultation beyond that required for covered projects under the LCR MSCP biological and conference opinion.

Because this alternative would be covered under the LCR MSCP, and with incorporation of the mitigation measure presented under the proposed alternative and additional restoration of wetlands to compensate for the greater wetlands function lost, impacts on vegetation and habitats, wildlife, aquatic communities, and sensitive species would be less than significant.

3.3.2.3 Alternative 3

This alternative would be the same as the Proposed Action without design components to reduce impacts on wetlands habitats so that loss of marsh areas would increase from 5.9 to 14.4 acres compared to the Proposed Action. All wetland areas within the footprint of this alternative would be removed. As a result, impacts on wetlands would be increased under this alternative compared to the Proposed Action. Because impacts on marsh areas would increase, impacts on sensitive species, including Yuma clapper rail, would also increase. This alternative would be considered a covered project under the LCR MSCP, and would benefit from existing measures in place including maintenance of existing habitat; creation of new habitat; avoidance and minimization of impacts on habitat; and population enhancement of specific species including Yuma clapper rail and southwestern willow flycatcher; and monitoring, research, and adaptive management goals.

Because this alternative would be covered under the LCR MSCP, and with incorporation of the mitigation measure presented under the Proposed Action and additional restoration of wetlands to compensate for the greater extent of wetlands lost, impacts on vegetation and habitats, wildlife, aquatic communities, and sensitive species would be less than significant.

3.3.2.4 No-Action Alternative

Under the No-Action Alternative, the proposed dredging activities would not occur. Open water habitat would continue to be reduced from sedimentation of the basin and the operational functionality of the reservoir, as well as the suitability of habitat for sport fishes, would continue to decrease until the entire basin fills with sediment. If complete sedimentation of the basin occurs, loss of aquatic and wetland communities and associated impacts on sensitive species and other wildlife would be significant. However, impacts on vegetation and habitat, wildlife, aquatic communities, and sensitive species resulting from dredging activities would not occur.

3.4 Cultural Resources

3.4.1 Affected Environment

Cultural resources are districts, buildings, sites, structures, areas of traditional use, or objects with historical, architectural, archeological, cultural, or scientific importance. They include archeological resources (both prehistoric and historic), historic architectural resources (physical properties, structures, or built items), and traditional cultural resources (those important to living Native Americans for religious, spiritual, ancestral, or traditional reasons). Traditional cultural resources and Native American consultations are discussed in section 3.10, Indian Trust Assets.

3.4.1.1 Regulatory Environment

The National Historic Preservation Act (NHPA) establishes national policy for protecting significant cultural resources that are defined as "historic properties" under 36 CFR 60.4. NHPA Section 106 (36 CFR §800) requires that federal agencies consider and evaluate the effect that federal projects may have on historic properties under their jurisdiction. Only significant cultural resources are considered for potential adverse impacts from a federal action.

3.4.1.2 Prehistoric and Historic Setting

The regional prehistoric cultural sequence can be divided into four periods – Paleoindian (San Dieguito), Archaic (Pinto and Amargosa), Late Prehistoric (Patayan), and Protohistoric. The earliest, well-documented prehistoric sites in the region are identified as belonging to the San Dieguito complex (approximately 12,000 to 7,000 years ago). The San Dieguito complex, which dates to late in the Paleoindian Period, is generally seen as representing small, mobile bands of hunters and gatherers with a hunting economy focused on large and small animals as well as collecting seasonally available wild plants. The Archaic Period (approximately 7,000 and 1,500 years ago) is differentiated from the earlier Paleoindian cultural complex by a shift to a more generalized economy and an increased focus on seed grinding and processing technology. The Patayan culture pattern along the lower Colorado River is marked by the introduction of pottery and floodplain agriculture approximately 1,200 years ago. By the time Native Americans came in contact with the Spanish, a variety of Native American groups were living along the lower Colorado River. Historically, the Quechan (also referred to as the Yuma Indians) occupied the project area.

Spanish explorers such as Francisco de Ulloa (1539), Francisco Vasquez de Coronado (1540), and Hernando de Alarcon (1540) led the earliest expeditions into the present day region of Yuma. Two missions were established near the Colorado and Gila River confluence and were later destroyed by the Quechan in the late-1700s. Fort Yuma was also established at the Colorado and Gila rivers confluence as people traveling to California from Mexico and other portions of the U.S. in the 1840s and 1850s passed through the area (Reclamation 2005c). Agriculture and associated irrigation facilities, like the Laguna Dam, played a significant role in the regional economy during the early-20th century. After the passage of the Reclamation Act in 1902, one of Reclamation's earliest initiatives was the Yuma Project, adopted in 1904. A key

element of this project was the construction of Laguna Dam to divert Colorado River water into canals for agricultural use.

3.4.1.3 Cultural Resources associated with the Project Area

A Class III cultural resource study was conducted for the Laguna Reservoir Expansion Project (Reclamation 2005c) to determine the presence or absence of potentially significant prehistoric and historic resources within the proposed dredging boundaries that might be considered a historic property under 36 CFR 60.4. This investigation consisted of a review of all relevant site records and reports on file with Arizona's Cultural Resource Inventory and the Southeastern Information Center of the California Historical Resource Information System, a pedestrian survey of the project area, and consultation with Native American representatives with possible knowledge of cultural resources in the project areas. No cultural resources were identified within the project area. Although visibility was poor in some areas, the study determined that the probability of encountering undocumented cultural resources within the project area is very low because the proposed dredging areas consist of accumulated sediment deposited during this century, especially since the construction of Imperial Dam in the 1930s (Reclamation 2005c). The State Historic Preservation Offices (SHPO) of California and Arizona have concurred with the findings of the Class III study on 6 January 2006 and 14 December 2005, respectively (see Appendix C).

The dredge spoil would be placed in an area previously analyzed by a Class II Cultural Resources Survey (Reclamation 1999). The area contained either recent sand deposits or impenetrable salt cedar vegetation. No cultural resources were identified in the proposed disposal area. In response to a request for consultation by Reclamation, California SHPO concluded that Reclamation took reasonable measures to identify historic properties in the area of potential effect, conducted the appropriate Native American consultation, and the Section 106 compliance efforts conform to applicable standards (Abeyta 1999). SHPO also noted Reclamation's previous stipulation for use of the disposal site, in lieu of a less than Class III survey of this area: *In the event of an inadvertent discovery of archaeological or historical cultural resources, all activity shall cease in the area of the discovery. Immediate telephone notification of the discovery shall be made to the Area Archaeologist or a responsible Federal Agency Official. In addition, all reasonable efforts to protect the cultural resources discovered shall be made. The Activity may resume only after the Federal Agency has authorized a continuance.* This stipulation would also apply to all Project-related activities.

Based on the Class II and III surveys described above, there are no archaeological resources within the project area. However, the Laguna Dam, itself, is eligible for listing on the National Register of Historic Places (NRHP) under the NHPA (Pfaff, Queen, and Clark 1999) and, therefore, qualifies as a historic property under 36 CFR 60.4. The dam is eligible as a stand-alone feature and as a contributing feature associated with Reclamation's historic Yuma Project. The SHPOs of California and Arizona have concurred with the eligibility determination of Laguna Dam. A Programmatic Agreement between Reclamation and SHPO is currently under development, which will cover NRHP-eligible features associated with the Yuma Project, including the Laguna Dam.

3.4.2 Environmental Consequences and Mitigation Measures

3.4.2.1 Alternative 1 — Proposed Action

Environmental Consequences Impacts on cultural resources are considered significant if a historic property, as defined under 36 CFR 60.4, would be physically damaged or altered, would be isolated from the context considered significant, or would be affected by project elements that would be out of character with the significant property or its setting.

There are no historic properties located within the proposed dredge or disposal areas. However, some of the proposed dredging would occur in close proximity to Laguna Dam, a cultural resource that has been determined eligible for listing on the NRHP. There is a large rubble block on the upstream side of the dam that is now covered with alluvium; this rubble block extends out about 38-feet from the crest of the dam. As described in Chapter 2, dredging operations near the dam would include a 50-foot buffer area from dam crest to dredge to ensure that no dam feature would be inadvertently impacted during dredging operations. The mitigation measure provided below would provide additional assurance that this historic property would not be affected by the Proposed Action.

Reclamation has submitted a determination of finding of no adverse affect to the California and Arizona SHPOs, in accordance with Section 106 of the NHPA, and they have concurred with this determination on 6 January 2006 and 14 December 2005, respectively.

Mitigation Measures With implementation of the following mitigation measure, potential impacts on the Laguna Dam would be avoided:

- Project activities within 100 feet of the Laguna Dam shall be monitored by an archeologist that meets the Secretary of the Interior's professional qualification standards for archeology.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.4.2.2 Alternative 2

The environmental consequences would be the same as under the Proposed Action. With implementation of the mitigation measure provided for Alternative 1, impacts on cultural resources would be avoided.

3.4.2.3 Alternative 3

The environmental consequences would be the same as under the Proposed Action. With implementation of the mitigation measure provided for Alternative 1, impacts on cultural resources would be avoided.

3.4.2.4 No-Action Alternative

Under the No-Action Alternative, no dredging or sediment disposal activities would occur to clear vegetation growth near hydraulic features of the Laguna Dam. Under existing conditions, the historic integrity of the Laguna Dam could be impacted by further sedimentation and vegetation growth over time. For example, vegetation has the potential to affect the structural integrity of the weir and the gate structure's concrete outlet structure. Increased sedimentation under current conditions could lead to additional vegetation growth, which could lead to accelerated structural deterioration of features associated with the historic dam. If left unchecked, such deterioration could result in significant impacts on the Laguna Dam, a historic property under 36 CFR 60.4.

3.5 Environmental Justice

This section addresses the potential for the Project to create disproportionate impacts on minority and low-income populations.

3.5.1 Affected Environment

3.5.1.1 Regulatory Environment

In 1994, the president issued Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-income Populations. The objectives of the EO include developing Federal agency implementation strategies, identifying minority and low-income populations where proposed Federal actions could have disproportionately high and adverse human health and environmental impacts, and encouraging the participation of minority and low-income populations in the NEPA process. In addition, the CEQ issued Environmental Justice Guidance under NEPA (CEQ 1997).

3.5.1.2 Minority and Low-Income Populations

Minority populations include all persons identified by the Census of Population and Housing to be of Hispanic or Latino ethnicity, regardless of race, as well as non-Hispanic persons who are Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and persons of two or more races.

Low-income populations are those that fall within the statistical poverty thresholds from the Bureau of the Census for the 2000 Census. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level ($17,463 for a family of four with two children in 2000, adjusted based on household size and number of children), as reported by the Census. The Census Bureau uses a set of income thresholds that vary by family size and composition. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level." The percentage of low-income persons is calculated as the percentage of all persons for whom the Bureau of the Census determines poverty status, which is generally a slightly lower number than the total population because it excludes institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.

Laguna Dam is located approximately 12 miles northeast of Yuma, Arizona, on the border of California and Arizona. The affected area includes the locations where the vast majority of the Project effects are expected to occur including the Laguna Reservoir (specifically locations affected by the proposed dredging and related activities such as staging areas, dredge disposal sites) and nearby communities where workers are likely to reside. There are no residences in the immediate vicinity of the reservoir site; however, a small recreational trailer park is located on the opposite side of S-24. The affected area includes Imperial County, California, and Yuma County, Arizona, the City of El Centro in Imperial County and the City of Yuma in Yuma

County. Information on total population, minority population, and poverty status for the two counties and two cities is provided in Table 3-13 below.

Of the two counties, Imperial County has a higher percentage of both minority and low-income populations, at approximately 80 percent and 23 percent, respectively. The City of El Centro has similar characteristics; approximately 82 percent of the population is minority and 23 percent low-income. The population of Yuma County is approximately 56 percent minority and 19 percent low-income. The City of Yuma's population is approximately 53 percent minority and 15 percent low-income, slightly less than Yuma County.

Table 3-13. Total Population, Minority Population, and Population Living Below Poverty, 2000

County	*Total Population*	*Minority Population*	*Percent Minority*	*Population Living Below Poverty Level*	*Percent of Population Living Below Poverty Level*
Imperial County, CA	142,361	113,872	80.0	29,681	22.6
City of El Centro	37,835	30,998	81.9	8,405	22.8
Yuma County, AZ	160,026	88,896	55.6	29,670	19.2
City of Yuma	77,515	40,731	52.5	10,910	14.7

Note: Percent of population living below poverty is calculated taking by taking into consideration the population for whom poverty status is determined, a number that is generally less than the total population, because certain populations are excluded.
Source: U.S. Census Bureau 2000.

Reclamation has been consulting with the Quechan Indian tribe whose reservation, the Fort Yuma Indian Reservation, is located partially within and adjacent to the project area (see section 3.8, Indian Trust Assets and section 3.12, Socioeconomics). The 2000 Census reports that 83.2 percent of the population of the Reservation is minority and 33.9 percent is living below the poverty level. If the Project results in more open water, this could, for example, increase revenues to the tribe for fishing and boating.

3.5.2 Environmental Consequences and Mitigation Measures

3.5.2.1 Alternative 1 — Proposed Action

Environmental Consequences As part of the Environmental Justice analysis, environmental consequences for other resources analyzed in Chapter 3 were reviewed, and no significant impacts to human populations were identified (e.g., noise, air quality, traffic). The Proposed Action would benefit system users of the Colorado River by improving operational flexibility and increasing storage behind Laguna Dam. Project-related expenditures for labor, materials, and services would benefit the local economy. Project dredging would last approximately three years, with periodic maintenance dredging approximately every four years thereafter. No significant impacts were identified for the Proposed Action that would adversely affect human populations or the public. The Proposed Action, therefore, would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations.

Mitigation Measures The Proposed Action would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations; therefore, no mitigation measures are identified.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.5.2.2 Alternative 2

No significant impacts to human populations were identified for Alternative 2. Like the Proposed Action, this alternative would benefit system users of the Colorado River by improving operational flexibility, but would increase storage behind Laguna Dam to a greater extent than under the Proposed Action. Project-related expenditures for labor, materials, and services would benefit the local economy. No significant impacts were identified for Alternative 2 that would adversely affect human populations or the public. Alternative 2, therefore, would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations.

3.5.2.3 Alternative 3

No significant impacts to human populations were identified for Alternative 3. Like the Proposed Action, this alternative would benefit system users of the Colorado River by improving operational flexibility and would increase storage behind Laguna Dam creating the same overall reservoir capacity as the Proposed Action, but with additional wetland impacts. Project-related expenditures for labor, materials, and services would benefit the local economy. No significant impacts were identified for Alternative 3 that would adversely affect human populations or the public. Alternative 3, therefore, would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations.

3.5.2.4 No-Action Alternative

Under the No-Action Alternative, the sediment dredging and vegetation removal would not occur in Laguna Reservoir. As a result, the storage capacity behind the dam would remain at levels below its pre-1983 capacity. The No-Action Alternative, therefore, would not create benefits for system users of the Colorado River by improving operational flexibility and increasing storage behind Laguna Dam. No impacts were identified for the No-Action Alternative that would adversely affect human populations or the public.

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3.6 Hazards/Hazardous Materials

This section addresses potential impacts related to hazards and hazardous materials resulting from implementation of the Proposed Action and alternatives.

3.6.1 Affected Environment

3.6.1.1 Regulatory Environment

Generally speaking, "hazardous materials" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials that are commonly found in soil and groundwater include petroleum products, fuel additives, heavy metals, and volatile organic compounds. If concentrations of certain contaminants in the soil or groundwater are high enough to exceed regulatory thresholds or other criteria established under California Code of Regulations (CCR) Title 22, Sections 66261.20 to 66261.24, the soil or groundwater would be classified as a "hazardous waste." Soil or groundwater that exhibits these criteria is classified as "characteristic" hazardous wastes.

Section 402 of the Clean Water Act (CWA) authorizes states to issue permits for discharges to surface waters from point sources and from non-point sources. This section of the CWA requires National Pollution Discharge Elimination System (NPDES) permits for (1) discharges of pollutants into waters of the U.S. or (2) discharge from projects that disturb one or more acres. Section 401 of the CWA requires that federally authorized discharges into waters of the U.S. not violate state water quality standards. If a permit under Section 402 of the CWA were needed, then a Certification of Conformance with water quality standards, pursuant to Section 401 of the CWA, would also be needed.

3.6.1.2 Hazards and Hazardous Materials within the Project Area

The project site is located in a rural area, adjacent to agricultural properties. No commercial or industrial properties, which might have used hazardous materials, are located in the vicinity of the site. An environmental database report, which identified all documented hazardous materials and petroleum storage or spills within one mile of the subject site, indicated that the closest site is the Imperial Irrigation District Imperial Dam Headquarters, located approximately 0.5 mile northeast of the site, at 2400 Imperial Road (Route 1 at Senator Wash Road). A leaking underground storage tank (UST) was discovered at this property in 1989; however, a site investigation indicated that groundwater was not impacted as a result of the spill (only localized soil impacts) and the case was closed on August 25, 1992 by the California Regional Water Quality Control Board (Environmental Data Resources [EDR], Inc. 2002). The project site is not located in any other type of hazard-prone area.

In addition, two USTs were present at Reclamation's Laguna Yard, located approximately one mile north of the proposed dredge site. No leaks have been reported from these USTs, which

have been upgraded periodically over the years to comply with current UST regulations. These tanks were removed in January 2006. Soil samples collected from the base of the tank excavation contained no detectable concentrations of petroleum hydrocarbons (personal communication, Mike Biever 2006).

3.6.2 Environmental Consequences and Mitigation Measures

3.6.2.1 Alternative 1 — Proposed Action

Environmental Consequences The project site is not located in proximity to any known or suspected hazardous waste or petroleum waste sites. The site is located in a rural area with no known historic commercial or industrial uses. Therefore, it is not anticipated that contaminated sediments would be encountered during dredging operations. However, incidental spills of petroleum products could occur during operation and maintenance of the dredge. In addition, incidental spills could occur from construction equipment and vehicles used during construction and operation of the disposal pipeline. Such spills could result in significant impacts to sediment and water quality.

Mitigation Measures There are potentially significant impacts related to incidental spills of petroleum products during construction and dredging operations. With implementation of the following mitigation measure, impacts related to hazardous materials would be less than significant:

- Pursuant to NPDES requirements, a Storm Water Pollution Prevention Plan (SWPPP) shall be in place prior to dredging and pipeline construction. The SWPPP shall include standard Best Management Practices (BMPs), such as temporary spill containment booms and absorbent pads, to be utilized in accordance with an established spill contingency plan.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.6.2.2 Alternative 2

Impacts would be similar, but slightly greater, than those described for Alternative 1, as more dredging operations would be required, thus extending the potential time that incidental spills could occur. Impacts would be less than significant with implementation of the mitigation measure provided for Alternative 1.

3.6.2.3 Alternative 3

Impacts would be similar to those described for Alternative 2, as the amount of dredging would be similar. Impacts would be less than significant with implementation of the mitigation measure provided for Alternative 1.

3.6.2.4 No-Action Alternative

No impacts would occur with respect to hazards and hazardous materials, as no construction and operation related incidental spills of petroleum products would occur.

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3.7 Hydrology/Water Quality

This chapter discusses the potential change of water quality, reservoir elevation and release, and water management associated with the implementation of the Proposed Action and alternatives related to increased storage capacity at Laguna Reservoir. Sources of information for this section were the Preliminary Study of Lower Colorado River Storage Alternatives (Reclamation 2004), the Final Environmental Impact Statement Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions (Reclamation 2002), a technical memorandum comparing Laguna Reservoir conditions in 1982 and 2003 (Brown and Caldwell 2006, see Appendix D), Laguna Dam flow and water surface elevation data (see Appendix D), and the Scoping Summary Report for the Laguna Restoration Project (Appendix A).

3.7.1 Affected Environment

The Colorado River Basin encompasses approximately 244,000 square miles located in portions of seven states (i.e., Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming – collectively referred to as the Basin States). The Colorado River starts in the Rocky Mountains and traverses more than 1,400 miles to its terminus in the delta region of the upper Gulf of California (Sea of Cortez) in Mexico. The Colorado River provides the water supply for over 25 million people and about 3.5 million acres of agricultural lands in the U.S. and Mexico (Water Education Foundation 2004). The Colorado River Compact of 1922 divided the Colorado River into Upper and Lower Divisions and Upper and Lower Basins. The Upper Division States are Colorado, New Mexico, Utah, and Wyoming, and the Lower Division States are Arizona, California, and Nevada. The Lower Basin extends from Lee Ferry to the Southerly International Boundary and is generally referred to as the Lower Colorado River.

Hydrologic conditions vary from year to year depending on a variety of factors, and a single year may not be representative of normal conditions. To better control and utilize waters of the Colorado River, multiple dams, powerplants, and diversion structures were constructed by the U.S. Government. The overall system has 10 major reservoirs that provide approximately 60 million acre-feet (maf) of water storage. The Lower Colorado River system includes Hoover, Davis, Parker, Headgate Rock, Palo Verde Diversion, Imperial, Laguna, and Morelos Dams. Hoover is the northern most dam and Morelos Dam is the last dam on the Colorado River and is located just below the U.S. at Mexico's Northerly International Boundary. Morelos Dam was constructed and is operated and maintained by the Republic of Mexico. Reclamation manages the water resources of the Colorado River, and operates the Lower Colorado River system to control floods, regulate the flow of the Colorado River, deliver stored water for beneficial uses in the U.S. and Mexico, and generate electrical energy, among other purposes.

The region of influence for the Proposed Action is Laguna Reservoir, which is behind Laguna Dam. Laguna Dam is approximately 12 miles northeast of Yuma, Arizona and five miles downstream from Imperial Dam, near the California and Arizona border. The Laguna Reservoir area lies on an existing floodplain of the Colorado River.

The sluicing flows facilitated by Laguna Reservoir are important to operations at upstream facilities, including Imperial Dam and desilting works, the California Sluiceway and the All-American and Gila Gravity Main canals. The desilting works at Imperial Dam remove sediment from Colorado River water and prevent clogging, expensive and difficult maintenance, and outages of the All-American and Gila Gravity Main canals. Sediment collected by the Imperial desilting works, along with water to move it, is discharged into the California Sluiceway. As sediment collects in the sluiceway, it is moved 3,000 feet downstream to a sediment settling basin in Laguna Reservoir using high rate, short duration sluicing flows of 8,000 to 14,000 cubic feet per second (cfs) of approximately 20 minutes in duration. Sluicing flows arriving at Laguna Reservoir are stored behind Laguna Dam and are released over an extended period.

Historically, the Laguna Reservoir capacity was approximately 1,500 af, which has decreased over time due to sedimentation. The reservoir has not been dredged since the late 1970's. Capacity, therefore, has incrementally decreased over time, and the reservoir currently has a storage capacity of approximately 400 af. Water can be stored in the Laguna Reservoir up to a maximum elevation of 151.30 feet, at which point water will spill over the weir, and to a low of 140.5 feet, which is the lowest point the Reservoir can go when there is no flow releases from the Laguna Dam gates. Figure 3-3 shows that daily reservoir elevations have varied historically. Data for 1982 has been selected as a reasonable standard for the historical operation of Laguna Dam before capacity was reduced by sedimentation. Table 3-14 summarizes operation of Laguna Reservoir historically and under more recent operating conditions. Table 3-14 is a summary of the information provided in Appendix D and Figure 3-3.

Table 3-14 Summary of Laguna Reservoir Elevation, Historic and Current

	Historic 1982/Proposed Action	***Year 2000***	***Year 2003***	***Year 2005***
Mean Elevation (ft)	148.49	149.36	149.24	146.29
Maximum Elevation (ft)	152.40	152.06	153.48	150.05
Minimum Elevation (ft)	140.5	141.69	145.30	140.18
Days at or Below Elevation 143 (days)	10	5	0	62

Notes:

Year 2001 and Year 2002 are not included in the analysis as elevations were atypical due to operating restrictions upstream at Senator Wash Reservoir. Year 2004 was not included in the analysis due to missing data resulting from a malfunctioning gage.

In year 2005 the increase in the frequency of lower than normal elevation is attributable to permitted and approved actions occurring at and upstream of the reservoir including repair work on the weir above the Laguna Settling Basin and seals on gates. Because the elevation recording gage at Laguna Dam was known to be malfunctioning in 2005, any suspiciously low or high readings were research and cross-referenced and adjusted as needed.

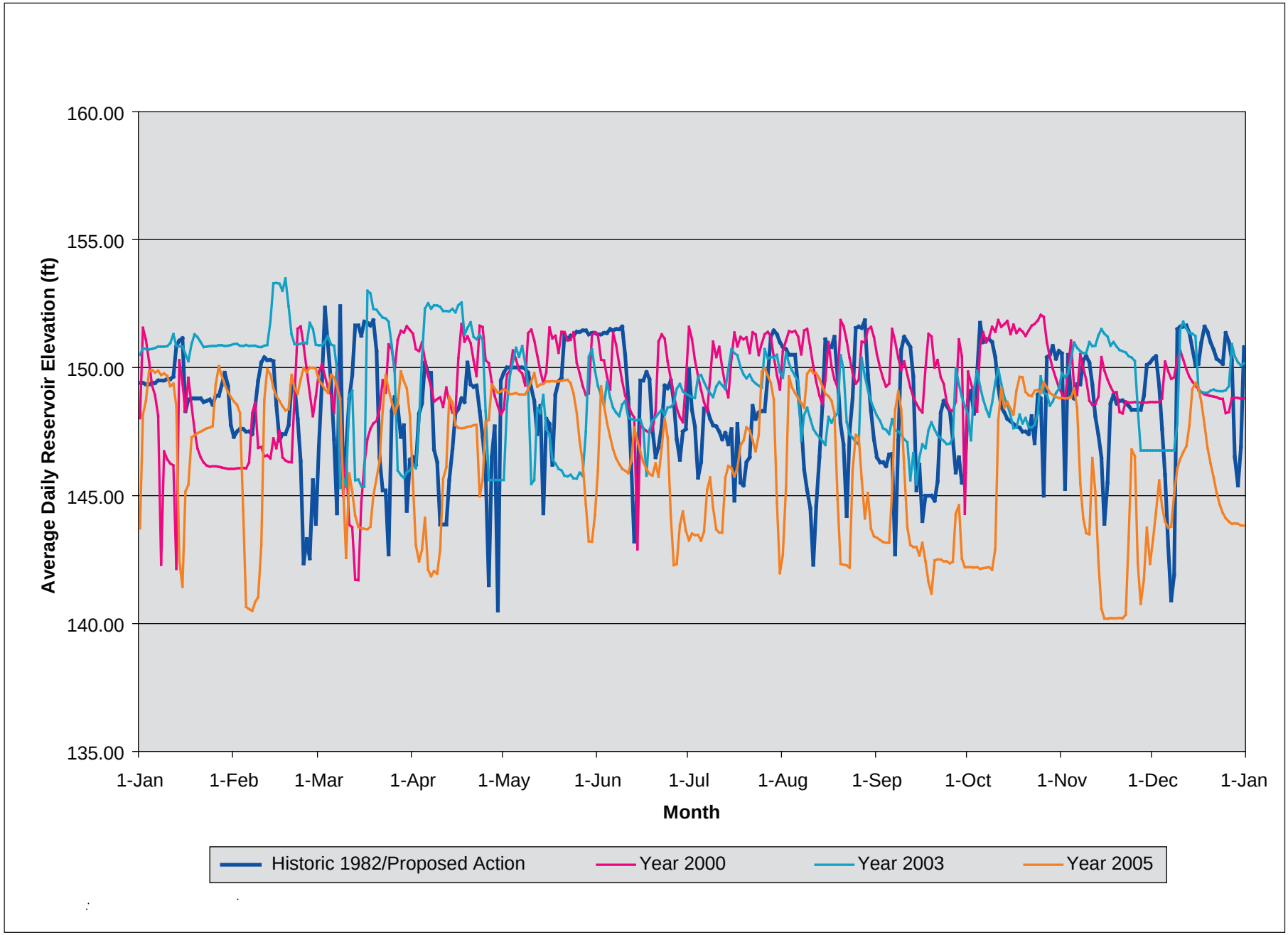

Figure 3-3. Average Daily Laguna Reservoir Elevations

Like reservoir elevation, releases from Laguna Reservoir have also varied over time. Many factors influence the amount of water released from Laguna Dam, including the amount of water needed by users downstream and the amount of water entering the reservoir from upstream releases. In recent years releases from Laguna Dam have averaged between 530 and 692 cfs, but minimum releases have been as low as 244 cfs and high releases as great as 3,660 cfs. As can be seen from Figure 3-4 and Table 3-15, historical (pre-1983) releases would fall within the current release ranges.

Table 3-15 Summary of Laguna Reservoir Releases, Historic and Current

	Historic 1982/Proposed Action	***Year 2000***	***Year 2003***	***Year 2005***
Mean Release (cfs)	496	692	530	550
Maximum Release (cfs)	2,010	3,660	3,530	3,050
Minimum Release (cfs)	254	326	244	282

Notes:
Year 2001 and 2002 was not included in the analysis as releases were atypical due to operating restrictions upstream at Senator Wash Reservoir. Year 2004 was not included in the analysis due to missing data resulting from a malfunctioning gage.

Laguna Reservoir is also one of many facilities used by Reclamation to make water deliveries to Mexico. Water deliveries to Mexico can also be made from Imperial Dam, through the All-American Canal, returning to the Colorado River at Pilot Knob; through the Yuma Main Canal; and from drains, wasteway flows, and Gila River flows.

3.7.1.1 Regulatory Environment

Reclamation is the lead agency for this EA. Though not subject to local and state regulations (except where local entities enforce federal law), Reclamation will coordinate environmental review, permitting, and construction activities with local and state authorities to avoid conflicts to the extent feasible.

- Executive Order 11988, Floodplain Management, May 24, 1977. This EO 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 area above Laguna Dam and would, therefore, minimize harm associated with the occupancy or modification of the floodplain, which is related to hydrology.

The Law of the River. Lower Colorado River operations are determined by various laws, treaties, and court decisions collectively referred to as The Law of the River. The Law of the River encompasses discretionary and nondiscretionary actions by Reclamation, acting for the Secretary of the Interior as watermaster, related to its operation and maintenance of the Lower Colorado River.

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

The Proposed Action could have impacts to water quality, as defined by the CWA. Water quality and CWA issues are also addressed in section 3.3 (Biological Resources), section 3.6 (Hazards/Hazardous Materials), and section 3.13 (Topography, Geology, Soils, and Mineral Resources).

3.7.2 Environmental Consequences and Mitigation Measures

3.7.2.1 Alternative 1 — Proposed Action

The Proposed Action would increase the amount of storage capacity in the Laguna Reservoir basin area located upstream of Laguna Dam through the excavation of accumulated sediments. The existing storage capacity available in the current reservoir is approximately 400 af. The Proposed Action would restore Laguna Reservoir's capacity to pre-1983 levels, or about 1,500 af of water storage capacity, through the removal of accumulated sediments in the basin area located immediately upstream of Laguna Dam. Increased capacity of the Laguna Reservoir would allow for more frequent sluicing operations from Imperial Dam, which is necessary to maintain proper operations of the outlet structure (California Sluiceway).

Impacts related to hydrology include changes to reservoir elevations, need for increased maintenance dredging, changes to water quality, and increased flexibility in meeting water deliveries to Mexico. The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

Water Quality

Environmental Consequences During the 3-year dredging period, the Proposed Action could have potential impacts to water quality due to the potential for erosion during desilting operations. Similarly, future maintenance dredging could result in potentially significant water quality impacts related to erosion. These impacts are discussed in detail in section 3.13 (Topography, Geology, Soils, and Mineral Resources).

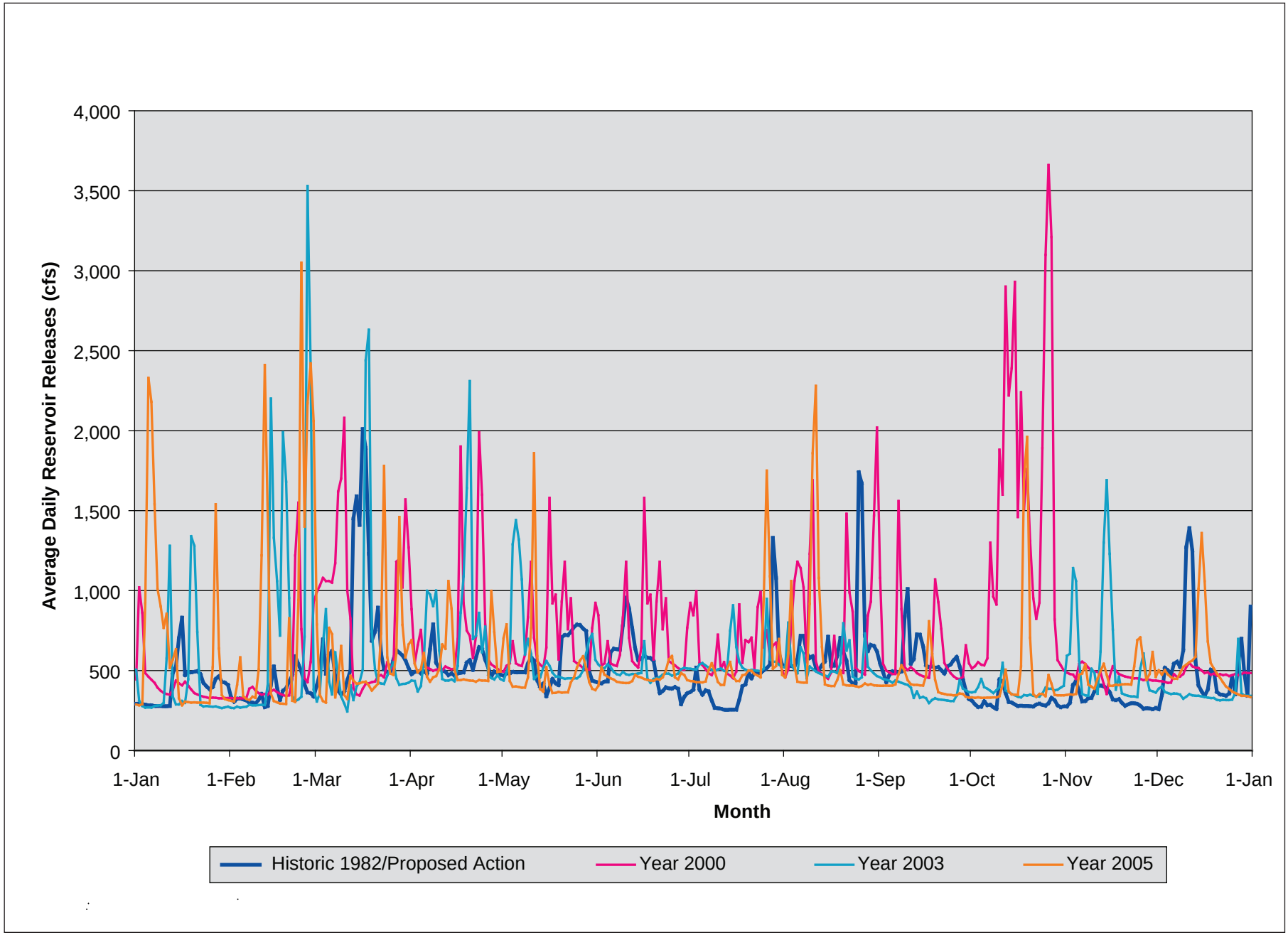

Figure 3-4. Average Daily Laguna Reservoir Releases

The Proposed Action would have no impacts on the chemical composition of the water at and below the Laguna Reservoir because the increase in storage capacity would have no impact on the composition of the water flowing into or out of the reservoir**.**

Mitigation Measures With implementation of the mitigation measure described in section 3.13 (Topography, Geology, Soils, and Mineral Resources), impacts to water quality related to erosion would be less than significant.

Reservoir Elevation and Laguna Dam Releases

Environmental Consequences Under current operations, the elevation of Laguna Reservoir is consistently rising and falling and is rarely static, as detailed in Appendix D and Figure 3-3. The annual water surface elevations under the Proposed Action are anticipated to be similar with data shown in the tables included in Appendix D and detailed in Figure 3-3. Therefore, under Alternative 1, the range of reservoir elevation fluctuation is anticipated to be within the historic operating levels for Laguna Reservoir and is not a significant impact. Restoration of the 1,500 af storage capacity in the reservoir would allow Reclamation to operate Laguna Dam and the reservoir without the current constraints encountered when a sluicing event is planned and initiated. Reservoir restoration would alleviate the necessity of evacuating the reservoir to accommodate the sluicing flows. Thus, the water surface elevation in the reservoir, and the Old River channel behind Laguna Reservoir, would be anticipated to experience a degree of stability similar to that associated with operations under pre-1983 conditions, which have not been possible under the diminished storage capacity.

Reclamation will continue to perform operation and maintenance activities in the reservoir and on Laguna Dam under Alternative 1. Some operation and maintenance activities require lowering the surface water elevations and/or reducing flow rates; however, these activities are generally short-term and would not result in significant impacts.

Water releases from Laguna Dam are anticipated to be consistent with historic operations shown in data tables included in Appendix D and detailed in Figure 3-4 and Table 3-15. Although changes in reservoir operations could result in a reduction in flow releases from Laguna Dam (see Appendix D, Figure 3-4 and Table 3-15), minimum daily flows with the Proposed Action would be within the range of minimum and maximum flow releases recorded from 2000 to 2005, and potential effects on the downstream channel are anticipated to be minimal.

Mitigation Measures While no significant impacts are anticipated, Reclamation would install a staff gage in the portion of the Old River channel behind Laguna Reservoir. The gage shall be located so as to be accessible for interested agencies (AGFD, BLM, etc.) to monitor water surface elevations in the Old River channel.

Water Management

Environmental Consequences The Proposed Action would be consistent with Reclamation's operations and maintenance responsibilities under the Law of the River. The Proposed Action would enhance Reclamation's ability to sluice water and maintain the California Sluiceway, as

well as the desilting operations at Imperial Dam necessary for delivery of water into the All-American Canal and Gila Gravity Main Canal.

The Proposed Action would not impair Reclamation's ability to meet its obligations under the U.S.-Mexican Water Treaty of 1944. The Proposed Action would enhance the options by which Reclamation could deliver water to Mexico by increasing water available for delivery to Mexico from Laguna Reservoir.

Mitigation Measures Because no significant impacts on water management would occur as a result of implementation of the Proposed Action, no mitigation measures are proposed.

Hydroelectric Power The Proposed Action would have only a limited affect on hydroelectric power. Neither Imperial, Laguna, nor Morelos dams are equipped with hydroelectric facilities. Hence, a change in sluicing flows from Imperial Dam to Laguna Reservoir and any resulting changes in water deliveries from Laguna Dam to Morelos would be minimal and changes to hydroelectric power production would be minimal.

Mitigation Measures Because no significant impacts on hydroelectric power would occur as a result of implementation of the Proposed Action, no mitigation measures are proposed.

3.7.2.2 Alternative 2

Alternative 2 would have a beneficial impact to river flows, as it would allow for greater capacity of the Laguna Reservoir (2,800 af), and, therefore, would allow for proper maintenance of the Laguna outlet structure and would achieve more predictable downstream flows.

Water Quality As described in section 3.13 (Topography, Geology, Soils, and Mineral Resources), impacts to water quality would be similar, but slightly greater, than those described for the Proposed Action (Alternative 1), as more dredging and disposal operations would be required, thus extending the potential time for erosion-induced siltation of the reservoir and river. Impacts would be less than significant with implementation of the mitigation measure provided in section 3.13.

Reservoir Elevation and Laguna Dam Releases Impacts to reservoir levels would be similar, but slightly greater, than those described for the Proposed Action (Alternative 1), as the increased storage capacity would allow for greater fluctuation in reservoir levels. As described earlier, under current conditions elevations vary from 145.3 feet to 153.7 feet and average 149.3 feet (Brown and Caldwell 2006). With storage capacity of 2,800 af, reservoir elevations could be drawn down to the minimum water storage level for Laguna Reservoir, 140.5 feet. However, due to the greater storage in the reservoir under Alternative 2 less rapid fluctuations in reservoir elevation are anticipated than under current conditions or Alternative 1. The greater storage would allow the reservoir to accept additional sluicing water without having to rapidly evacuate the reservoir in advance or quickly release water in anticipation of future sluicing flows.

Water Management Alternative 2 would be consistent with Reclamation's operations and maintenance responsibilities under the Law of the River. Under Alternative 2, benefits to water

management would be enhanced relative to the Proposed Action. Alternative 2 improves Reclamation's ability to sluice water and maintain the California Sluiceway, as well as the desilting operations at Imperial Dam that are necessary for delivery of water into the All-American Canal and Gila Gravity Main Canal. It also enhances the options by which Reclamation could deliver water to Mexico by increasing water available for delivery to Mexico from Laguna Reservoir.

Hydroelectric Power Impacts to hydroelectric power would be similar, but slightly greater, than those described for the Proposed Action, as the increased storage capacity could result in changes in the water being delivered to Mexico via Laguna Dam rather than via releases from Imperial Dam and the power production facilities of the All-American Canal.

3.7.2.3 Alternative 3

Alternative 3 would have the same beneficial impact to river flows as the Proposed Action. Alternative 3 would allow for greater capacity of the Laguna Reservoir (1,500 af), and, therefore, would allow for proper maintenance of the Laguna outlet structure and would achieve predictable downstream flows.

Water Quality Impacts to water quality would be similar to the Proposed Action (Alternative 1), as the amount of dredging would be similar. Impacts would be less than significant with implementation of the mitigation measure provided in section 3.13.

Reservoir Elevation and Laguna Dam Releases Impacts to reservoir levels would be similar to those described for the Proposed Action (Alternative 1), as the amount of dredging and resulting storage capacity would be similar.

Water Management Alternative 3 would be consistent with Reclamation's operations and maintenance responsibilities under the Law of the River. Benefits to water management would be similar to those described for the Proposed Action (Alternative 1), as the amount of dredging and resulting storage capacity would be similar. Alternative 3 improves Reclamation's ability to sluice water and maintain the California Sluiceway, as well as the desilting operations at Imperial Dam that are necessary for delivery of water into the All-American Canal and Gila Gravity Main Canal. It also enhances the options by which Reclamation could deliver water to Mexico by increasing water available for delivery to Mexico from Laguna Reservoir.

Hydroelectric Power Impacts to hydroelectric power would be similar to those described for the Proposed Action (Alternative 1), as the amount of dredging and resulting storage capacity would be similar. Increased storage capacity could result in changes in the water being delivered to Mexico via Laguna Dam rather than via releases from Imperial Dam and the power production facilities of the All-American Canal.

3.7.2.3 No-Action Alternative

Under the No-Action Alternative, Laguna Reservoir would continue to receive sediment from upstream and the reservoir would continue to lose capacity. Loss in capacity would result in

reduced capabilities of capturing sluicing flows, which would have a negative impact on the ability to maintain the California Sluiceway and desilting operations at Imperial Dam, hindering Reclamation's water management on the Lower Colorado River. This is a potentially significant impact, and would be inconsistent with the purpose and need of the Project. The No-Action Alternative would result in no change to water quality or hydroelectric power generation.

3.8 Indian Trust Assets

3.8.1 Affected Environment

This section outlines potential impacts to tribal resources associated with the implementation of the Proposed Action. Tribal resources include all potential impacts to tribal lands and resources, including the specific category referred to as Indian Trust Assets (ITAs). ITAs are legal assets associated with rights or property held in trust by the U.S. for the benefit of federally recognized Indian Tribes or individuals. The U.S., as trustee, is responsible for protecting and maintaining rights reserved by, or granted to, Indian Tribes or individuals by treaties, statutes, and executive orders. All Federal bureaus and agencies share a duty to act responsibly to protect and maintain ITAs.

3.8.1.1 Regulatory Environment

In accordance with Environmental Compliance Memorandum (ECM) 97-2, Reclamation's policy is to protect ITAs from impacts resulting from its programs and activities whenever possible. Reclamation, in cooperation with Tribe(s) potentially impacted by a given project, must inventory and evaluate assets, and then mitigate, or compensate, for impacts to the asset. ITAs include property in which a Tribe has legal interest, such as lands, minerals, water rights, and hunting and fishing rights. While most ITAs are located on a reservation, they can also be located off-reservation. For example, tribal entitlements to water rights pursuant to water rights settlements are considered trust assets, although the reservations of these Tribes may or may not be located along the river. A Tribe may also have other off-reservation interests and concerns that must be taken into account.

3.8.1.2 ITAs and Other Tribal Resources in the Project Area

Reclamation has met with the Quechan Nation to elicit their opinions and potential concerns regarding the Proposed Action. The Quechan Council on the Fort Yuma Reservation was briefed about the Project on September 15, 2005 and November 16, 2005, at which time the council was provided project materials that were previously distributed during the public scoping meeting. In addition, a representative of the Fort Yuma Reservation participated in the archaeological field reconnaissance that was conducted for the Project (see section 3.5 for more information). Reclamation has also apprised the Bureau of Indian Affairs (BIA), Phoenix Office, of the Proposed Action.

Based on discussions with the Quechan Council and BIA, there are no recorded ITAs within the project area. The Quechan Council has requested that they be kept informed about the Project, especially regarding potential cultural resources impacts. In a letter dated February 10, 2006, the Quechan Tribe expressed their support for the restoration project and offered additional suggestions for further enhancements (see Appendix C). Reclamation looks forward to working with the tribe on these issues during future projects. No other issues of tribal concern were expressed during these meetings.

3.8.2 Environmental Consequences and Mitigation Measures

The Proposed Action and alternatives were reviewed to determine whether effects of the components of the Federal actions would have an adverse impact on tribal resources, including ITAs.

3.8.2.1 Alternative 1 — Proposed Action

Environmental Consequences There are no ITAs or other resources of tribal concern in the project area. Therefore, significant impacts to ITAs or other tribal resources from implementation of the Proposed Action would not occur.

Reclamation intends to keep both the Quechan Council and BIA informed of the Project's progress, even though no archaeological sites were documented within the project area and no heritage preservation issues have been identified by any consulting parties.

Mitigation Measures Because no significant impacts on ITAs would occur as a result of implementation of the Proposed Action, no mitigation measures are proposed.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.8.2.2 Alternative 2

The environmental consequences would be the same as under the Proposed Action. Tribal resources would not be impacted by this alternative.

3.8.2.3 Alternative 3

The environmental consequences would be the same as under the Proposed Action. Tribal resources would not be impacted by this alternative.

3.8.2.4 No-Action Alternative

Under the No-Action Alternative, no dredging or sediment disposal activities would occur, and environmental conditions would continue as currently exists. Tribal resources would not be impacted by this alternative.

3.9 Land Use

This section discusses existing land uses at and adjacent to the project area in order to evaluate the compatibility of the proposed alternatives with those uses. This section also addresses the potential for the proposed dredging activities to impact agricultural resources.

3.9.1 Affected Environment

3.9.1.1 Land Use

Regulatory Setting Land use attributes addressed in this analysis focus on general land use patterns, management plans, policies, and regulations. These provisions determine the types of uses that are allowable and identify appropriate design and development standards used to address specially designated or environmentally sensitive areas. State and Federal agencies are not subject to local land use and zoning regulations; however, these agencies cooperate with local agencies to avoid conflicts to the extent feasible. Although the project site is not subject to local land use and zoning regulations, the following adopted plans and studies present factors affecting land use and include recommendations to assist officials and local community leaders in ensuring compatible development.

Lower Colorado River Multi-Species Conservation Program Conservation Plan The LCR MSCP is an authorized and permitted conservation program under the ESA and CESA. The Conservation Plan is a comprehensive, habitat-based approach developed to provide ESA compliance for species that are currently listed under the ESA or that may become listed in the future. Because the LCR MSCP is seeking compliance for a 50-year period, the Conservation Plan includes minimization and mitigation measures for species not currently listed under the ESA that may become listed within the term of the permit. The LCR MSCP provides for the conservation of habitat that offsets the habitat impacts of all covered activities, including the Project, and contributes to the recovery of various endangered and threatened species of fish, wildlife, and plants. The LCR MSCP conservation measures include maintenance of existing habitat, creation of new habitat, avoidance and minimization of impacts on habitat, population enhancement of specific species, monitoring and research, and adaptive management. The program is implemented and funded by a partnership of state, Federal (including Reclamation), and other public and private stakeholders in Arizona, California, and Nevada with interests in managing the water and related resources of the Lower Colorado River (LCR MSCP 2004a).

Yuma Field Office Resource Management Plan (Proposed Revision to 1987 Yuma District Resource Management Plan) Pursuant to the U.S. Department of the Interior's Departmental Manual 613 (DM 613), the Bureau of Land Management (BLM) manages Reclamation withdrawn lands in the project vicinity. Although Reclamation maintains jurisdiction of the lands within the project area, BLM maintains primary responsibility for managing wildlife and recreational resources within the project area. BLM is also responsible for implementation of the Resource Management Plan (RMP). BLM is currently in the process of updating and revising the *1987 Yuma District Resource Management Plan* for federal lands within the project area.

Existing Setting The Laguna Reservoir storage site is situated between Imperial Dam to the north, the Laguna Desilting Basin to the southeast, Laguna Dam to the south, and Mittry Lake and the Old River channel to the west. Although some of the project site is located on or adjacent to tribal lands within the Fort Yuma Reservation boundary, these Reclamation-withdrawn lands are currently used for water storage, delivery, and sediment disposal from maintenance dredging activities. Reclamation continues to hold fee title to the Laguna Dam infrastructure, Laguna Settling Basin, and Sediment Disposal Area within the Reservation boundaries and maintains the rights to operate, maintain, and reconstruct these appurtenances through existing reservations made in an existing security and protection zone for those purposes. The majority of the project site is located within Reclamation's jurisdiction; however, a portion of the site is located on tribal lands outside Reclamation's security zone.

3.9.1.2 Agricultural Resources

Regulatory Setting Individual counties and municipalities regulate agricultural land uses primarily through the adoption of land use plans, policies, and agricultural zoning that restrict the location, type, and intensity of land development and use that is allowed. The California Department of Conservation (CDOC) has the primary responsibility for regulation and reporting related to California agricultural lands. The Arizona Department of Agriculture is the administering agency in Arizona. Agricultural resources on tribal lands are governed by the tribal governments.

This analysis meets the requirements of the Farmland Protection Policy Act (7 USC 4201) on a programmatic basis. This Act is the Federal statute that provides the basis for the policy of avoiding impacts from Federal programs. The Act does not prohibit Federal agencies from undertaking actions that convert farmland to nonagricultural use, but only requires that Federal agencies "identify and take into account the adverse effects of Federal programs on the preservation of farmland; consider alternative actions, as appropriate, that could lessen such adverse effects; and assure that such Federal programs, to the extent practicable, are compatible with State (and local) programs and policies to protect farmland" (7 USC §4202[b]).

Existing Setting The Imperial Valley and Yuma Mesa and surrounding valleys contain a variety of agricultural uses ranging from field crops (alfalfa, hay) and row crops (citrus) to livestock production. The area's favorable climate, abundance of arable lands in valley regions, fertile soils, and the availability of adequate water transported from the Colorado River via a complex canal system provide ideal conditions for an abundant array of crops. Approximately 20 percent of lands (512,163 acres) within Imperial Valley are irrigated for agricultural purposes (Imperial County 1996). Approximately 238,900 acres of farmlands are harvested annually in Yuma County (Tickes et al. 2002). However, buildout within Imperial Valley and the Yuma Mesa area has resulted in the conversion of productive agricultural lands to non-agricultural uses.

The Laguna Reservoir is located on primarily flat lands within the existing floodplain of the Colorado River. On-site soils consist of Indio silt loam and Holtville clay, which are hyperthermic arid soils that are deep, stratified, and coarse to fine textured that are generally located on level to gently sloping areas on floodplains and lower alluvial fans (U.S. Department of Agriculture [USDA] undated). The reservoir site primarily includes low wetland and riparian areas that are not recognized as Important Farmland. Although some soils located within the

project area are recognized as agriculturally prime soils by the USDA (USDA 2003), these soils have never been farmed. The project area consists of federally-owned lands that are managed by Reclamation for water delivery, storage, and infrastructure maintenance; the project area is not used for agricultural purposes. Accordingly, the project area is not part of an agricultural preserve contract that would commit it to long-term agricultural uses. However, agricultural lands located north of the Laguna Dam weir are currently in agricultural use.

3.9.2 Environmental Consequences and Mitigation Measures

3.9.2.1 Alternative 1 — Proposed Action

Land Use Impacts on land use patterns and land management plans would be considered significant if the Proposed Action would physically divide an established community; conflict with existing land uses; conflict with any applicable land use plan, policies, or regulations; or conflict with any applicable habitat conservation plan or natural community conservation plan.

Environmental Consequences Proposed excavation and vegetation removal activities would not physically divide an established community; the Project would be implemented on undeveloped lands located away from populated, developed areas. The Project would consist of increasing storage within an existing reservoir, mostly in areas where a reservoir pre-existed prior to the high flows from 1983 to 1988; therefore, no introduction of any new incompatible land uses and/or disruption or division of established land use configurations would occur. Furthermore, since dredging activities (including staging areas) would occur within the existing reservoir site, no acquisition of private right-of-way and/or encroachment onto privately owned lands would occur.

Restoring Laguna Reservoir's original capacity would result in the permanent loss of approximately seven acres of wetland habitat. However, dredging footprints associated with proposed excavation activities have been designed to avoid as much wetland habitat as possible while achieving the necessary functional improvements to Laguna Reservoir. Additionally, the Proposed Action is a covered activity under the LCR MSCP. The LCR MSCP is an authorized and permitted conservation program under the ESA that provides for the conservation of habitat that offsets the habitat impacts of all covered activities, including the Project, and contributes to the recovery of various endangered and threatened species of fish, wildlife, and plants (see section 3.4.2 - Biological Resources for additional information). Furthermore, the implementation of conservation measures on Federal or state lands would not conflict with any management plans because they would occur only in cooperation with the managing agency and its goals and objectives. Therefore, the Proposed Action would not impede the implementation of the RMP plans or policies. Accordingly, the Proposed Action would not conflict with any applicable federal land use plan, policy, or regulation.

Although the project site is not subject to local land use and zoning regulations, implementation of the Proposed Action would be consistent with the guidelines specified in the Imperial County General Plan. Specifically, Land Use Element Goal 3 identifies the importance of achieving balanced growth while preserving the unique natural, scenic, and agricultural resources of Imperial County. Project activities would increase the reservoir's water storage capacity and improve the operational integrity of Laguna Dam, ensuring efficient dam operations below

Imperial Dam while preserving natural habitats to the extent feasible. As irrigation is critical to maintain economic development in the Imperial Valley, the Proposed Action would ensure consistency with Land Use Element Goal 3.

The Proposed Action would have a long-term beneficial impact on existing recreational opportunities in the project area. Proposed sediment and vegetation removal activities would increase the amount of open water behind Laguna Dam adjacent to the existing open water channel, enhancing recreational opportunities (including fishing, hunting, canoeing and bird-watching) in the project area. Although increases in boating opportunities in the project area would potentially increase wave action on adjacent habitats, there is potential for the implementation of boat speed restrictions in the project area by establishing a “no-wake” zone in the future. Accordingly, the Proposed Action would be consistent with the 2020 Plan objectives associated with protecting open space and recreational resources in Yuma County.

Mitigation Measures No mitigation measures specific to land use are required.

Agricultural Resources Impacts on prime agricultural land and agricultural land productivity would be considered significant if the Proposed Action would conflict with existing zoning for agricultural use, or other legal protections (i.e., agricultural preserve programs) for agricultural use; or convert a substantial portion of the available Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) in the project area to nonagricultural use.

Environmental Consequences Dredging and vegetation removal activities would occur within the defined project footprint areas; dredging staging areas would also be located within these areas (see Figure 2-1). Therefore, construction activities would not conflict with agricultural operations on lands north of Laguna Dam currently in agricultural production. Although some onsite soils are recognized as agriculturally prime soils by the USDA, these soils are not located within the wetland and riparian areas within the project footprint. Furthermore, the project area and surrounding lands are federally-owned lands that are managed by Reclamation and not used for agricultural purposes. As construction activities would not affect agriculturally prime soils and/or regionally unique agricultural resources, significant impacts would not occur.

Mitigation Measures Because significant impacts on agricultural resources would not occur, no mitigation measures are proposed.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.9.2.2 Alternative 2

Land Use Under this alternative, approximately 16.0 acres of jurisdictional wetlands would be removed and converted to open water, and increased dredging activity and storage would be required to expand the reservoir capacity to 2,800 af. Alternative 2, therefore, would

permanently remove more acres of wetland habitats than the Proposed Action, increasing the potential for conflicts with BLM's RMP policies adopted for the purpose of managing sufficient wildlife habitat. Overall, this alternative would have greater impacts on land use compared to the Proposed Action; however, such impacts would remain less than significant.

Agricultural Resources Increasing the reservoir's storage capacity to 2,800 af would result in no discernable difference to impacts on agricultural resources. As all dredging activities and staging areas would be located within the defined project footprint, impacts would be similar to those described for the Proposed Action.

3.9.2.3 Alternative 3

Land Use Under this alternative, approximately 16.1 acres of jurisdictional wetlands would be removed and converted to open water to accommodate increasing the reservoir's storage capacity to 1,500 af. As dredging footprints would only be designed to maximize functional improvements to the reservoir, Alternative 3 would result in additional impacts on wetland habitats that would be inconsistent with the goals and objectives delineated in BLM's RMP. Therefore, this alternative would result in greater impacts on land use compared to the Proposed Action; however, such impacts would remain less than significant.

Agricultural Resources Removing an additional 16.1 acres of jurisdictional wetlands to increase the reservoir's storage capacity to 1,500 af would result in no discernable difference to impacts on agricultural resources. As all dredging activities and staging areas would be located within the defined project footprint, impacts would be similar to those described for the Proposed Action.

3.9.2.4 No-Action Alternative

Land Use Under the No-Action Alternative, the reservoir's pre-1983 storage capacity would not be restored. Although no short-term construction activities would occur, no long-term beneficial effects associated with the Proposed Action would result. If increased sedimentation is left unchecked, this alternative would conflict with federal and local resource management policies, resulting in potentially significant impacts.

Agricultural Resources Maintaining the reservoir's existing, inadequate storage capacity could result in the dam not functioning as designed and adjacent agricultural areas being more readily inundated during low flow floods when water would not pass over the weir properly. Thus, the No-Action Alternative could result in potentially significant impacts.

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3.10 Noise

This section addresses noise from potential sources related to the implementation of the Project, including noise impacts from dredging activities and other potential long-term operational noise. Potential noise impacts on wildlife are discussed in section 3.3 (Biological Resources).

3.10.1 Affected Environment

Noise may be defined as unwanted sound, and is usually objectionable because it is disturbing or annoying. Several noise measurement scales are used to describe noise in a particular location. A decibel (dB), which is calculated on a logarithmic basis, is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

Because of the logarithmic nature of the decibel, each doubling of distance from a point noise source results in a 6 dB decrease in the sound level. For example, a piece of equipment generating 86 dB at a reference distance of 50 feet would produce 80 dB at 100 feet, 74 dB at 200, 68 dB at 400 feet, 62 dB at 800 feet and 56 dB at 1,600 feet. However, this is a conservative worst case estimate. There would be additional attenuation (loss) because of absorption of noise by soft ground surfaces and atmospheric variations. Other important attenuation results from blocking of the noise path by topography, by vegetation, and by man-made structures including buildings and sound walls. Combined, these factors can reduce the noise levels substantially from the numbers given in the above example and the estimates given below.

There are several methods of characterizing sound. The most common is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Because the sensitivity to noise increases during the evening and at night—excessive noise interferes with the ability to sleep—24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5-dB penalty added to evening (7:00 P.M. to 10:00 P.M.) and a 10-dB addition to nocturnal (10:00 P.M. to 7:00 A.M.) noise levels. The Day/Night Average Sound Level (L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

3.10.1.1 Regulatory Environment

Land use compatibility with differing noise levels is regulated at the local level, although the Federal government has established suggested land use compatibility criteria for different noise zones (Federal Interagency Committee on Urban Noise 1980). Residential areas and schools are considered compatible where the L_{dn} is up to 65 dBA; outdoor recreational activities such as fishing, golfing and horseback riding are compatible with noise levels up to 75 dBA; and parks are compatible with noise levels up to 75 dBA.

Noise regulations established by local jurisdictions that govern stationary noise sources are typically included in noise ordinances, although policies that limit public exposure to noise may be included in the general or community plans of individual cities or counties. Some jurisdictions also have specific provisions addressing construction noise impacts that often limit the hours and days of construction and may establish noise thresholds that may not be exceeded at specific locations, such as the property line of the site that is under construction. Tables 3-16 and 3-17 provide summaries of the regulations governing noise from construction and long-term operations, respectively, for Imperial County and Yuma County, where the closest sensitive noise receptors are located (see below).

Table 3-16. Construction Noise Regulations

County/State	*L_{dn} or CNEL (dBA)*
Imperial County, CA	75 dBA L_{eq} when averaged over an 8-hour period and measured at the nearest sensitive receptor (e.g., residences, schools, hospitals, parks, office buildings, and certain non-human species, including riparian bird species).
Yuma County, AZ	None.

Table 3-17. Long-Term Noise Compatibility Thresholds

County/ State	*Noise Ordinance/ Controls? Yes/No*	**L_{dn} OR CNEL (dBA)**			
		Residential	*Commercial*	*Industrial*	*Recreational*
Imperial County, CA	Yes	Daytime [50-55dB] Nighttime [45-50 dB]	Daytime [60dB] Nighttime [55 dB]	Anytime [70-75dB]	Not specified
Yuma County, AZ	No	NA	NA	NA	NA
1. Daytime is typically 7:00 A.M. to 10:00 P.M. and nighttime is typically 10:00 P.M. to 7:00 A.M.					

3.10.1.2 Sensitive Noise Receptors in the Project Area

The nearest individuals in the project vicinity are people who stay at a recreation trailer park across S-24 near the Laguna Dam, in Imperial County, California. According to Reclamation, the park is mainly populated by winter visitors (personal communication, Garvey 2005). This park is directly adjacent to S-24 and is currently subjected to a fairly high level of noise because of the existing traffic. It is approximately 500 feet from the end of the dam near S-24. Other recreational users can be found in nearby Mittry Lake Wildlife Area and Betty's Kitchen Wildlife Area and Interpretive Trail (see section 3.11 – Public Services for a description of recreational activities at these sites).

These areas are several thousand feet from the end of the dam near S-24. No other sensitive receptors (e.g., hospitals, schools, residential neighborhoods) are located near the project area.

3.10.2 Environmental Consequences and Mitigation Measures

Noise impacts would occur if the Project would result in exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies; exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project; or a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.10.2.1 Alternative 1 — Proposed Action

Environmental Consequences The Proposed Action would require standard construction activities, including vegetation removal, launch ramp construction, dredging operations, access road maintenance, and periodic maintenance dredging. No elements of the Project would result in excessive groundborne vibration or groundborne noise levels.

The nearest receptor (a recreation trailer park) is more than 400 feet away from any equipment operation. Calculated noise levels at various distances from dredging activities are presented in Table 3-18. These numbers reflect a conservative approach, assuming high noise levels for the construction equipment. Additional attenuation would be expected due to atmospheric and topographic effects. The day-night noise level would be less than 75 db at about 300 feet and less than 70 db at 400 feet for all phases of the project activities. This noise level would drop to 60 dB at about 1,400 feet from the trailer park, as dredging operations moved farther away. These noise levels are compatible with both Federal and county guidelines discussed above.

Traffic noise as a result of project activities would be associated with worker transportation and transportation of construction equipment. It is not expected to generate a noticeable increase in noise generated from existing S-24 traffic.

Table 3-18. Maximum Noise Levels (L_{dn}) with No Noise Reduction Measures in Place

Feet	*Vegetation Removal*	*Launch Ramp Construction*	*Dredging Operations*	*Access Road Maintenance*	*Periodic Maintenance Dredging*
50	84	85	87	81	87
100	78	78	81	75	81
200	72	73	75	69	75
300	68	69	71	66	71
400	66	67	69	63	69
500	64	65	67	62	67
600	63	64	66	61	66
700	62	62	64	60	64
800	61	62	63	59	63
900	60	61	63	58	63
1,000	60	60	62	58	62
1,200	59	59	61	57	61
1,400	58	58	60	57	60
1,600	57	58	59	56	59
1,800	57	57	58	56	58
2,000	57	57	58	56	58
2,500	56	56	57	56	57
Note: Background Noise Level = 55 dBA (assumed at the Trailer Park)					

There may be minor noise impacts on recreational users of the nearby Mittry Lake Wildlife Area and Betty's Kitchen Wildlife Area and Interpretative Trail to the west of the project area. However, most of the dredging activities would occur at a much greater distance than 400 feet from the these recreational areas and, therefore, should be well below the 75 db threshold. Also Reclamation has agreed to suspend activities during the Yuma Birding Festival field trips. The Project would not impact the use of this wildlife area. Because of the distance from the recreation trailer park to the proposed dredging activities in conjunction with the existing background noise generated from S-24, significant noise impacts are not expected. No other sensitive noise receptors would be impacted by the Proposed Action.

Mitigation Measures Because of the relatively low level of noise impacts occurring from implementation of the Proposed Action, no mitigation measures are required.

3.10.2.2 Alternative 2

The impacts of Alternative 2 would be greater than those for the Proposed Action because dredging operations would last longer due to the increased amount of dredging. However, because of the relatively low level of direct impact upon nearby recreational visitors, no mitigation measures are required.

3.10.2.3 Alternative 3

The impacts of Alternative 3 are similar to that of the Proposed Action. Because of the relatively low level of direct impact upon nearby recreational visitors, no mitigation measures are required.

3.10.2.4 No-Action Alternative

Since no noise-inducing activities would occur, there are no noise impacts as a result of the No-Action Alternative.

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3.11 Public Resources

This section addresses potential impacts related to public resources, such as recreation and energy/depletable resources. A detailed analysis of public utilities and services was not performed because the Proposed Action and alternatives would have minimal impacts on wastewater treatment, water supply and treatment, storm water drainage, landfill capacity, or the need for new or physically altered facilities; therefore, these resources are not discussed further.

3.11.1 Affected Environment

Recreation

BLM manages several recreation facilities on public lands, including wildlife areas, national wilderness areas, and national conservation areas. The numerous recreation activities in the project area include but are not limited to boating, viewing the scenery and wildlife, camping, picnicking, hiking, bicycling, hunting, and fishing. Some fishing and picnic areas are located adjacent to the reservoir, and a small recreational trailer park is located across S-24 near the Laguna Dam.

Recreational facilities located on BLM administered lands in the project vicinity include the Mittry Lake Wildlife Area and Betty's Kitchen Wildlife Area and Interpretive Trail. The Mittry Lake Wildlife Area, located east of Laguna Reservoir, encompasses approximately 750 acres and serves as a popular recreation area for numerous activities. Recent rehabilitation efforts at Mittry Lake, including marsh dredging, revegetation, and fish habitat improvement, have created an ideal environment for small game hunting and sportfishing. Additional recreational opportunities offered at Mittry Lake include camping, boating, hiking, fishing, swimming, wildlife viewing, and sightseeing. This area is jointly managed by the BLM, Reclamation, and the Arizona Game and Fish Department.

Betty's Kitchen is a wildlife interpretive area located south of the project site, along the Colorado River north of Laguna Dam. This area is managed by the Betty's Kitchen Protective Association in cooperation with BLM for its riparian habitat values and to provide environmental education and recreational opportunities. Recreational amenities include a wildlife viewing area, a 0.5 mile interpretive trail, an outdoor classroom, ramadas, a fishing pier, picnic areas, and a parking area.

Energy/Depletable Resources

NEPA requires an analysis of significant, irreversible effects of energy and depletable resources resulting from implementation of a proposed action. Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources such as metal, wood, fuel, paper, and other natural or cultural resources) also are irretrievable. Human labor also is considered an irretrievable resource. All such resources are irretrievable in that they are used for one project and thus become unavailable for other purposes. Additionally, an impact that falls under the category of the irreversible or irretrievable

commitment of resources is the destruction of natural resources that could limit the range of potential uses of that resource.

Potential impacts on hydroelectric power, an energy resource, are discussed in section 3.7 (Hydrology/Water Quality), because such impacts are directly related to Reclamation's operation of Imperial and Laguna Dams. Dam operations are discussed in detail in the hydrology section.

3.11.2 Environmental Consequences and Mitigation Measures

3.11.2.1 Alternative 1 — Proposed Action

Recreation Impacts on recreation would be considered significant if the Proposed Action would cause the direct loss or substantial physical degradation of either public recreation uses or public recreational facilities resulting in decreased recreational opportunities, such as sport fishing, bird watching, or waterfowl hunting.

Environmental Consequences Although dredging activities would occur within the reservoir for up to 3 years, dredging would occur in only portions of the reservoir at a time. Dredging footprints would be designed to maintain sufficient access to adjacent passive recreational opportunities. This would allow sections of the reservoir to be publicly accessible during sediment and vegetation removal activities. As project dredging activities would not substantially preclude access to existing passive recreational opportunities (fishing and picnic areas) within or adjacent to the reservoir, significant impacts would not occur.

Increasing storage behind Laguna Dam to approximately 1,500 af would increase the available open water area accessible to the public. Accordingly, long-term beneficial effects on recreation would likely occur as the Proposed Action would result in increased opportunities for fishing, hunting, bird watching, and other recreational activities adjacent to the reservoir. Reclamation intends to cooperate with BLM and other interested parties regarding future recreational opportunities in the Laguna Reservoir.

Mitigation Measures Because significant impacts on recreational resources would not occur, mitigation measures are not proposed.

Energy/Depletable Resources

Environmental Consequences Implementation of the Proposed Action would result in an irreversible commitment of fuel for construction vehicles and equipment, human labor and other resources. Energy (electricity and natural gas) and water consumption, as well as demand for services, would not increase as a result of the implementation of the Proposed Action. These commitments of resources are neither unusual nor unexpected, given the nature of the action. Potential impacts on hydroelectric power are discussed in section 3.7.

The Proposed Action would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, nor affect the biodiversity of the region (see section 3.3 - Biological Resources, for additional information).

Mitigation Measures Because significant impacts on energy and depletable resources would not occur, mitigation measures are not proposed.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.11.2.2 Alternative 2

Recreation Under this alternative, increased dredging activities would be required to expand the reservoir's capacity to 2,800 af. Although Alternative 2 would require additional sediment and vegetation removal activities that would increase the duration of dredging activities compared to the Proposed Action, this alternative would increase the overall open water area and associated recreational opportunities accessible to the public. Overall, this long-term beneficial effect on recreational resources would be greater compared to the Proposed Action.

Energy/Depletable Resources The environmental consequences would be similar to the Proposed Action, except the proposed larger-scale dredging operations would require additional commitments of fuel for construction vehicles and equipment, human labor and other resources. Additional wetland habitat also would be affected, but this would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, nor affect the biodiversity of the region.

3.11.2.3 Alternative 3

Recreation Removing an additional 16.1 acres of wetland habitat to increase the reservoir's storage capacity to 1,500 af would result in no discernible difference to impacts on recreational resources. The long-term beneficial effects on recreational resources associated with this alternative would be similar to those described for the Proposed Action.

Energy/Depletable Resources The environmental consequences would be similar to the Proposed Action, except additional wetland habitat would be affected. This would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, nor affect the biodiversity of the region.

3.11.2.4 No-Action Alternative

Recreation Under the No-Action Alternative, excavation and vegetation removal activities would not occur and the storage capacity of the reservoir would not be enlarged. If sedimentation is allowed to continue, the reservoir could fill completely with sediment and vegetation, leaving very little to no open water for recreational use. The long-term beneficial effects associated with the Project would not result under this alternative, and the potential loss of open water habitat in the future could lead to significant impacts on recreation.

Energy/Depletable Resources No dredging activities would occur under the No-Action Alternative and, therefore, there would be no need for additional commitments of fuel for construction vehicles and equipment, human labor and other resources. No wetlands or other habitat would be affected.

3.12 Socioeconomics

The analysis of socioeconomics addresses population, housing, and employment. Environmental justice (i.e., effects on minority and low-income populations) is addressed in section 3.5.

3.12.1 Affected Environment

3.12.1.1 Regulatory Setting

Under NEPA, the economic and social effects of the Proposed Action must be addressed if they are interrelated to the natural or physical environmental effects (40 CFR Sec. 1508.14). The definition of the term "effects" under NEPA also includes economic and social factors (40 CFR Sec. 1508.8). No other statutes or regulations that address socioeconomics would apply to this EA.

3.12.1.2 Population, Housing, and Employment

The study area for socioeconomics includes the area in which the majority of socioeconomic effects would occur. For population and housing, this includes Imperial County, California and Yuma County, Arizona, the city of Yuma within Yuma County, and the Fort Yuma Reservation. Data on employment is addressed at the county level for Imperial and Yuma counties.

Imperial County contained a population of 142,361 persons in 2000 compared to 160,026 persons in Yuma County. The City of Yuma contained 77,515 persons and the Fort Yuma Reservation 2,376 (U.S. Census Bureau 2000). Table 3-19 summarizes population and housing data for the study area in 2000. The Census also reports data for Winterhaven, California (i.e., the Winterhaven Census Designated Place or CDP). The population of Winterhaven population was 529 in 2000. The community contained 219 total housing units, for which the vacancy rate was 16.4 percent. Of the occupied housing units, 47.5 percent are owner-occupied.

Table 3-19. Population and Housing Characteristics (2000)

Item	*Imperial County, CA*	*Yuma County, AZ*	*City of Yuma, AZ*	*Fort Yuma Reservation, CA--AZ*
Population	142,361	160,026	77,515	2,376
Housing Units	43,891	74,140	34,475	962
Housing Vacancy Rate (Percent)	10.3	27.4	22.7	18.9
Percent of Housing Owner-Occupied	58.3	72.3	63.5	65.1

For each of the counties, the most recent employment data are 2003 data from the Bureau of Economic Analysis, and the most recent data regarding farms and cropland are contained in the 2002 Census of Agriculture. Full- and part-time employment in Imperial County increased from 61,974 jobs in 2001 to 66,672 jobs in 2003, for a total increase of 4,698 jobs (approximately 7.6 percent). Farm employment increased from 5,593 jobs in 2001 to 5,815

jobs in 2003, for a total increase of 222 jobs (approximately 4.0 percent). Employment in all sectors of the economy increased, with the exception of four sectors: construction; information; finance and insurance; and accommodation and food services. The numerically greatest gains were experienced in the manufacturing, government and government enterprises, and retail trade sectors (Bureau of Economic Analysis 2003).

Full- and part-time employment in Yuma County increased from 74,896 jobs in 2001 to 77,858 jobs in 2003, for a total increase of 2,962 jobs (approximately 4.0 percent). Between 2001 and 2003, farm employment in Yuma County decreased by approximately 1.8 percent. Employment in all sectors of the county's economy increased, with three exceptions. Wholesale trade declined by 10.9 percent, retail trade by 1.9 percent, and the arts, entertainment, and recreation sector declined by approximately 7.9. The numerically greatest gains were experienced in the following sectors: construction; administrative and waste services; health care and social assistance; and government and government enterprises, especially state and local government (Bureau of Economic Analysis 2003).

For Colorado River system users in Imperial and Yuma counties, water supply is a critical component supporting agricultural production. Part of Reclamation's mission is to promote the beneficial use of water from its facilities, including water used for agricultural production. In 2002, the amount of land in farms exceeded 514,000 acres in Imperial County and 231,000 acres in Yuma County. The total market value of agricultural products sold in Imperial County was $1.043 billion and $802 million in Yuma County. There were 537 farms in Imperial County and 531 farms in Yuma County. The average market value of agricultural products sold per farm in Imperial County was $1.942 million and $1.511 million in Yuma County. The average farm size was almost twice as large in Imperial County, 957 acres compared to 435 acres in Yuma County (USDA 2002).

3.12.2 Environmental Consequences and Mitigations

3.12.2.1 Alternative 1 – Proposed Action

Environmental Consequences The Proposed Action would have negligible effects on population and housing, and does not propose new homes or businesses. The Proposed Action would not displace persons or housing, nor would it induce substantial population growth in the area, either directly or indirectly. As described below, dredging and maintenance workers are anticipated to reside in nearby communities, primarily Yuma, and minimal relocation of workers is anticipated. Most of the work would be conducted by existing Reclamation staff. Dredging activities would last approximately three years with periodic maintenance dredging approximately every four years thereafter.

Dredging activities associated with the Proposed Action would provide economic benefits associated with purchases of materials, supplies, services, and construction employment. The estimated construction expenditure for the Proposed Action is $10.5 million. Some portion of the construction workers are expected to reside in the City of Yuma; their wages and expenditures would provide benefits to Yuma County. Purchases of materials, supplies, and services for construction would come from either the local area or the larger region, depending upon contractor selection and the locations where purchases are made.

The reservoir site is located on federally withdrawn land and Fort Yuma Indian Reservation Land. The Proposed Action would not require acquisition of private property and, therefore, no loss of property tax revenues is anticipated.

Mitigation Measures The Proposed Action would not result in adverse impacts to socioeconomic resources. No mitigation measures are proposed.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.12.2.2 Alternative 2

Like the Proposed Action, Alternative 2 would increase storage behind Laguna Dam, but to a greater extent. Like the Proposed Action, Alternative 2 would have negligible effects on population and housing. Dredging activities associated with Alternative 2 would provide economic benefits associated with purchases of materials, supplies, services, and temporary increases in construction employment. These benefits could potentially be greater than the Proposed Action, assuming that increased dredging (e.g., more cubic yards of material would be removed from upland areas) would increase the expenditures required to construct the increased storage. Alternative 2 would not result in adverse socioeconomic impacts.

3.12.2.3 Alternative 3

Like the Proposed Action, Alternative 3 would increase storage behind Laguna Dam to 1,500 af, but would not provide the reduced wetlands impacts included under the Proposed Action. Like the Proposed Action, Alternative 3 would have negligible effects on population and housing. Dredging activities associated with Alternative 3 would provide economic benefits associated with purchases of materials, supplies, services, and temporary increases in construction employment. These benefits would be similar to the Proposed Action. Alternative 3 would not result in adverse socioeconomic impacts.

3.12.2.4 No-Action Alternative

Under the No-Action Alternative, sediment dredging and vegetation removal would not occur in Laguna Reservoir. The economic benefits of the Proposed Action would not occur. No adverse effects on population and housing would be avoided because none would occur under the Proposed Action.

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3.13 Topography, Geology, Soils, and Mineral Resources

3.13.1 Affected Environment

Topography and Geology

The Lower Colorado River area of Arizona and California is located in the lower Basin and Range Geomorphic Province, within the western Sonora Desert. This area is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys or basins. The Lower Colorado River generally consists of narrow stretches confined by resistant bedrock cliffs and bluffs and broad areas lined by low-lying alluvial floodplains (USDA Soil Conservation Service 1974, 1986). From the Imperial Dam to the Northerly International Border, which includes the project area, the river passes primarily through relatively flat-lying topography, underlain by Quaternary alluvium. Localized outcrops of Plio/Pleistocene sandstone, shale, and gravel deposits are present along the banks of the river (California Division of Mines and Geology [CDMG] 1977; Arizona Geological Survey [AGS] 2000). Since the area between Laguna Dam and Imperial Dam appears to have filled in from sedimentation, these sediments are assumed to consist of silt and fine sand (Reclamation 2004).

The existing 100-year floodplain along the Colorado River is the lower of two floodplains. The active floodplain, which encompasses the project area, has low relief and includes the stream channel and associated features, such as point bars and abandoned channels or meanders. Ground surface elevations vary from approximately 144 to 160 feet above mean sea level. Sand splays, point bars, and meander scrolls are typically underlain by coarse-grained alluvium. Annual flooding inundates these floodplains, except where protected by levees. The landscape of the floodplain changes annually as a result of cutting of new channels, abandonment of older channels, lateral meander migration, and downstream movement of alluvial deposits (Parsons et al. 1986).

Soils

Surficial soils in the project area consist of Torrifluvents Association soils, which are deep, stratified, coarse- to fine-textured, nearly level to gently sloping soils on floodplains and lower alluvial fans (USDA Soil Conservation Service 1975). The soils on the Colorado River floodplain are also saline, as a result of infestation of non-native salt cedar, as well as accumulated salts from alluvial deposits and subsequent evaporation of soil moisture. The rainfall is not sufficient to leach these salts below the plant root zone; therefore, a continuing accumulation of salts occurs (USDA Soil Conservation Service 1986).

Seismicity

A probabilistic seismic hazard analysis was completed by URS Corporation in 2003 to determine the seismic risk for nearby Imperial Diversion and Senator Wash dams. The analysis concluded that the project area is generally characterized by low seismicity (Reclamation 2004). The nearest active fault is the Imperial Fault, located approximately 48 miles southwest of the project

area (Jennings 1994). There is a 10 percent probability that peak ground accelerations at the project site will exceed 0.2 g (percent of gravity), during the next 50 years. This is considered a relatively low shaking hazard (Petersen et al. 1999).

The Uniform Building Code defines different regions of the U.S. and ranks them according to their seismic hazard potential. There are four types of these regions, including Seismic Zones 1 through 4, with Zone 1 having the least seismic potential and Zone 4 having the highest seismic potential. The Laguna Dam project area is located on the boundary between Zones 3 and 4.

Mineral Resources

Many of the alluvial floodplain areas along the Lower Colorado River are potential sources of sand and gravel aggregate. However, the deposits in the project area are not considered a potential source area of sand and gravel aggregate (USGS 1988).

3.13.2 Environmental Consequences and Mitigation Measures

3.13.2.1 Alternative 1 — Proposed Action

Environmental Consequences Although the Proposed Action is designed to remove accumulated sediments in the Laguna Reservoir, dredging and disposal activities could result in a slight short-term increase in suspended sediments in the Colorado River. Other activities, such as clearing vegetation, re-grading existing access roads, construction of a disposal pipeline, and soil stockpiling and spreading could similarly result in increased short-term soil erosion and associated sedimentation of the Colorado River. Although sediment accumulation as a result of the Proposed Action would be negligible in comparison to existing sediment build-up behind the dam, potential short-term erosion induced sedimentation would be considered nonpoint source pollution, which would be subject to the provisions of the CWA, as discussed in section 3.6.

Because the dam is not located in proximity to any active faults or in a highly seismic area, significant seismic impacts would not occur.

Mitigation Measures There are potentially significant impacts related to erosion during dredging and disposal operations. With implementation of the following mitigation measure, impacts related to erosion would be less than significant:

- Pursuant to NPDES requirements, a SWPPP shall be in place prior to road grading, pipeline construction, and disposal operations. The SWPPP shall include standard BMPs, including erosion control features such as straw wattles, silt fences, revegetation, minimization of grading (to the extent possible), construction of surface water velocity reducers, and installation of erosion control barriers around stockpiled soil. Such measures shall be implemented in accordance with an established erosion control plan.

The environmental consequences of implementation of habitat restoration under the LCR MSCP, including the specific wetlands restoration activities at the Imperial NWR, have been addressed in separate NEPA compliance documents, the LCR MSCP EIS (LCR MSCP 2004a) and the

Lower Colorado River National Wildlife Refuges Comprehensive Management Plan EA (USFWS 1994), respectively.

3.13.2.2 Alternative 2

Impacts would be similar, but slightly greater, than those described for Alternative 1, as more dredging and disposal operations would be required, thus extending the potential time that erosion induced siltation of the river could occur. Impacts would be less than significant with implementation of the mitigation measure provided for Alternative 1.

3.13.2.3 Alternative 3

Impacts would be similar to those described for Alternative 1, as the amount of dredging would be similar. Impacts would be less than significant with implementation of the mitigation measure provided for Alternative 1.

3.13.2.4 No-Action Alternative

No impacts would occur, as no construction and operation related erosion-induced siltation of the river would occur under the No-Action Alternative.

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4.0 Cumulative Impacts

4.1 Cumulative Impact Methodology

This section addresses the cumulative impacts of the Proposed Action in combination with other projects. The "Proposed Action" when used in this analysis refers to implementation of the Project described in Chapter 2. A list approach was used to identify projects that are closely related to the Proposed Action (i.e., either located within or in the vicinity of the planning area and having the potential to impact common resources) that could result in cumulatively considerable impacts. These projects then were examined for their potential to result in a cumulative impact when combined with the Proposed Action. Section 4.2 describes the projects included in the cumulative impact analysis, while section 4.3 summarizes cumulative impacts by each resource area.

4.2 Analysis of Cumulative Impacts

4.2.1 Future Activities Covered under the LCR MSCP

Changes in Points of Diversion of up to 1.574 maf per year of Colorado River Water

Covered activities include the potential changes in points of diversion of up to 1.574 maf per year of Colorado River water by water contractors in Arizona, California, and Nevada (LCR MSCP 2004a). Specific transfers for the entire 1.574 maf per year have not been identified; therefore, the impact analysis for the changes in points of diversion is programmatic. Diversion changes are expected to occur in response to shifts in water demand during the 50-year term of the Conservation Plan. It is anticipated that a shift in water diversion from the southern reaches of the Colorado River upstream to Lake Mead and to Lake Havasu will occur. Potential impacts could include changes in water surface elevation along the Lower Colorado River where points of diversion are changed as well as increased short and long-term fallowing. Potential impacts could include associated impacts on biological resources, short-term impacts to air quality, geology and soils/water quality, cultural resources, hazards and noise, and changes to socioeconomic resources (e.g. sales tax) and environmental justice issues (loss of agricultural jobs).

Yuma Area Water Resources Management Group Drainage Project

The Yuma Area Water Resource Management Group Drainage Project is a plan by Reclamation to achieve better control of groundwater levels in the Yuma area (LCR MSCP 2004a) by increasing total drainage pumping on the Yuma Mesa and in the Yuma Valley to reduce groundwater levels in the Yuma Valley to acceptable levels of 6 to 8 feet below the ground surface. The plan calls for increasing drainage pumping by about 40,000 to 50,000 af for 5

years, beginning in 2003. The drainage pumping will then be reduced to maintain those groundwater levels in the future. Of the total drainage pumping, some drainage will be discharged to the Colorado River above the Northerly International Border and some will be discharged into the Yuma Valley drainage system for delivery to Mexico at the Southerly International Border.

Repairs and Modifications to the Yuma Mesa Conduit (YMC) Drainage System

A Categorical Exemption was prepared for the Repairs and Modifications to the Yuma Mesa Conduit (YMC) Drainage System on March 16, 2001 (Reclamation 2001). On September 7, 2003, an analysis entitled Effects on Riparian and Marsh Communities along the Colorado River Due to Water Table Reduction in the Yuma Valley was prepared to address the effects of the project (Reclamation 2003). The analysis concluded that the project would be implemented in highly disturbed areas and would not affect sensitive species or cultural resources or significantly affect other environmental resources. It also concluded that the project would help control groundwater levels in the Yuma Valley and improve the salinity of flows into Mexico at the Southerly International Border.

Ongoing Operations and Maintenance Activities at the Laguna Settling Basin

Several local water districts perform operation and maintenance activities on federally owned facilities. The Colorado River Front Work and Levee Act (CRFWLSA) of 1927 and the Colorado River Floodway Protection Act (CRFPA) of 1986 address the protection of facilities from flood damage and cover operation and maintenance activities conducted by Reclamation. Some of the operation and maintenance activities include wash fan removal, bankline protection, levee location, dredging, jetty training structure location, drainage pump, channel outfalls, rip rap, roads, gauging stations, surveys, boat ramps, vegetation management, floodflow capacity, and settling basins (LCR MSCP 2004a).

4.2.2 Habitat Enhancement Projects

Mittry Lake Emergency Stabilization Projects

This project is an emergency stabilization and rehabilitation effort on approximately 475 acres of BLM-administered lands located within the Mittry Lake Wildlife Area, which is being undertaken in response to disturbance caused by the Mittry Lake Fire that occurred in March 2003. A Decision Record (BLM 2003a) for this project was signed in July 2003 by the BLM, and is supported with the Mittry Lake Emergency Stabilization and Rehabilitation EA (BLM 2003b) and Finding of No Significant Impact. The EA determined that the project would have limited impacts on recreational resources due to temporary restricted access to recreational areas. Additionally, beneficial impacts associated with the project were identified in the EA (BLM 2003b).

Mittry Lake Hazardous Fuels Reduction and Riparian Restoration

The BLM is proposing to restore riparian plant communities along the Lower Colorado River for the improvement of wildlife species diversity and numbers, to increase habitat complexity and reduce hazardous fuels in the area. Approximately 80 acres of land would be revegetated with

native plants following removal of saltcedar at the south end of Mittry Lake. An EA was completed for this project in December 2002 and determined that only minor impacts on air quality, aesthetics, and water quality would result from the Mittry Lake Hazardous Fuels Reduction and Riparian Restoration project.

Yuma East Wetlands Restoration Project

A Section 404 permit has been issued by the Army Corps of Engineers to the City of Yuma for the Yuma East Wetlands Restoration project, a 1,400-acre native riparian and river restoration project. A formal plan was completed in July of 2001 for the area by the Quechan Indian Nation, the City of Yuma, and the Yuma Crossing National Heritage Area acting as the lead entities. The project is scheduled to be completed, depending on funding, between 2008-2013. The project could result in the conversion of approximately 400 acres of agricultural land to native vegetation and would have construction-related impacts on air quality. No determination has been made whether the agricultural land that would be converted to wetlands is important farmland.

Cocopah Tribe River Restoration Project

The Cocopah Tribe River Restoration Project is currently in the conceptual phase and therefore does not have a well-defined project description. The project would involve saltcedar eradication and replanting with honey mesquite and cottonwood-willow. It is anticipated that this restoration project would have long-term beneficial impacts on aesthetics and biological resources. Vegetation removal and replanting activities would likely result in impacts on aesthetics, biological resources, air quality, hydrology, geology and soils, cultural resources, and noise.

4.2.3 Other Projects

All-American Canal Lining Project

Imperial Irrigation District obtains water from the 82-mile long All-American Canal, which diverts water from the Colorado River at Imperial Dam. The lining of the All-American Canal was authorized by Title II of Public Law 100-675, dated November 17, 1988 and in accordance with the terms of the Allocation Agreement. This Act authorizes the Secretary to construct a new lined canal or to line the previously unlined portions of the All-American Canal to reduce seepage of water. Reclamation prepared a Final EIS/EIR for the All-American Canal Lining Project in March 1994 (Reclamation and IID 1994). Environmental impacts were identified in the following areas: groundwater, groundwater quality and quantity in Mexico, biological resources (wetlands including wetlands along the canal and along the impacted reach of the Colorado River, terrestrial plant communities and associated wildlife, and special status species), canal fisheries, air quality, cultural resources, hydroelectric power, and recreation (Reclamation and IID 1994). However, mitigation measures have been incorporated to address the level of impacts of this project (Reclamation and IID 1994).

Lower Colorado River Boundary and Capacity Preservation Project

The Lower Colorado River Boundary and Capacity Preservation Project is proposed by the International Boundary and Water Commission, U.S. Section (USIBWC). The project is located

along the Limitrophe Division of the Colorado River, the 23.7 mile "international segment" of the Colorado River. This portion of the river serves as the border between the U.S. (State of Arizona) and Mexico (State of Baja California del Norte). The project would include measures to preserve and stabilize the international boundary and improve flood control of the channel, as well as long-term operations and maintenance activities. The environmental impacts of the project may include loss of vegetation and associated wildlife habitat between the river levees as a result of clearing for the pilot channel. The extent of that impact will depend on the actual route of the channel, which is now being developed. Since the project would include a significant amount of construction, construction-related impacts on aesthetics, air quality, hazards, geology and soils, and water quality could occur.

Drop 2 Reservoir Project

The Drop 2 Reservoir Project has three primary physical components, the reservoir itself, an inlet canal (approximately seven miles in length, 150 feet wide with capacity flow of 1,800 cfs), and an outlet canal (approximately 2,000 feet in length). The new inlet canal would convey water from the All-American Canal to a new storage reservoir, and later, water would be returned to the All-American Canal at a point approximately one mile downstream of Drop 2, via a new outlet canal. Both the inlet and outlet canals would be designed to use gravity flow. To maintain capacity, periodically silt would have to be removed from the bottom of the reservoir. The Draft EA for the Drop 2 Project is expected to be released in October 2006. Potential impacts relate to biological resources, aesthetics, air quality, cultural resources, land use, recreation, geology, and transportation. With implementation of mitigation measures, no significant impacts are expected.

4.3 Impacts by Resource

4.3.1 Aesthetics

The Proposed Action would not result in the obstruction or degradation of any scenic viewshed. Construction may cause temporary changes in the visual character of the project area, but would not result in a significant impact. Rather, the addition of a new open waterway would be considered beneficial. Operations would not cause the overall nature of the project area to be degraded and would not result in impacts to visual quality. Therefore, the Proposed Action, in conjunction with other proposed or on-going activities described in section 4.2, would result in no significant adverse cumulative impacts to aesthetics resources and may result in beneficial cumulative impacts in the project vicinity.

4.3.2 Air Quality

Implementation of the Proposed Action and other reasonably foreseeable actions described in section 4.2 may result in increased area emissions associated with construction activities. Due to the mobile nature and short duration of most emission sources, project emissions in combination with future emission sources would not be expected to contribute to an exceedance of an ambient

air quality standard. As a result, the Proposed Action, in combination with other foreseeable projects, would not produce significant cumulative impacts to air quality.

4.3.3 Biological Resources

The Proposed Action and the projects described in section 4.2.1 are covered activities under the LCR MSCP and as such the biological impacts of these projects are mitigated through the protection, enhancement, and creation of habitat along the Lower Colorado River as a requirement of implementation of the LCR MSCP. The LCR MSCP and the habitat enhancement projects identified in section 4.2.2 would result in beneficial effects on vegetation and habitat. There are potentially significant adverse biological impacts from the Proposed Action resulting from the loss of habitat for sensitive and common wildlife species; however, mitigation of the effects of the Proposed Action is provided through avoidance and minimization measures designed into the Proposed Action and through implementation of the LCR MSCP, including the marsh and open water creation at Imperial NWR. With the implementation of avoidance and minimization measures under the Proposed Action and conservation measures under the LCR MSCP, the level of impact would be reduced to adverse but less than significant. Because the Proposed Action and other projects covered under the LCR MSCP are address by the LCR MSCP, significant cumulative impacts on biological resources are not expected to occur.

4.3.4 Cultural Resources

The Proposed Action would not result in disturbance of known historic properties, including archeological resources and historic architectural resources. No significant cultural resources impacts were identified for the Proposed Action. During the construction of projects identified in section 4.2, there is potential for unforeseen cultural resources to be discovered or damaged. However, with mitigation measures to ensure proper actions are taken if cultural resources are discovered during construction, impacts would be expected to be less than significant. Therefore, the Proposed Action, in conjunction with other projects listed in section 4.2, would not result in significant cumulative impacts on cultural resources.

4.3.5 Environmental Justice

No significant impacts were identified for the Proposed Action that would adversely affect human populations or the public. The Proposed Action, therefore, would not result in disproportionately high and adverse human health and environmental effects on minority or low-income populations. The environmental documentation for one or more of the other cumulative projects described in section 4.2 identifies environmental justice effects; however, the types of disproportionate effects identified (e.g., reductions in agricultural employment, increased noise, and fugitive dust) would not occur for the Proposed Action and the disproportionate effects of the other projects would be localized. The Proposed Action, in combination with other proposed or on-going projects, would not cause disproportionate cumulative effects on minority or low-income populations.

4.3.6 Hazards/Hazardous Materials

The project site is not located in close proximity to any known or suspected hazardous waste or petroleum waste sites. However, incidental spills of petroleum products could occur during dredging activities, and such spills could result in significant impacts to sediment and water quality. With the implementation of mitigation measures, these risks of incidental spills would be reduced to less than significant. Other projects described in section 4.2 have similar hazards/hazardous materials related impacts due to construction activities. However, with anticipated mitigation measures, these risks would be cumulatively less than significant as these impacts are localized and temporary.

4.3.7 Hydrology/Water Quality

Impacts from the Proposed Action related to hydrology include temporary and localized impacts on water quality during dredging, as well as potential decreases in hydroelectric power generation. The Proposed Action would have beneficial impacts related to greater ability to run sluicing flows between Imperial and Laguna Dams and increased flexibility in making water deliveries to Mexico. Cumulative projects described in section 4.2 that also involve dredging activities would result in similar minimal impacts. Any resulting changes from cumulative projects in water deliveries from Laguna Dam to Morelos Dam would be minimal and changes to hydroelectric power production would be minimal. Thus, the net cumulative change to hydroelectric power generation is anticipated to be less than significant. The Proposed Action, in conjunction with other proposed or on-going projects described in section 4.2, would not result in cumulatively significant impacts.

4.3.8 Indian Trust Assets

There are no ITAs or other resources of tribal concern in the project area, and significant impacts on ITAs or other tribal resources from implementation of the Proposed Action would not occur. Therefore, the Proposed Action, in combination with other proposed or on-going projects, would not cause disproportionate cumulative effects on ITAs.

4.3.9 Land Use

Development of the Proposed Action would not lead to any incompatible land uses, disrupt any established land configurations, or violate any land use standards and guidelines from local and regional plans. Implementation of the Proposed Action, in conjunction with other proposed and on-going projects listed in section 4.2, would not be expected to cause cumulatively significant impacts on land use.

Additionally, construction activities for the Proposed Action would not conflict with agricultural operations on lands north of Laguna Dam currently in agricultural production. The project area and surrounding lands are federally-owned lands that are managed by Reclamation and not used for agricultural purposes. As dredging activities would not affect agriculturally prime soils and/or regionally unique agricultural resources, significant impacts would not occur. Implementation of the Proposed Action, in conjunction with other proposed and on-going projects listed in section 4.2, would not be expected to cause cumulatively significant impacts on agriculture.

4.3.10 Noise

The Proposed Action would require standard dredging activities, including vegetation removal, launch ramp construction, access road maintenance, and periodic maintenance dredging. Other projects described in section 4.2 would have similar temporary construction noise. It is not expected that these projects in combination with the Proposed Action would lead to significant cumulative impacts to any sensitive noise receptors.

4.3.11 Public Resources

With implementation of the Proposed Action, project dredging activities would not substantially preclude access to existing passive recreational opportunities, and, therefore, significant impacts to recreation would not occur. In addition, increasing storage behind Laguna Dam would increase the available reservoir area accessible to the public, which would result in increased opportunities for fishing, hunting, bird watching, and other recreational activities adjacent to the reservoir. These long-term beneficial impacts from the Proposed Action, combined with other foreseeable projects discussed in section 4.2, would not be expected to cause any cumulatively significant impacts on recreation.

Implementation of the Proposed Action would result in an irreversible commitment of fuel for construction vehicles and equipment, human labor and other resources. Energy (electricity and natural gas) and water consumption, as well as demand for services, would not increase as a result of the implementation of the Proposed Action. These commitments of resources for the Proposed Action and other reasonably foreseeable projects are neither unusual nor unexpected given the nature of the action; therefore, no significant cumulative impact on energy or depletable resources is expected.

4.3.12 Socioeconomics

The Proposed Action would have negligible effects on population, housing, and other socioeconomic issues. The Proposed Action would not displace persons or housing, nor would it induce substantial population growth in the area, either directly or indirectly. The Proposed Action, in combination with other foreseeable projects described in section 4.2, is not expected to have a cumulatively significant impact on socioeconomics.

4.3.13 Topography, Geology, Soils, and Mineral Resources

Activities associated with the Proposed Action such as clearing vegetation, re-grading existing access roads, construction of a disposal pipeline, soil stockpiling and spreading, and maintenance activities could result in some increased soil erosion and associated sedimentation of the Colorado River. The Proposed Action would not increase the seismic risk to the dam, and significant seismic impacts would not occur. Mineral resources are not expected to occur in the project area, so no impact would occur. Other cumulative projects described in section 4.2 will have similar impacts to soils and geology during construction phases; however, since these impacts are localized and temporary, cumulative impacts on topography, geology, soils, and mineral resources would not be expected.

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5.0 Other NEPA Considerations

5.1 Possible Conflicts between the Proposed Action and the Objectives of Federal, State, Local, and Regional Land Use Plans, Policies, and Controls

Implementation of the Proposed Action would comply with existing federal regulations and state, regional, and local policies and programs. The federal acts, executive orders, policies, and plans that apply include the following: NEPA; CAA and Federal General Conformity Rule; CWA; ESA; Fish and Wildlife Coordination Act, NHPA; Rivers and Harbors Act; EO 12898, Minority Populations and Low-Income Populations; and EO 12372, Coordination with State and Regional Agencies. Other state, local, and regional plans, policies, and controls addressed below include the following: California ESA, ADEQ Rules and Regulations, and ICAPCD Rules and Regulations.

5.1.1 Federal Acts, Executive Orders, Policies, and Plans

National Environmental Policy Act

This EA was prepared in accordance with the NEPA, 42 U.S.C. §§ 4321-4370d, as implemented by the CEQ Regulations, 40 CFR Parts 1500-1508. Executive Order 11991 of 24 May 1977 directed the CEQ to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies.

Clean Air Act and General Conformity Rule

The CAA and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the CAA require federal facility compliance with all applicable substantive and administrative requirements for air pollution control. The air quality analysis shows that the Proposed Action would not contribute to an exceedance of an ambient air quality standard (see section 3.2 – Air Quality). The CAA also requires federal actions to conform to the goals of the applicable SIP. Reclamation has determined that this Proposed Action would conform to the SIP.

Clean Water Act

Section 404 of the CWA and subsequent amendments established a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. The Proposed Action

would involve the placement of dredge material into waters of the U.S., including wetlands, as an inadvertent result of dredging activities within these waters. The Proposed Action would require a section 404 permit from the U.S. Army Corps of Engineers for the placement, though inadvertent, of dredged material into waters of the U.S. The application process under section 404 CWA will be conducted by Reclamation.

Endangered Species Act

The ESA of 1973 and subsequent amendments provide for the protection of threatened and endangered species of fish, wildlife, and plants and their habitats. The Act requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of endangered or threatened species or destroy or adversely modify designated critical habitat. The Proposed Action is a covered activity under the LCR MSCP, a program to enhance wildlife habitats along the Lower Colorado River that has been approved and authorized by Federal, state, tribal, and local agencies, including USFWS and Reclamation. All federally listed species known to occur in the LCR MSCP planning area were included under the LCR MSCP (covered species), and all impacts associated with the Proposed Action and other covered actions were evaluated under a Biological Assessment and subsequent Biological and Conference Opinion (USFWS 2005), which determined that the program is not likely to jeopardize the continued existence of endangered or threatened species nor destroy or adversely modify designated critical habitat (see section 3.3 – Biological Resources for more details).

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act and subsequent amendments provides that whenever the waters or channel of a body of water are modified by a department or agency of the U.S., the department or agency first shall coordinate with the USFWS and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur, with a view to the conservation of wildlife resources. The Act provides that land, water and interests may be acquired by federal construction agencies for wildlife conservation and development. In addition, real property under jurisdiction or control of a Federal agency and no longer required by that agency can be utilized for wildlife conservation by the state agency exercising administration over wildlife resources upon that property. Reclamation has and continues to coordinate with both Federal and State Wildlife agencies on the Proposed Action, including USFWS and Arizona Game and Fish Department.

National Historic Preservation Act

The NHPA provides for the protection, enhancement, and preservation of those properties that possess significant architectural, archaeological, historical, or cultural characteristics. Section 106 of the NHPA requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any historic property. The Proposed Action would have no adverse effect on any historic property, including archeological resources, historic architectural resources, or traditional cultural resources (see section 3.4 – Cultural Resources). In letters dated 6 January 2006 and 14 December 2005 (see

Appendix C), respectively, the SHPOs of California and Arizona concurred with a no historic properties affected finding under 36 CFR 800.4 (d)(1) for the Proposed Action.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 401, et seq.) requires Congressional approval for the building of any wharf, pier, jetty, and other structures in navigable waters. Navigable waters include all water bodies that are presently, have historically, or could in the future be used for navigation for the purpose of interstate or foreign commerce. Section 10 also requires the approval from the U.S. Army Corps of Engineers for any excavation or fill within navigable waters. The Rivers and Harbors Act covers construction, excavation, or deposition of materials in, over, or under navigable waters. Activities such as dredging, disposing of dredged materials, excavating, filling, or construction of structures in navigable waters require a Section 10 permit from the U.S. Army Corps of Engineers. The Proposed Action involves dredging within a navigable water of the U.S. (the Colorado River) and as such would require authorization from the U.S. Army Corps of Engineers under section 10 of the Rivers and Harbors Act. Such compliance is done in conjunction with compliance with section 404 of the CWA, see above.

Executive Order 12898

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency must identify and address disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations. The Proposed Action would not disproportionately affect any minority populations or low-income populations (see section 3.5 – Environmental Justice).

Executive Order 12372

Executive Order 12372, Intergovernmental Review of Federal Programs, was issued in 1982 in order to foster an intergovernmental partnership and a strengthened federalism by relying on State and local processes for the State and local government coordination and review of proposed Federal Financial assistance and direct Federal development. Reclamation pursues close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states. In preparing this EA, relevant data from state, regional, and local agencies was reviewed in order to determine regional and local conditions associated with the Proposed Action. With respect to the Proposed Action, no mutual land use or environmental issues require resolution.

5.1.2 State, Local, and Regional Plans, Policies, and Controls

California Endangered Species Act

The California ESA does not apply on strictly federal lands or to federal actions. However, MSCP-listed species, which includes some state-listed species, are addressed in this document. The Proposed Action is a covered action under the LCR MSCP, a program to enhance wildlife habitats along the Lower Colorado River. All California state-listed species known to occur along the LCR MSCP planning area were included under the program (covered species) (see section 3.3 – Biological Resources for more details).

ADEQ Rules and Regulations and ICAPCD Rules and Regulations

Proposed Action air emissions would comply with all applicable ADEQ Rules and Regulations and ICAPCD Rules and Regulations (see section 3.2 – Air Quality for more details).

5.2 Relationship between Local Short-Term Use of the Human Environment and Maintenance and Enhancement of Long-Term Biological Productivity

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have on the maintenance and enhancement of long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing one development option could reduce future flexibility to pursue other options, or that choosing a certain use could eliminate the possibility of other uses at the site.

Implementation of the Proposed Action would not result in any such environmental impacts because it would not pose long-term risks to health, safety, or the general welfare of the communities surrounding the project area that would significantly narrow the range of future beneficial uses.

5.3 Any Probable Adverse Environmental Effects that Cannot be Avoided and are not Amenable to Mitigation

This EA has determined that the Proposed Action would not result in any significant unmitigable impacts; therefore, there are no probable adverse environmental effects that cannot be avoided or are not amenable to mitigation.

6.0 List of Preparers

Lead Agency

Unites States Bureau of Reclamation
Yuma Area Office
Yuma, Arizona
Julian DeSantiago, Environmental Protection Specialist EA

This EA was prepared for, and under the direction of, Reclamation by Science Applications International Corporation (SAIC). Members of SAIC's professional staff who contributed to the preparation of this document are listed below.

Name	***Title***	***Degree***	***Project Participation***
Jessica Benson	Environmental Planner	B.A., Environmental Studies	Agricultural; Land Use; Recreation; Public Utilities
Meredith Clement	Environmental, Water, and Transportation Planner	M.S., Transportation Engineering M.S., City and Regional Planning	Energy and Depletable Resources; Hydrology/Water Quality; Transportation
Chris Crabtree	Senior Air Quality Scientist	B.A., Environmental Studies	Air Quality
Paul Cylinder	Director of Natural Resources Planning & Management	Ph.D., Botany	Quality Assurance/Quality Control
Tom Engels	Senior Project Manager	Ph.D., Biological Sciences	Project Manager
Karen Foster	NEPA Project Manager/Cultural Resources Manager	Ph.D., Anthropology	Cultural Resources; Indian Trust Assets
Alison Malkin	Environmental Planner	B.A., Environmental Studies	Aesthetics
Edward Mullen	Senior Wildlife Biologist	M.A., Biological Sciences	Biological Resources
Tom Mulroy	Senior Wildlife Biologist	Ph.D., Ecology and Evolutionary Biology	Biological Resources
Trevor Pattison	Environmental Analyst	B.S., Geology – Earth Systems	Biological Resources
Marcus S. Rawlings	Senior Natural Resources Planner	B.S., Wildlife Management	Biological Resources
Jeff Reece	Chemical/Civil Engineer	M.S., Civil and Sanitary Engineering	Noise
Perry Russell	Geologist/Hydrogeologist	M.S., Geological Sciences	Hazards; Topography, Geology, Soils, and Mineral Resources

Name	***Title***	***Degree***	***Project Participation***
Lisbeth Springer	Certified Planner	Master of City and Regional Planning	Environmental Justice; Population and Housing; Socioeconomics
Sharon Farris	Environmental Planner	B.A., Cultural Anthropology	Project Coordinator
Joseph P. Walsh III	GIS Supervisor	B.A., Physical Geography	GIS
Karen Stark	Publications Center Manager	B.A., Psychology	Production Lead
Catherine FitzGerald	Technical Illustrator	120 Units, Fine Arts, Santa Barbara City College	Graphics
Kathleen Kramer	Document Specialist	M.A., Dramatic Art	Word Processing

7.0 Persons and Agencies Contacted or Consulted

The following agencies, organizations, and individuals were contacted during preparation of this EA:

- Arizona Game and Fish Department
- Arizona State Historic Preservation Office
- California Department of Fish and Game
- California State Historic Preservation Office
- Fort Yuma Indian Reservation
- U.S. Army Corps of Engineers
- U.S. Bureau of Indian Affairs
- U.S. Bureau of Land Management
- U.S. Fish and Wildlife Service

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8.0 Distribution

- Ahamakav Cultural Society, Fort Mojave Indian Tribe, Ms. Linda Otero, Director, PO Box 5990, Mojave Valley, AZ, 86440
- Arizona Game and Fish Department, Mr. Russ Engel, 9140 E. 28th Street, Yuma, AZ 85365
- Bureau of Indian Affairs, Mr. William Pyott, PO Box 11000, Yuma, AZ 85366
- Bureau of Land Management (BLM), Pratt Lease, Ms. Loren Pratt, 7775 South Avenue 19E, Wellton, AZ, 85356
- Bureau of Land Management (BLM), Yuma Field Office, Ms. Rebecca Heick, Field Manager, 2555 E. Gila Ridge Road, Yuma, AZ 85365-3200
- California Department of Fish & Game, Mr. Chris Hayes, PO Box 2160 Blythe, CA 92226
- Center for Biological Diversity, Ms. Michelle T. Harrington, PO box 39629, Phoenix, AZ, 85069
- Cocopah Indian Tribe, Cocopah Museum, Ms. Lisa Wanstall, Director, County 15 and Avenue G, Somerton, AZ, 85350
- Imperial Irrigation District (IID), Mr. Robert Powell, 333 Barioni Blvd., Imperial, CA 92251
- Imperial Irrigation District (IID), Mr. Elston K. Grubaugh, Interim General Manager, 333 Barioni Blvd., Imperial, CA 92251
- Kenneth Epperly, PO Box 1841, Yuma, AZ 85366-1841
- Laguna Mobile Home and RV Park, Ms. Yolanda Cox, Manager, 7270 Laguna Dam Road, Yuma, AZ, 85356-7914
- Metropolitan Water District, Mr. John Scott, PO Box 54153, Los Angeles, CA 90054-0153
- U.S. Fish and Wildlife Service, Ms. Lesley Fitzpatrick, 2321 West Royal Palm Road, Suite 013, Phoenix, AZ 85021-4951
- U.S. Fish and Wildlife Service, Mr. Mike Martinez, 2321 West Royal Palm Road, Suite 013, Phoenix, AZ 85021-4951
- Yuma Valley Rod and Gun Club, Mr. Jon Fugate, PO Box 10450, Yuma, AZ, 85366-0450

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10.0 Acronyms

ADEQ	Arizona Department of Environmental Quality
af	acre-feet
AMM	Avoidance and Minimization Measures
ARB	California Air Resources Board
AGS	Arizona Geological Survey
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDMG	California Division of Mines and Geology
CDOC	California Department of Conservation
CEQ	Council on Environmental Quality
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CRFWLSA	Colorado River Front Work and Levee Act

CRFPA	Colorado River Floodway Protection Act
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
EA	Environmental Assessment
ECM	Environmental Compliance Memorandum
EDR	Environmental Data Resources
EO	Executive Order
ESA	Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
ICAPCD	Imperial County Air Pollution Control District
INWR	Imperial National Wildlife Refuge
ITA	Indian Trust Asset
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
L_{dn}	Day/Night Average Sound Level
L_{eq}	equivalent sound level
maf	million acre-feet
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_x	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
O_3	Ozone

PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
Reclamation	United States Bureau of Reclamation
RMP	Resource Management Plan
ROI	Region of Influence
S-24	State Highway 24
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USIBWC	International Boundary and Water Commission, United States Section
UST	underground storage tank
VOC	volatile organic compound
YMC	Yuma Mesa Conduit
μg/m3	micrograms per cubic meter

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Appendix A

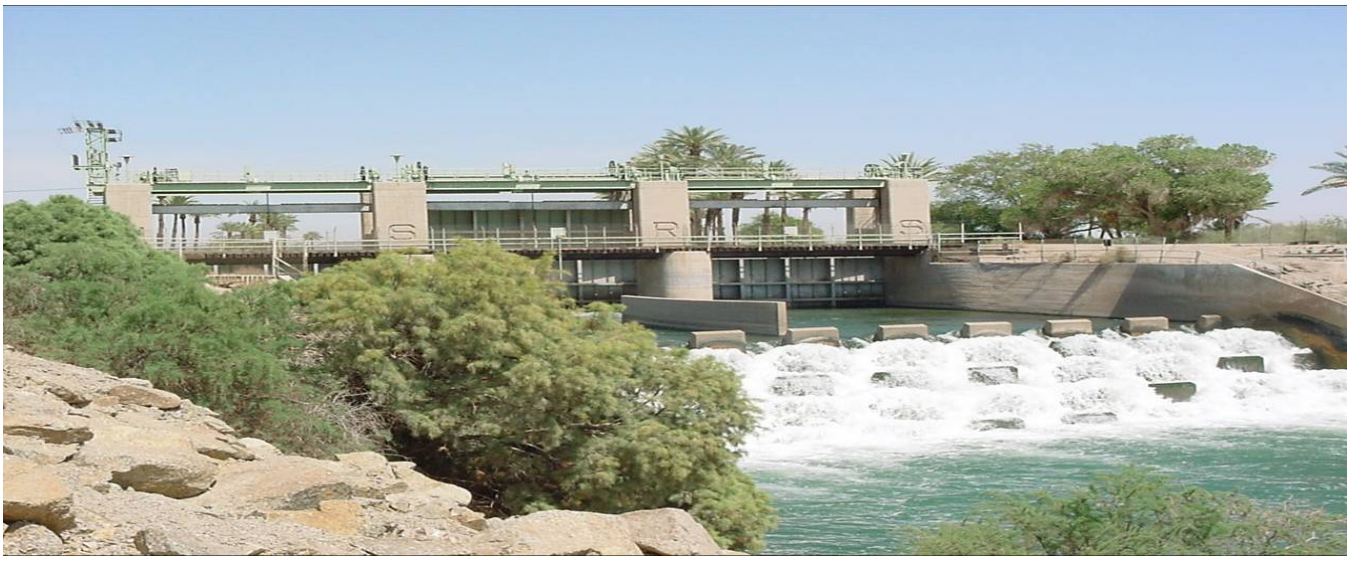
Scoping Summary Report

RECLAMATION

Managing Water in the West

Scoping Summary Report

Laguna Restoration Project
Imperial County, California



U.S. Department of the Interior
Bureau of Reclamation
Yuma Area Office
Yuma, Arizona

November 2005

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Scoping Summary Report

Laguna Restoration Project
Imperial County, California

Delivery Order No. 05-PE-34-0117

Prepared by:

Science Applications International Corporation
525 Anacapa Street
Santa Barbara, CA 93101

Project Management
Thomas M. Engels, Ph.D., Project Manager

Prepared for:

U.S. Department of the Interior
Bureau of Reclamation
Yuma Area Office
Yuma, Arizona

November 2005

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1.0 INTRODUCTION AND BACKGROUND

The scoping report has been prepared to provide a synopsis of the scoping process that has been conducted to date for the proposed Laguna Restoration Project in Imperial County, California. This scoping report identifies efforts made to notify interested agencies, organizations, and individuals about the proposed federal action and to obtain input from those entities regarding the range of alternatives to be evaluated and the issues to be considered during the preparation of the environmental assessment (EA) being prepared by Reclamation. These efforts have been carried out pursuant to the "scoping process," as defined by the Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA).

This report summarizes the major points made in the public comments received during the scoping process.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

Consistent with implementation of NEPA, Reclamation is preparing an EA related to the proposed Laguna Restoration Project. The purpose of dredging above Laguna Dam is to provide increased water storage capacity to:

- Capture sluicing flows (approximately 400-500 Acre Feet) released from Imperial Dam and
- Ensure the safety of the public below Laguna Dam during sluicing operations at Imperial Dam
- Maintain the operational integrity (function ability) of Laguna Dam and
- Operate the river effectively and efficiently below Imperial Dam

Due to the lack of storage capacity above Laguna Dam and the variation in water demand at Imperial Dam, it has been difficult to perform enough sluicing operations to keep the California Sluiceway Channel clean. Operation of the California Sluiceway of the All American Canal/Imperial Dam complex requires release of a "slug" of water to wash accumulated sediments downstream to the Laguna Settling Basin. About 400-500 Acre Feet of water is released by Imperial Dam during each sluicing event. This water is retained by Laguna Dam.

To keep the California Sluiceway Channel relatively clean of sediment deposited from the All American Canal desilting basins, sluicing operations should be performed approximately two to three times a week. Presently, the storage capacity of Laguna Dam reservoir is barely sufficient to retain sluicing flows arriving from Imperial Dam. Without sufficient storage behind Laguna Dam, sluicing flows would continue downstream creating a hazard to the public and causing large fluctuations in flows arriving at Morelos Dam.

In addition to affecting the ability to store sluicing flows, sediment deposition above Laguna Dam has resulted in vegetation growth near hydraulic features, which compromise the

operational function of the reservoir and the structural integrity of the Dam. Laguna Dam is still used as a regulating structure for Laguna Reservoir. Vegetation growth upstream of the Laguna Dam gate structure's concrete outlet channel located at the California side of Laguna Dam has blocked about two thirds of the channel. Preventing the outlet channel from completely closing off will help ensure relatively stable delivery of Treaty water to Mexico.

Vegetation has also grown across a significant portion of the Laguna Dam spillway. Vegetation upstream of the spillway will both impact the structural integrity (structural deterioration) of the spillway and cause the water surface elevation to rise even further above the design water surface elevation during floods, creating a larger area of impact than would normally occur. If vegetation continues to grow across the remaining open section of the outlet channel, it would completely block flows from safely routing through the spillway when the reservoir rises during relatively modest floods.

1.2 SCHEDULE FOR NATIONAL ENVIRONMENTAL POLICY ACT PROCESS

Reclamation is proceeding with the technical studies necessary to complete the analysis for the proposed action and alternatives, as revised as a result of the scoping process. Reclamation anticipates a Draft EA will be available for public review and comment in December 2005. The Draft EA will be sent to individuals and entities on the scoping mailing list as well as those individuals/entities that requested copies of the Draft EA. The Draft EA will also be available on the internet at www.usbr.gov/lc/yuma.

2.0 SCOPING ACTIVITIES AND ISSUES

This section documents the purpose and objectives of scoping, and identifies issues that were frequently raised through the scoping process.

2.1 PURPOSE OF THE SCOPING PROCESS

"Scoping" is an integral part of the NEPA process. Scoping provides "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." (40 CFR § 1501.7)

The objectives of scoping for this federal action include the following:

- Identify significant issues related to the proposed Project;
- Determine the range of alternatives to be evaluated;
- Identify environmental review and consultation requirements;
- Define the environmental analysis process and technical studies necessary to adequately address the impacts of the proposed Project;
- Identify the interested and affected parties; and
- Provide information to the public regarding the proposed Project.

2.2 SCOPING ANNOUNCEMENTS

Reclamation published a news release on its website (www.usbr.gov/lc/yuma) announcing the public open house to be held to solicit input on the environmental documentation for the Laguna Restoration Project. This news release, included in Appendix A, provides information on the Project, its location, and how to provide input with and without attendance at the public open house. In addition to the news release, letters announcing the public open house were mailed to 30 interested parities, including property owners and resource agencies. The mailer and distribution list are provided in Appendix A.

2.3 OPEN HOUSE

Reclamation held an open house to discuss the Laguna Restoration Project and to solicit the public's input on the upcoming environmental documentation. The open house was held Thursday, September 22, 2005 at Yuma Crossing State Historic Park, 201 North Forth Avenue, Yuma, Arizona, from 6:00 p.m. to 8:00 p.m. with a presentation about the Project from 6:30 p.m. to 7:30 p.m. During the open house, Reclamation representatives were available to provide information and respond to questions about the Laguna Restoration Project and proposed alternatives. Posters and handouts were made available to attendees detailing the proposed project and the existing site conditions in the area that would be affected by the proposed Project (e.g., land uses, habitats). Handouts and other materials from the open houses, as well as the transcript from the open house are provided in Appendix B.

2.4 SCOPING COMMENTS

2.4.1 Number of Comments

A total of 5 comment letters/emails were received in response to the public notices of the scoping period for the Draft EA. These comments are in addition to verbal comments received during the open house. All comment letters are attached in Appendix C, and are listed below:

- U.S. Fish and Wildlife Service, Phoenix Office, Stephen L. Spangle
- U.S. Bureau of Land Management, Aaron Curtis
- Arizona Game and Fish Department, Russell K. Engel
- Center for Biological Diversity, Michelle T. Harrington
- Yuma Rod and Gun Club, Jim Ammons

In addition, multiple persons provided informal comments at the open house. A transcript from the open house is provided in Appendix B.

Reclamation has reviewed and considered all the comments that have been received. For convenience, in the discussion below, comments have been grouped by major theme.

2.4.2 Issues Raised through Scoping

2.4.2.1 Issues Related to Potential Impacts to the Lower Colorado Multi-species Conservation Program

The U.S. Fish and Wildlife Service and Arizona Game and Fish Department wrote that the proposed project is included in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) as a covered action. The U.S. Fish and Wildlife Service stated that the loss of marsh, honey mesquite, and cottonwood-willow riparian habitats that support the LCR MSCP covered species is mitigated through the implementation of the LCR MSCP.

The Center for Biological Diversity requested that the EA explain the implication of the LCR MSCP on the proposed project. Specifically, they requested that if the project is a covered action within the MSCP, the cross-section of allowed habitat loss, actual habitat loss (if any), and mitigation implied in the MSCP be reviewed. Also requested was that the potential impacts to endangered, threatened, or candidate species, or species of concern be evaluated.

2.4.2.2 Issues Related to Potential Impacts to Wetlands and Wildlife

Arizona Game and Fish Department expressed concern that the project may potentially result in the loss of more than 7 acres of wetlands. In addition, they requested an analysis of potential impacts to wildlife.

2.4.2.3 Issues Related to Potential Impacts to Recreation

The Bureau of Land Management provided input stating that the proposed project may greatly increase the existing recreational use of the project area, and that this may warrant the

installation of recreation facilities to address public health and safety and resource protection concerns. The Yuma Valley Rod and Gun Club requested that the small channel along the spillway from Laguna Dam to Betty's Kitchen and the channel from the confluence of the old river channel upstream to the existing boat ramp be re-opened.

APPENDIX A OPEN HOUSE ANNOUNCEMENTS

- **NEWS RELEASE**
- **LETTER ANNOUNCEMENT**
- **LETTER ANNOUNCEMENT MAILING LISTS**

Yuma Area Office
Yuma, Arizona

Media Contact: Jack Simes, 928-343-8334, jsimes@lc.usbr.gov

For Immediate Release: September 12, 2005

Open House Scheduled to Receive Comment on Environmental Assessment for Laguna Dam Restoration Project

On Thursday, September 22, the Bureau of Reclamation will host an open house to provide information about and seek public input on an Environmental Assessment for the Laguna Restoration Project.

The open house will be from 6:00 p.m. to 8:00 p.m. in the Cocopah Conference Room at the Yuma Crossing State Historic Park, 201 North Fourth Avenue in Yuma. Reclamation staff will make a presentation on the project at 6:30 p.m. Information about the project, and about existing site conditions in the area that would be affected by it (e.g., land uses, biological and cultural resources), will also be available. Reclamation staff will be available to accept comments or answer questions throughout the meeting. The facilities are accessible to people with disabilities.

The purpose of the project is to remove more than two million cubic yards of sediment from the reservoir behind Laguna Dam. This will restore about 1100 acre-feet of water storage capacity in the reservoir, providing greater flexibility for sluicing operations at Imperial Dam. Removal of the sediment is scheduled to begin in March 2006 and last approximately 2 years.

The open house will provide an opportunity for interested parties to comment on the scope of the issues to be addressed in the EA. The EA, a National Environmental Policy Act compliance document being prepared for the project, integrates consideration of environmental values into planning and decision making. A draft EA is expected to be available for public review and comment in December.

Reclamation also will accept written comments on the scope of the EA. Comments can be mailed or faxed to Ms. Kimberly Garvey, at the Bureau of Reclamation, Yuma Area Office, 7301 Calle Agua Salada, Yuma, AZ 85364; or at 928-343-8320, respectively. Comments must be received by October 21, 2005. (Si decea atender la junta y necesita un interprete en Español, por favor llame a Sr. Sal Teposte al 928-343-8201.)

Laguna Dam is located 13 miles northeast of Yuma, and about five miles downstream from Imperial Dam. Completed in 1909, Laguna is the oldest dam on the Colorado River. Its original purpose was to divert Colorado River water to Yuma area projects. This function is now performed by Imperial Dam, and Laguna Dam now serves primarily as a regulating structure for Imperial Dam sluicing operations.

# # #

Reclamation is the largest wholesale water supplier and the second largest producer of hydroelectric power in the United States, with operations and facilities in the 17 Western States. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Visit our website at http://www.usbr.gov.

Dear Interested Party:

The Yuma Area Office of the Bureau of Reclamation (Reclamation) is preparing an Environmental Assessment (EA) to evaluate potential impacts from the creation of 1100 acre feet of additional storage upstream of Laguna Dam. Specific objectives of the proposed project include:

- Capture sluicing flows (est. 400-500 Ac. Ft.) released from Imperial Dam and
- Maintain the operational integrity (function ability) of Laguna Dam and
- Operate the river effectively and efficiently below Imperial Dam

Operation of the California sluiceway of the All American Canal/Imperial Dam complex requires release of a "slug" of water to wash accumulated sediments downstream to the Laguna Settling Basin. About 400-500 Ac. Ft. of water is released by Imperial Dam in each event. This water will be retained by Laguna Dam. Presently, the storage capacity of Laguna Dam reservoir is insufficient to retain sluicing flows, which must continue downstream. Reduced storage capacity at Laguna Reservoir has made it difficult to run a sluice for sediment control any more than about once every two weeks. To keep the Sluiceway Channel relatively clean of sediment deposited from the AAC desilting basins, sluicing operations should be performed approximately twice a week.

In addition to affecting the ability to store sluicing flows, the sediment deposition and resulting vegetation growth near hydraulic features is compromising the function of the reservoir. Near the upstream end of the concrete outlet channel, vegetation has blocked about two thirds of the channel. Vegetation has also blocked flow from a significant portion of the spillway. If allowed to continue to grow across the remaining open section of spillway, flow to the spillway will be completely blocked which would raise the water surface above the design water surface elevation during relatively modest floods. Laguna Dam is still used as a regulating structure for the reservoir. Dredging above the dam will ensure continued water deliveries of Treaty waters to Mexico. In addition, vegetation encroachment on the dam limits operational functions, especially during high flows. Increased storage of waters will maximize the Laguna Settling Basin's operational flexibility and provide a greater flexibility to operate the entire Laguna structures efficiently.

Restoring reservoir capacity above Laguna Dam will provide Reclamation a greater operational flexibility of its sluicing operations in an environmentally and economically sound manner in the interest of the American public. Dredging will begin in fiscal year 2006, last for approximately 24 months and utilize Reclamation dredging personnel and equipment.

Laguna Dam is located 13 miles northeast of Yuma, Arizona and about 5 miles downstream from Imperial Dam. Construction of Laguna Dam was completed in 1909. It is the oldest dam on the Colorado River. The dam's original purpose was water diversion to the Yuma Main Canal. In 1941 a turnout was provided at Siphon Drop on the All-American Canal to supply part of the Yuma Project with water diverted by Imperial Dam and in 1948 the turnouts on the California side of Laguna Dam were sealed. Today

Laguna Dam has an integral role on the lower Colorado River serving as a regulating structure for sluicing flows and downstream toe protection for Imperial Dam.

Open House

On Thursday, September 22, 2005 the Bureau of Reclamation will host an open house to provide information and to seek your input on the project and its alternatives. The open house will be held at the Yuma Crossing State Historic Park, 201 North Fourth Avenue, Yuma, Arizona, from 6:00 p.m. to 8:00 p.m. with a presentation about the project from 6:30 p.m. to 7:00 p.m. A period for oral comments and questions will be held from 7:00 p.m. until completion. All open house facilities are physically accessible to people with disabilities.

During this open house, Reclamation representatives will be available to provide information and respond to questions about the Laguna Restoration Project and proposed alternatives. Attendees will be able to view information about the proposed project, and existing site conditions in the area that would be affected by the proposed project (e.g., land uses, biological and cultural resources).

How to Comment

The open house will provide an opportunity for agencies and the public to comment on the scope of the issues to be addressed in the EA. The EA, a National Environmental Policy Act compliance document is being prepared for the proposed project and is meant to integrate consideration of environmental values into planning and decision making. A Draft EA is anticipated to be available for public review and comment in December 2005. Final design, project approval, and ultimate construction will begin in spring 2006.

Those unable to attend the open house should send their written comments by October 21, 2005, by mail to Ms. Kimberly Garvey, Bureau of Reclamation, Yuma Area Office, 7301 Calle Agua Salada, Yuma, Arizona 85364; or by fax to Ms. Kimberly Garvey, Bureau of Reclamation, at 928-343-8320. To give Reclamation the opportunity to effectively consider comments within the Draft EA, comments should be provided no later than October 21, 2005.

After reviewing public comments on the proposed project, Reclamation will analyze the effects of the project and its alternatives on resources in the project area and prepare a Draft EA. Reclamation will provide notice when the Draft EA is available for public review. A Draft EA is anticipated in late November 2005.

Letter Announcement Mailing List

Bureau of Indian Affairs Western Regional Office PO Box 10 Phoenix, AZ 85001	Bureau of Land Management California Desert District 22835 Calle San Juan De Los Lagos Moreno Valley, CA 92553	Bureau of Land Management El Centro Field Office 1661 South Fourth Street El Centro, CA 92243
California Department of Fish and Game Eastern Sierra and Inland Deserts Region 3602 Inland Empire Blvd., Suite C-220 Ontario, CA 91764	California Department of Transportation Headquarters PO Box 942873 Sacramento, CA 94273	California Department of Transportation District 11 PO Box 85406 San Diego, CA 92186-5406
Chemehuevi Indian Tribe PO Box 1976 Havasu Lake, CA 92363	Cibola National Wildlife Refuge Route 2, Box 138 Route 2, Box 138 Cibola, AZ 85328	City of Blythe 235 North Broadway Blythe, CA 92225
City of Palo Verde Planning Department 801 Main Street El Centro, CA 92243	City of Ripley Community Service District Office 24501 School Road Ripley, CA 92225	Cocopah Indian Tribe County 15 and Avenue G Somerton, AZ 85350
Colorado River Indian Tribal Council Route 1, Box 23-B Parker, AZ 85344	Community Planning and Liaison Office MCAS-Yuma Box 99106 Yuma, AZ 85369-9106	County of Imperial 940 Main Street El Centro, CA 92243
Environmental Defense	Fort Mojave Indian Tribe 500 Merriman Avenue Needles, CA 92363	Fort Yuma Quechan Indian Tribe PO Box 1899 Yuma, AZ 85366
Gila River Indian Community PO Box 2140 Sacaton, AZ 85247	Imperial National Wildlife Refuge PO Box 72217 Martinez Lake, AZ 85365	US Environmental Protection Agency Region IX 75 Hawthorne Street San Francisco, CA 94105
U.S. Fish and Wildlife Service Phoenix Office	U.S. Army Corps of Engineers	US Geological Survey Western Regional Office Menlo Park Campus, Bld. 3 345 Middlefield Road Menlo Park, CA 94025
Wellton-Mohawk Natural Resources Conservation Service 5578 South Avenue, 37 East Roll, AZ 85347	Yuma County 198 South Main Yuma, AZ 85364	Yuma County Planning and Zoning Division 2703 South Avenue B Yuma, AZ 85364
Center for Biological Diversity PO Box 710 Tucson, AZ 85702-0710		

APPENDIX B OPEN HOUSE MATERIALS

- **OPEN HOUSE POSTERS**
  - Welcome Poster
  - Fact Sheet
  - Laguna Restoration Project, Project Location
  - How to Provide Input
- **POWERPOINT PRESENTATION**
- **SIGN-IN SHEET**
- **EASEL COMMENTS**
- **TRANSCRIPT, OPEN HOUSE YUMA, AZ SEPTEMBER 22, 2005**

Welcome to the Open House

Laguna Restoration Project Environmental Assessment

Thursday, September 22, 2005

6:00 P.M. to 8:00 P.M.

RECLAMATION

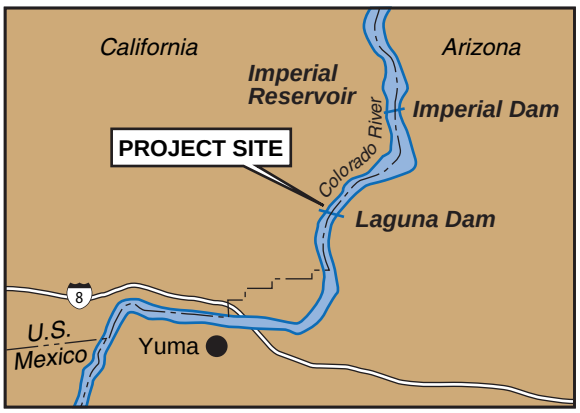
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

Laguna Restoration Environmental Assessment

Project Location

Laguna Dam is located on the Colorado River 13 miles northeast of Yuma, Arizona, and about five miles downstream from Imperial Dam.



Purpose and Need

The purpose of the proposed project above Laguna Dam is to provide increased water storage capacity to:

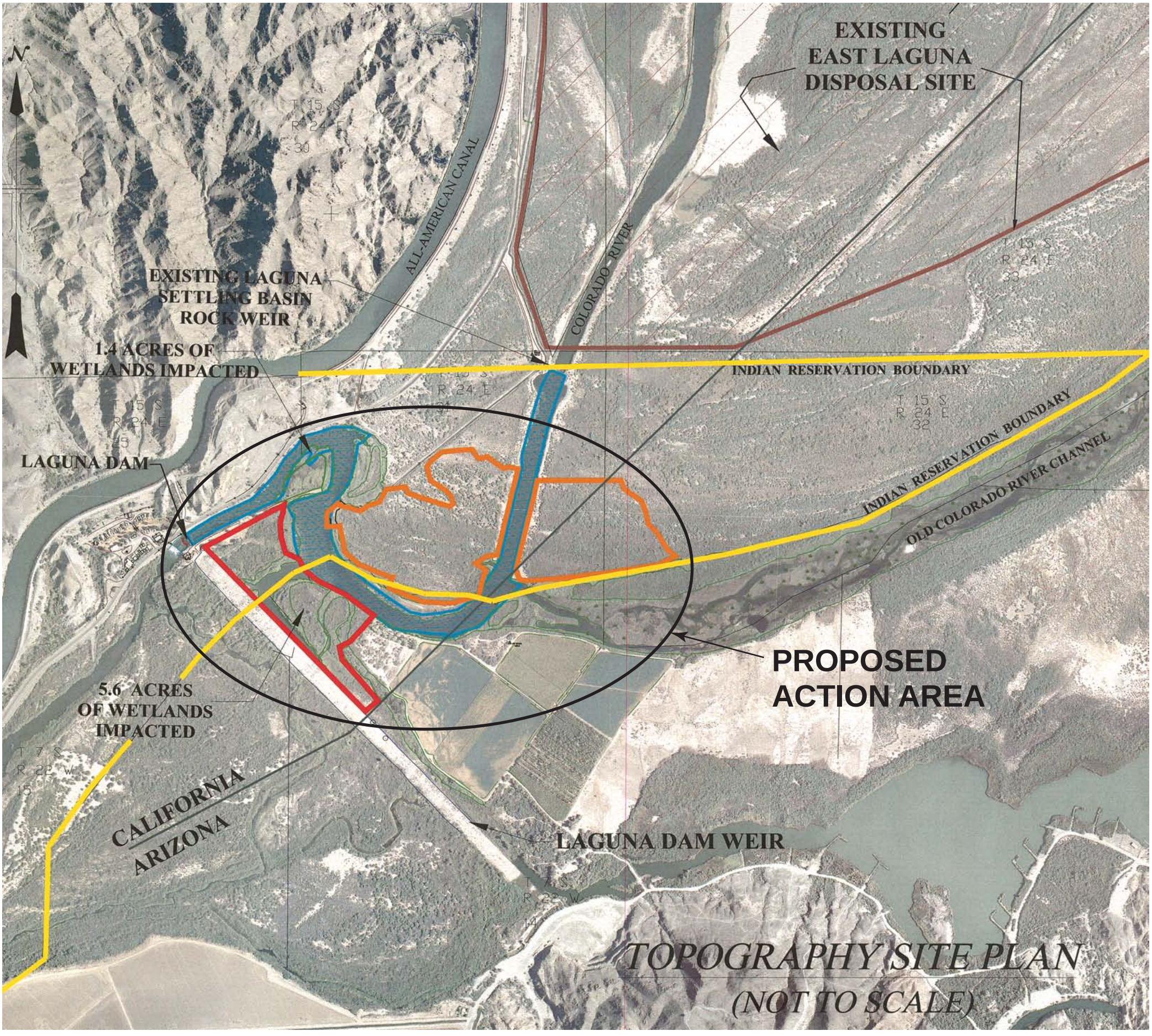
- Capture sluicing flows (est. 400-500 Ac. Ft.) released from Imperial Dam, and
- Maintain the operational integrity (functional ability) of Laguna Dam and
- Operate the river effectively and efficiently below Imperial Dam

Operation of the California sluiceway of the All American Canal/Imperial Dam complex requires release of a “slug” of water to wash accumulated sediments downstream to the Laguna Settling Basin. About 400-500 Ac. Ft. of water is released by Imperial Dam in each event. This water will be retained by Laguna Dam. Presently, the storage capacity of Laguna Dam reservoir is insufficient to retain sluicing flows, which must continue downstream. Reduced storage capacity at Laguna Reservoir has made it difficult to run a sluice for sediment control any more than about once every two weeks. To keep the Sluiceway Channel relatively clean of sediment deposited from the desilting basins, sluicing operations should be performed approximately twice a week.

In addition to affecting the ability to store sluicing flows, the sediment deposition and resulting vegetation growth near hydraulic features is compromising the function of the reservoir. Near the upstream end of the concrete outlet channel, vegetation has blocked about two thirds of the channel. Vegetation has also blocked flow from a significant portion of the spillway. If allowed to continue to grow across the remaining open section of spillway, flow to the spillway will be completely blocked which would raise the water surface above the design water surface elevation during relatively modest floods.

Laguna Dam is used as a regulating structure for operation and maintenance of the Lower Colorado River. Dredging above the dam will ensure continued water deliveries of Treaty waters to Mexico. In addition, vegetation encroachment on the dam limits operational functions, especially during high flows. Increased storage of waters will maximize the Laguna Settling Basin’s operational flexibility and provide a greater flexibility to operate the Laguna structures efficiently.

Laguna Restoration Site Location



RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

How to Provide Input

Laguna Restoration Project
Environmental Assessment

We would like to hear from you!
There are many ways to provide input.

You may:

1. provide verbal comments at the open house; or
2. you may choose to attend the open house and provide written comments at that time; or
3. you may provide written comments via email to either KGARVEY@lc.usbr.gov, on or before October 21, 2005; or
4. you may provide written comments via fax to Ms. Kimberly Garvey, Bureau of Reclamation, at 928-343-8227, on or before October 21, 2005; or
5. you may provide written comments via U.S. Mail addressed to Ms. Kimberly Garvey, USBR-YAO, 7301 Calle Agua Salada, Yuma, AZ, 85364, on or before October 21, 2005.

If you chose to provide written comments, please also provide the following information that will allow us to contact you if necessary:

Name
Representing
Address
City, State, and Zip Code
Phone No.
Email Address

After reviewing public comments on the proposed project, Reclamation will analyze the effects of the project and its alternatives on resources in the project area and prepare a Draft EA per the directives of the National Environmental Policy Act. Reclamation will provide notice when the Draft EA is available for public review. A Draft EA is anticipated in late Fall 2005.

Welcome to the Open House

Laguna Restoration Project Environmental Assessment

Thursday, September 22, 2005

6:00 P.M. to 8:00 P.M.

RECLAMATION

Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

RECLAMATION

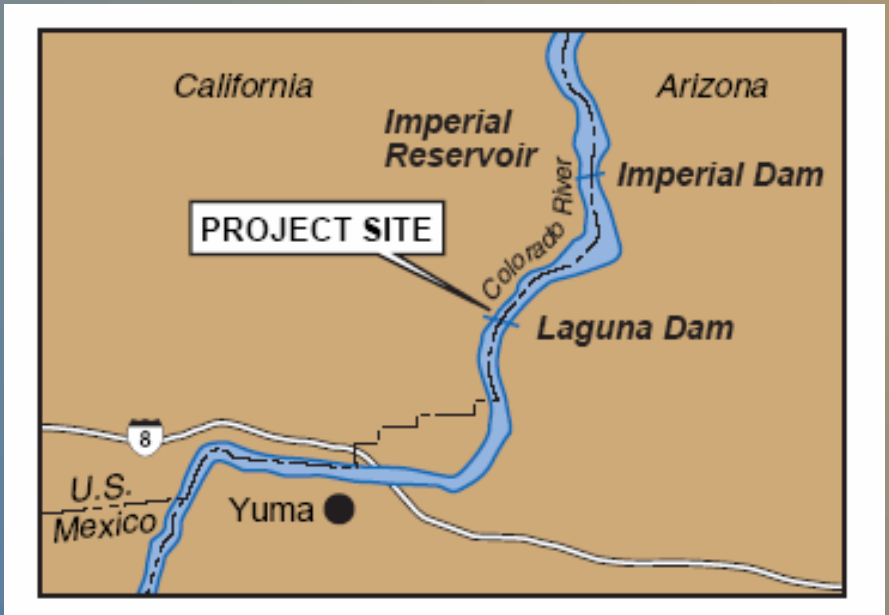
Managing Water in the West

Laguna Restoration Project

U.S. Department of the Interior
Bureau of Reclamation

Laguna Restoration Project Location

- The proposed project is located above Laguna Dam
- 13 miles northeast of Yuma
- 5 miles downstream of Imperial Dam
- Project footprint may extend into both Arizona and California



RECLAMATION

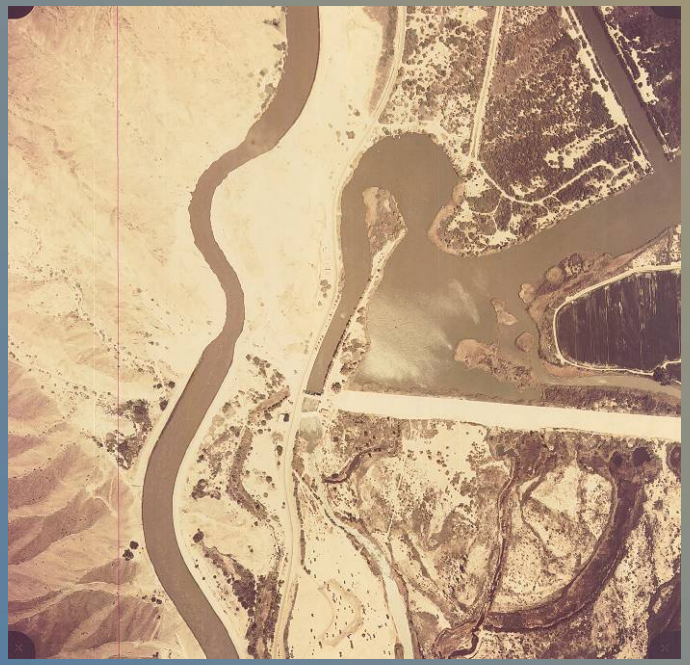
Laguna Dam History

- Oldest Dam on the Colorado River
- Completed in 1909, it is a register-eligible Historic Structure
- Served as a diversion structure for the Yuma Main Canal (CA) and the North Gila Canal (AZ)
- Imperial Dam, built upstream in 1939, altered the diversion function of Laguna Dam

RECLAMATION

Laguna Dam History (con't)

- Prior to 1980, the storage capacity of the reservoir above Laguna Dam was maintained through dredging at about 1,500 acre-feet



RECLAMATION

Laguna Dam Today

- Regulating structure for sluicing flows to control sediment
- Provides scour protection for Imperial Dam

RECLAMATION

Current Characteristics

- About 400 acre-feet of existing storage capacity
- Currently a 10-foot fluctuation during sluicing events
- Reservoir must be nearly empty prior to sluicing
- Spillway function has been reduced by vegetation overgrowth

RECLAMATION

Proposed Reservoir Characteristics

- 1,100 acre-feet of additional capacity above Laguna Dam
- 3-foot fluctuations during sluicing events
- Environmental and safety benefits from regulating flows into and out of Laguna Dam
- Remove some vegetation immediately upstream of the spillway to restore flood flow capacity

RECLAMATION

Purpose and Need for Project

- Capture sluicing flows (about 400-500 acre-feet) released from Imperial Dam, and
- Maintain the operational integrity (functional ability) of Laguna Dam, and
- Operate the river effectively and efficiently below Imperial Dam

RECLAMATION

Project Goals

- Restore capacity above Laguna Dam
- Allow for increased sluicing operations
- Ensure safety of the public from fluctuating flows below Laguna Dam
- Preserve the structure of Laguna Dam
- Decrease impacts to the environment by minimizing elevation fluctuations
- Cost-effective construction and maintenance

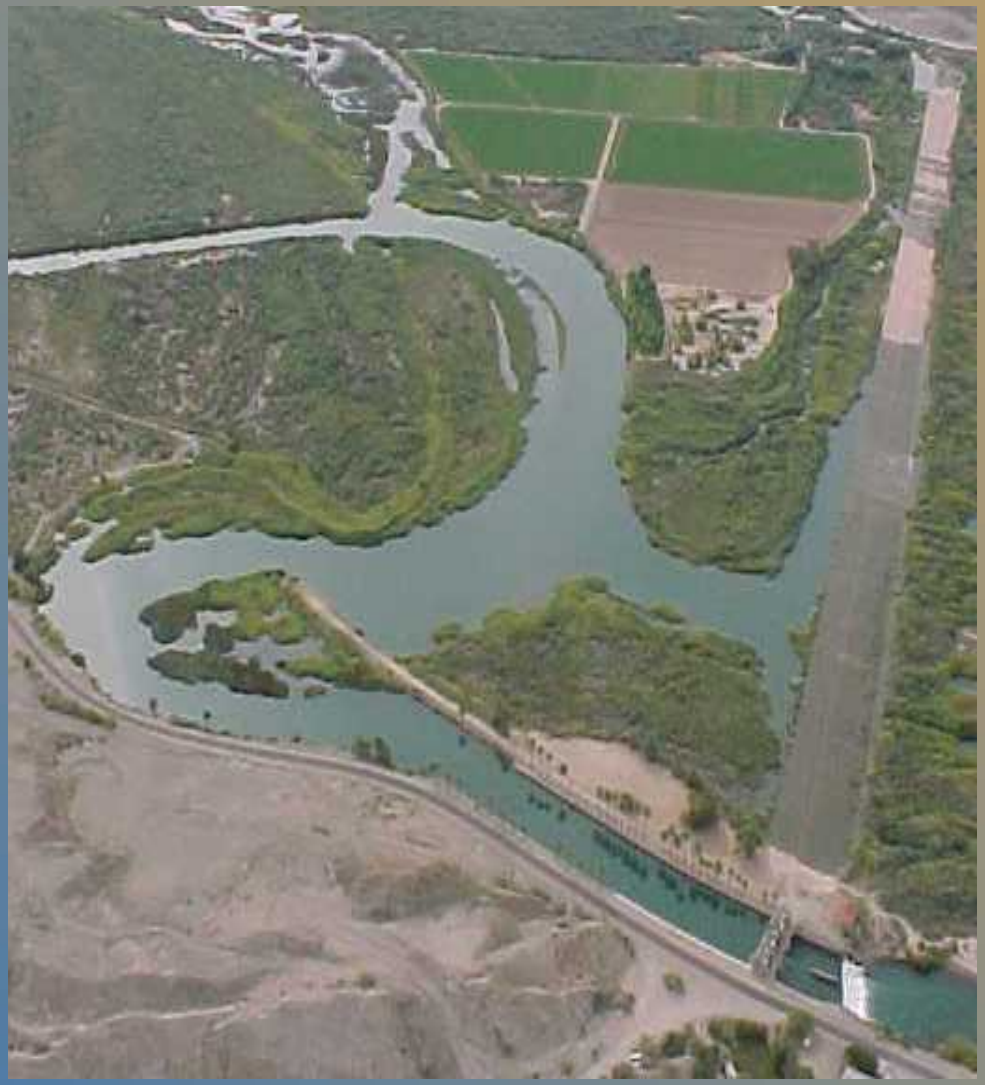
RECLAMATION

The Proposed Action Will…

…Create an additional 1,100 acre-feet of storage capacity above Laguna Dam

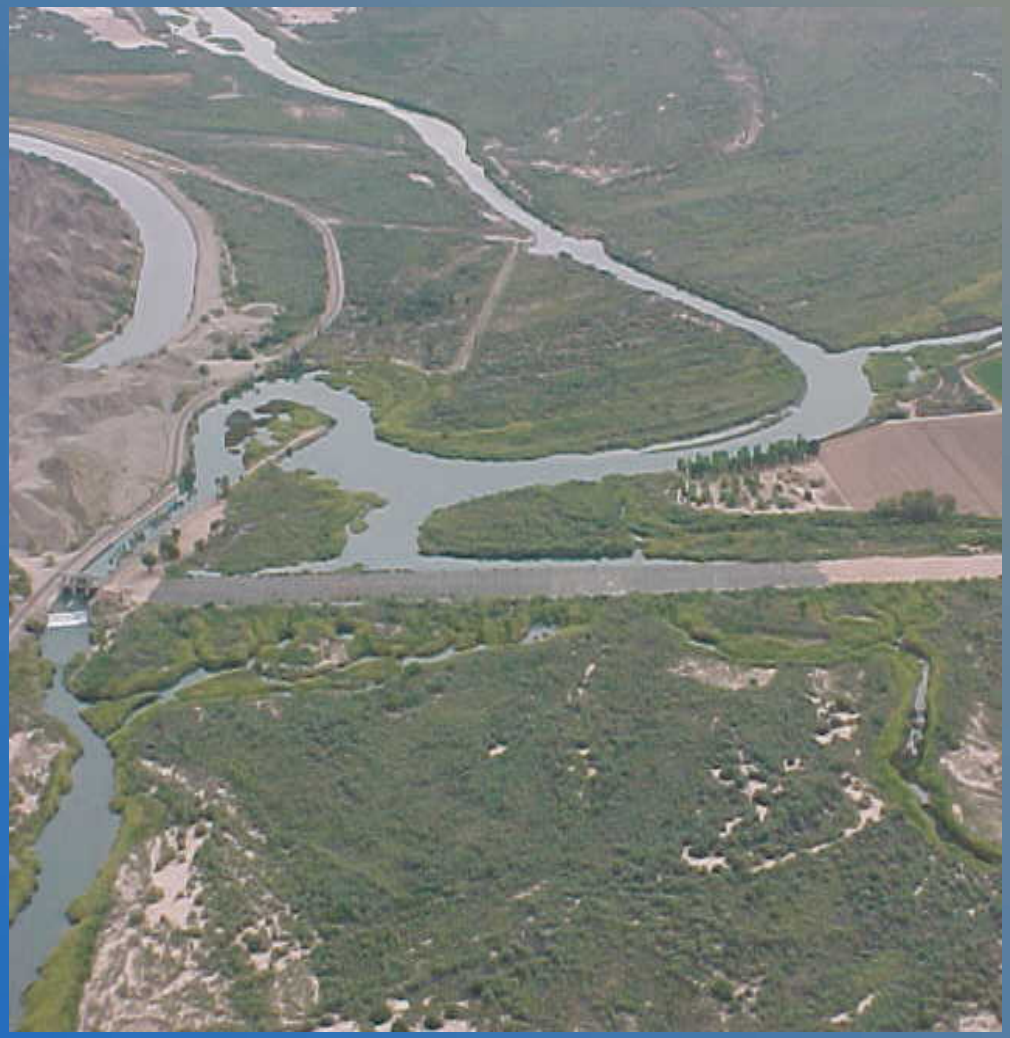
…Have no changes to the dam or control structures

…Dredge the area in front of the spillway



RECLAMATION

The Proposed Action Will…



…Dispose of excavated/ dredged material in the existing Laguna Settling Basin Disposal Site

…Minimize the amount of wetlands impacted

RECLAMATION

Questions?

Comments?

RECLAMATION

We would like to hear from you! There are many ways to provide input.

- Provide verbal comments at the open house; or
- You may choose to attend the open house and provide written comments at that time; or
- You may provide written comments via email to either kgarvey@lc.usbr.gov, on or before October 21, 2005; or
- You may provide written comments via fax to Ms. Kimberly Garvey, Bureau of Reclamation, at 928-343-8227, on or before October 21, 2005; or
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  - Name
  - Representing
  - Address
  - City, State, and Zip Code
  - Phone Number
  - Email Address
- After reviewing public comments on the proposed project, Reclamation will analyze the effects of the project and its alternatives on resources in the project area and prepare a Draft EA per the directives of the National Environmental Policy Act. Reclamation will provide notice when the Draft EA is available for public review. A Draft EA is anticipated in December 2005.

RECLAMATION

RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

Sign-In Sheet

Laguna Restoration Project
Environmental Assessment
Public Scoping Meeting

Bureau of Reclamation
Yuma, Arizona, September 22, 2005

Welcome to the Scoping Meeting. Please take a moment to sign in.

Name	Address	Email Address	Draft EA
William Pyott	P.O. Box 11000 Yuma, AZ 85366		✓
Cathi Alonzo	10197 Tornado Ave	gcalonzo@earthlink	
Russ Engel	9140 E 28th St.	rengel@azgfd.gov	
Ernie Mendivil	P.O. Box 505 Winterhaven CA 92283		
Jon Fugate	2428 W. 13th Place	jff@underwaltransfer.com	
RJ McDermott	2907 S. Avenue A, Yuma	Roberta.Stevenson-McDermott@az.usda.gov	
Jeff Young	2555 Gila Ridge Rd. Yuma, AZ	jeffrey_young@blm.gov	
Aaron Curtis	2555 Gila Ridge Yuma, AZ	Aaron_Curtis@blm.gov	
Kenneth Epperley	P.O. Box 1841 Yuma AZ 85366-1841	Kenneth.Epperley@yuma.army.mil	✓

Laguna Restoration Project
Public Scoping Meeting Notes
Comments Received on Easel Paper
22Sep2005

- John Fugate, YVRGC
  - Consider opening area along entire length of the spillway (to Betty's Kitchen) for boat access (15-20' wide).
  - Improve boat access at existing boat launches near Pratt agricultural lease to the main river channel.
  - Deepen channel in old river channel for boat navigation and fish and wildlife resources.
  - Provide for freshening flows in the old river channel.
  - This is a win-win project.
  - Implementation of the proposed action will benefit existing fishery.
  - Make better (wider) connections to Mittry Lake.

- BLM
  - Address potential security issues by allowing more people to access this area.

TRANSCRIPT OF PUBLIC COMMENTS

OPEN HOUSE/PUBLIC MEETING
LAGUNA RESTORATION PROJECT
ENVIRONMENTAL ASSESSMENT

THURSDAY, SEPTEMBER 22, 2005
YUMA CROSSING STATE HISTORIC PARK
201 NORTH 4TH AVENUE
YUMA, ARIZONA 85364

REPORTED BY:
SILVIA D. GIDDIS,
C.S.R. NO. 12014
PAGES 1-26
JOB NO. 95933

YUMA, ARIZONA, THURSDAY, SEPTEMBER 22, 2005

- oOo -

MS. GARVEY: Hi, my name is Kim Garvey, and I work for the Bureau of Reclamation here in Yuma. I'd like to welcome you all to the public meeting for the Laguna Recreation Project Environmental assessment. We're here tonight to provide you guys with information about the proposed project and receive comments back from you. I'd like to welcome everybody.

I just want to be sure before we get started, did everybody receive a handout and a map? Did anybody still need those? Okay, perfect. We could have more available, if you want to take some back to your prospective groups. I know a lot of you are here representing organizations, so if you want to take some of those back, you're more than welcome.

The format that we're going to proceed under here is, Scott Tincher, one of our engineers, is going to give you a little presentation, and then if you could hold your comments. Then we are going to go through a question and answer and comment period orally. And then if you want to provide written comments after that, we can do that as well.

Let me start by introducing the team here. Like I said, we got Scott Tincher here, engineer. And we all work at the Yuma area office. We've got Julian De Santiago; he does environmental compliance. Peggy Haren, our land specialist. She is our land/water contract manager. We have got Don Young right here. He is an Assistant Area Manager, and does a lot with water operations. So he is a Water Operations Specialist. We've got Jack Simes in the back. He's our Public Affairs Officer. We've got Cynthia Hoeft right here, my boss. She is the director of the Resource management Office. We've got John Nickels (phonetic). He's another engineer. And then his boss right in front is Ross. Oh, here is Ross. He is the director of the Technical Services Offices.

So we have a lot of Reclamation Employees here tonight. You guys can definitely get some questions answered. And Jenniffer Rocosky (phonetic), who just wanted to listen today is a Deputy Area Manager here in Reclamations. She is new to the office and, you know, it's nice to get some new blood down here.

So I'd like to welcome you all. Thank you for coming. And I'm going to turn it over to Scott. Like I said, if you could hold your questions. Jack looks like he has got something he wants to add.

MR. SIMES: I just wanted to ask if anybody felt the need to have anybody in the room identify themselves, or if you want to wait and do that.

MS. GARVEY: Yeah. We can definitely go around the room and identify themselves, if everybody wants to do that. We'll start here (indicating).

AUDIENCE: My name is Kim Malony (phonetic). Bobby McDurat (phonetic), Desert Pass Angler, National Resources Conservation Service, all conservations districts swap.

MS. GARVEY: Thank you.

AUDIENCE: Bill (inaudible). Jeff Young (inaudible). Erin Curtis (phonetic) I'm also with BLM. Ernie (inaudible), retired. Russ Ingle (phonetic) (inaudible) and fish. Johnny Fugate (phonetic) Yuma Valley (inaudible). I'm Yolanda.

MS. GARVEY: We've also got a reporter here in the back. And just to be clear, the reporter -- this isn't a formal hearing. We just want to make sure that we get everything down that everybody says, so we can address it in the environmental assessment. And the person I forgot to introduce is Sal Teposte. He is our Interpreter slash AV Specialist. So he is here tonight. So for now I'm going to turn it over to Scott, and he can get to his presentation. And Jack, you got the

(indicating) -- Perfect. Thank you.

MR. TINCHER: Thanks, Kim. My name is Scott Tincher. I'm an engineer with the Reclamation Yuma area office. I'm going to give a brief presentation of the history of the project area, as well as a general idea of what we're looking for a project.

The project area is up just above Laguna Dam, which is, as most of you know, that's 13 miles northeast of Yuma, and about five miles downstream of Imperial Dam. The project area footprints straddles the California and Arizona state line. Laguna Dam is the oldest dam on the Colorado River. It was built between 1905 and 1909. As such it's a registered historical structure site. Initially served as diversion controlled structure for the Yuma project diverting water in the Yuma main canal on the California side of the dam and into the north -- canal on the Arizona side.

When the Imperial Dam was completed, the purpose of Laguna changed by 1948 all diversions were occurring up at Imperial. And essentially Laguna became more or less an alphabet for Imperial land. Prior to 1980, up to about 1983, the bureau of reclamation maintained about 1500 acre feet of storage through draining activity. On the right is a photo from 1979 and it shows on the California side of the reservoir.

As I said, Laguna became more or less an after dam once Imperial was completed. Up in Imperial, sediment is removed from diversions under the all American Canal through Summing (phonetics) farms, and put back into the river just downstream of Imperial Dam.

On occasion to move that sediment to the area where it's removed from the river, sluicing flows or flashing flows, which are higher than normal are released from Imperial to push that sediment down to the Settlement (phonetic) River, where is removed from the river.

Those higher flows just allow to continue to pass Laguna Dam with flow all the way through Yuma, which could be a safety concern. So Laguna regulates those flows and maintains a constant moderate flow below Laguna Dam. And that's the primary purpose these days for Laguna Dam, is to control the sluice flow.

And the secondary purpose is to control river scour. River scour occurs due to sediment moving from a particular location to another causing the bed of the river to erode. There is about ten foot in the river scour at Laguna. If allowed to continue upstream, it would eventually make its way to Imperial Dam causing difficulties with operation at Imperial. So all the scour is controlled at Laguna Dam.

Currently Laguna Dam has 400 acre foot of capacity just to control sluicing flow. From one sluice, we move about 400 acre foot of water to flush the material down to the Laguna selling base. Therefore, you pretty much need to drain, for the most part, the reservoir to prepare for a sluicing event, which can be up to ten foot drop in water surface elevation (inaudible).

In addition, as you can see near the spillway, there has been quite a bit of sedimentation and also vegetation growth in front of the spillway and to some degree at the entrance of the alley channel. And that is constricting the ability to pass flood flows in a predictable fashion.

The proposed reservoir would increase storage by 1100 acre feet to a total capacity of about 1500 acres. By having that increased storage, instead of having a ten-foot fluctuation, you'd have about a three foot fluctuation. That would have environmental and safety benefits by not having water fluctuate that much upstream of the dam. And also ensuring control of sluicing flows below the dam.

In addition, we are considering removing some of the sediment and vegetation at the primary hydraulics pressure (inaudible) and the alley channel. Spillways

are features that allow larger than normal flows to pass the dam without damaging the dam. In this case, most of the Laguna Dam is a spillway. And that's the purpose and need of the project. It's to increase storage so that we have ability to capture sluice and flows.

Currently, with all the operational considerations that we have, I'm going to go into that into detail, we're only able to sluice once every two weeks, which is proving insufficient to move material from below Imperial Dam. When we do sluice, it does sluice some of the material, but not all. Eventually it does accumulate. And that allow us, once we have that extra storage and are able to sluice more frequently, we'll have a more effective and efficient operation moving that sluice material.

In addition, one of the needs of the project is to remove the sediment and vegetation in the vicinity of those hydraulics structures I talked about, spill way and to some degree the altitude channel. And those are the project goals. The goals are to increase storage, so we can sluice more frequently to move that sediment down. That will ensure that the increased volume for capturing sluices and flows will ensure we don't allow higher than normal flows to get below the dam.

We're going to preserve the historic structure.

We don't want to modify the dam, and perhaps cause problems with the historic parts of the dam. And by not allowing a lot of fluctuation upstream of the dam will minimize impacts to any environmental areas like wetlands above the dam.

On top of that we want to make sure our construction is cost effective, as well as ongoing maintenance after the project is completed. And that's what the project is intended to do, increase storage by 1100 acre feet of a total pass of 1500 acre feet for the capture of sluice and flow, so that we can sluice more than we have in the recent pass.

We don't want to change or modify the historic parts of the dam structure or control structures. We want to dredge areas around the primary hydraulics structures, primarily portions of the spillway and the Aloe (phonetic) dam. All material will be disposed of in existing disposal area near the Laguna base, which is just at the upper edge of the photo on the screen. And we want to minimize impact to wetlands to the extent possible while still achieving the purpose and needs of the project. And that's all I have. If you will take over again, Kim, for questions.

MS. GARVEY: Hit the lights please. Thank you Scott, that was awesome. So we are here today not only

to provide you information, but also for you guys to help us identify potentially significant issues of this project that need to be addressed in the environmental assessment purpose project.

I'm going to field questions. So if you have questions or comments you can provide to me. The court stenographer is going to take those down. But like I said, this is not a formal hearing. It's more just to make sure that we've collected all the information that everybody provides for us. So with that, thank you for coming. And if anybody has any questions or comments, we would love to take those now. Bobbie?

BOBBIE: How many hours may I talk? The orange areas are the areas you are going to remove; is that correct?

MS. GARVEY: This project is still under development. And that's kind of what we're trying to figure out now is the kinds of issues that we need to address in our environmental assessment. Right now this is the proposed area that we're looking at. This orange area is an area that we may be looking at removing.

BOBBIE: Okay. And so you would deepen that to how deep?

MS. GARVEY: I'm going to turn that over to Scott to talk about that.

MR. TINCHER: It's essentially the apron elevation of the gates, which is about -- actually, there is a small weird at the downstream end of the gate apron. The gates are right here (indicating). As a matter of a fact, if I could back up, I can very easily show you that. This thing doesn't back up. I think it was -- go back one. There is a spill right here (indicating). And that's the minimum elevation we can get water out of this reservoir. So right now that's approximately the elevation we're going to excavate to, which is about ten foot below the top of the of the dam. So it's approximately ten feet below that, and some of these areas (indicating) might have two to three feet of material above that elevation. So the total depth of material might be something like 13 or so feet.

BOBBIE: So if indeed the orange were your work area, that will become (inaudible)?

MS. GARVEY: Yes.

JOHNNY: And that's inside the reservations?

MS. GARVEY: I'm going to let Peggy Haren field that question.

MS. HAREN: These areas right here (indicating), this is the reservation boundary as corrected by the secretary order of 1981. When that secretarial order was done, some certain lands were

reserved in feet for reclamation. And some of these areas are within the -- we don't have that overlay, but we do have the maps, if you'd like copies. We have our protective zone. We have our security zones, and they are all within this area (indicating), and we'll have maps that overlay everything, so we know exactly where this is. What its boundary is going to be. So we'll know if we're going onto reservation lands or not.

Currently, just from a little bit I've looked, there may be some overlap on reservation land. But if it's within the reservations boundaries, certain lands were reserved in feet for reclamation. So most of the answer to your question is that, yes, it's within the reservation boundary but, no, it's not on tribal lands.

JOHNNY: And I asked the question for a totally different reason. If you guys dredge that out, and it becomes ten-foot deep, Bobby is going to be fishing there. I guarantee you. I was wondering if we're going to have to buy permits to go fishing. If it wasn't, that would be nice --

MS. GARVEY: We will be conducting consultation with the tribes. And like I said, all those will be worked out in the environment assessment. And the map is showing that increase (inaudible) of the environmental assessment. And if you have a particular

comment -- I mean, if it's something specific like --

JOHNNY: Well, not on that one, but I've got some more.

MS. GARVEY: Okay.

JOHNNY: I believe you defined it as the old Colorado River channel.

MS. GARVEY: Yeah.

JOHNNY: And then it comes out into the main river channel, and there is a boat launch that we can use that --

BOBBIE: Right at the edge of --

MS. GARVEY: Okay.

BOBBIE: Right there.

JOHNNY: Is there any talk of dredging from the main river channel at least back that far? Maybe a quarter mile, less than a half.

MS. GARVEY: The exact project footprint is still being worked out. If that's something you would like to see happen, we sure would appreciate you put that in the comment.

BOBBIE: Well, and there is also a large -- right here (indicating) that's -- I'm not familiar with your other option, Johnny. I launch here (indicating).

JOHNNY: And I can't see that. Wherever it is --

BOBBIE: Wherever that -- and that would be wonderful if we could get some depth and definition there, so we didn't have to --

MS. GARVEY: So more specifically, are we talking about keeping more back water, or are we talking about opening up the entire thing? Those are the kinds of things that we need more specific comments about what exactly you'd like to see out there. So if you could --

JOHNNY: Basically while you got the dredge there, it wouldn't take much to take that down a little bit.

BOBBIE: Just some more depth. The cover is great. We don't mind cover, because that's where the fish and all of the specious, you know, but there is just not a lot of depth there.

MS. GARVEY: So you can navigate your boats?

JOHNNY: Absolutely.

MS. GARVEY: So it's a navigational issue?

BOBBIE: Yeah. Just getting into that area. We've always called it Laguna Lake. I don't know whether it ever had an official name. Of course in '93 when the water was, up we were all up there, and everybody was having a great time. And since '93, we've lost access to pretty much all the area below Laguna Dam and the channel, which was called Bruce (phonetic)

Church because of sedimentation.

And if there were a way to keep the sedimentation above Laguna Dam, it would be wonderful. From fishing the river the last 12 years, and being in the natural resource field, the biggest problem I see, and I realize is beyond your control in many respects as the bureau, are the rapid fluctuations of the river. I'll fish -- I watch the water release, and every Thursday, except this week, there is two or 3,000 CFS difference. So we have falling water until Sunday; rising water on Sunday. The banks are saturated, and every time the water drops rapidly, we have the dirt and vegetation falling in the river.

So we keep re-sedimenting all these areas here in front of the Imperial Dam that was just redone, redredged, you know, that only took less than ten years for that to build back up again. A lot of that has to do with that very rapid fluctuation. If we could ease the river down, then the water would have a chance to drain, and that's a huge weight (inaudible).

And that's one thing I've seen over and over again. And I know that this is not that project, but it would help keep sediment out of there. And if there were a way to keep sediment below Laguna, then maybe some day we could open up -- come down the complex.

MS. GARVEY: Thank you.

JOHNNY: What's the red square?

MS. GARVEY: The red?

JOHNNY: Yeah.

MS. GARVEY: When we wrote these down, it was kind of more just to break it down. This red area is the area directly behind the spillway right here which is (inaudible) flood. And it's actually got three different habitat types in there. It's a little bit of (inaudible), wetland, and a little bit of open water. So we just wanted to be able to break that down. Where as this one (indicating) is -- the orange squares are all upland, and the blue is water. This red one is a bit more diverse.

JOHNNY: Is that a dredge location site?

MS. GARVEY: It's a potential dredge location site, yes.

JOHNNY: It makes sense to me. And would you be considering going back to Betty's Kitchen parallelling where --

MS. GARVEY: If that's something you'd like to see, we'd surely like --

JOHNNY: I'd like for somebody to tell me if they are thinking about it. Can you do that right now?

MR. SIMES: If we are thinking about it?

JOHNNY: Yeah.

MR. SIMES: We have been considering it. The issue that we have to deal with in an area like that is it's a fair amount of wetlands that would be affected, if we were to dredge back into that direction. But it is under consideration.

JOHNNY: I mean, I rode the boat many a times on Saturday evenings with my parents --

MS. GARVEY: You're talking about right here (indicating).

JOHNNY: I'm not sure how far back Betty Kitchen is. Almost all the way the (inaudible) white line. And I mean, the water is there. You get a (inaudible). To me, you wouldn't be destroying a lot of habitat. It's just whatever you guys call it.

MR. SIMES: How wide a path would you be kind of talking about?

JOHNNY: Let Bobbie answer that one. She's is the fishing expert.

BOBBIE: The --

JOHNNY: As wide as that can move either way.

BOBBIE: Ten or 15 feet wide. We fish the Arizona channels, which a boat wide. So, yeah. And that used to be open when I came here almost 40 years ago.

MR. SIMES: If we can do that without causing too many environmental impact, we can definitely consider that option.

BOBBIE: And would it be possible to maybe reestablishing some wetlands in another area? You know, do a trade with some other agency for lands and reestablishing the same variety of wetlands that you have there. I know we looked at some wetlands area for my agency standpoint for a couple of our programs down around Avenue 3 at one point in time. What we had was wet land and not wetlands.

And so I know that there is -- we can reestablish some of those habitats. And there is a lot money out there for that sort of stuff as well.

MS. GARVEY: And we appreciate those comments. Some of this stuff that we are doing is regulatory driven. So we do have to minimize impact to the greatest extent possible, you know, within -- as long as it's cost effective and available technology, and things like that.

But we definitely appreciate your comments. And if that's something the local people and local groups would like to see, we would really appreciate putting that in writing. And kind of working through Arizona Game and Fish too to get your views out there.

And maybe even California Fish and Game, because it's on both sides of the lot. So you know, just -- and we will, you know, look at everybody's comments.

JOHNNY: We all got to satisfy Marjorie. If we can satisfy Marjorie, we will all be good. That's the key person to satisfy. But I would think that that would be a positive thing from Reclamation standpoint, because I don't know if you can justify it by increasing your capacity with that. I don't know how far the boom moves left and right on the (inaudible). I think that would be ample enough.

But as long it didn't effect Ross, meaning game and fish and habitat issues, it would sure increase public use, fishing. And it used to be that way. We used to be able to do that. It's been a long time ago. So this is one place, at least on behalf of (inaudible), where we've been kind of anti-dredging in the last 30 years. Remember the good old days when we just rift raft, fishing and all of that. But in regards to this, to me it's basically a win, win situation from my standpoint today.

MS. GARVEY: Thank you.

JOHNNY: You are welcome.

MS. GARVEY: Does anybody have anything else, any other questions, comments that they would like to

provide?

BOBBIE: Are there water quality issues in that area? Is the quality equal to Colorado River, the diversion at Imperial Dam, or are you getting more salt in this area?

JOHNNY: It's pretty close to Imperial Dam. Not a lot.

BOBBIE: So greater flow goes through that as well?

JOHNNY: Yeah.

MS. GARVEY: Are you guys identifying that as an issue?

BOBBIE: That's definitely an issue. Particularly when the fluctuation is in the water.

MS. GARVEY: Anything in particular?

BOBBIE: No, it's mostly just evaporation. As shallow water heats more, all of the wildlife go deeper. If we had deeper water for them to escape to, we'd have much better wildlife in all of those areas, and any islands that they can (inaudible), then they could use that for cover.

MS. GARVEY: Are there any other issues you guys would like to see addressed in the environmental assessment that we haven't talked about? I think we got

water quality, recreation, fish and wildlife.

JOHNNY: A possible solution, if indeed you mean beyond, go parallel with the (inaudible), and then Marjorie says, "What are you going to do for me," which she probably will, how about consideration of somehow bringing water back into the old river channel, not to be dredged, just somewhere off the upper end? You guys bring water in Demitry (phonetic) up the other end, and it wouldn't probably take too much to cut in over there. I'm just talking fresh water, not to go in there and dredge. That might be something that it definitely will be good for the habitat. I'm sure from everybody's standpoint.

MS. GARVEY: So you are talking about some refreshing flows in the old channel?

JOHNNY: Uh-huh.

BOBBIE: From Demitry (phonetic) Lake or --

JOHNNY: About the only way you can get it in there is -- I'm not an engineer, but the only way to get it in there would be to concrete out to the ditch or right at it, where it dumps into Demitry (phonetic) there.

MR. SIMES: That would be the easiest way.

MS. GARVEY: Yeah. I mean, 'cause we have our disposal site for the area. So the project is going to

be right here (indicating). And that is attachment for sediment. So we have to be real careful about -- what incentive benefits do you see from this?

JOHNNY: Habitat coming out. The water being fresh is going to be a moving flow versus a stagnant flow. I'm not no biologist, but he could probably say something -- I mean, when the water is moving, things are a lot better instead of being stagnant. And it wouldn't be -- it just looks like to me, it wouldn't be a lot that BR could do to do whatever you need to do elsewhere that would make the project become a reality. 'Cause this is a neat thing. Something that you guys obviously need to make Imperial Dam (inaudible).

MS. GARVEY: Anything else?

BOBBIE: I've got a question for Scott. Johnny, why are we dominating? The sluicing you are talking about is the releasing water through Laguna Dam?

MR. TINCHER: Yes.

BOBBIE: From Imperial Dam sluicing it down to Laguna?

MR. SIMES: Right.

MS. GARVEY: You had made a comment in the hallway about --

BOBBIE: Yeah, my real concern is -- another concern is the fact that we have lost, for all use

pretty much, the area from Laguna Dam to the Laguna River, because it has all (inaudible) back up since the 1983 flood. A tending problem for the farmers in the north Yuma Valley, of course, is that as that bottom comes up, they tend to develop water problems on some of the fields adjacent.

But without either some sort of constructive wetlands, or something to filter out material, you are going to have the problem every time you move water through there. So maybe it's a combination of things too. If we could reduce the amount of material moving below Laguna Dam, then look at maybe at some point in time doing something to recreate the wet areas that we had below there.

But there is no point in reopening the Colorado from Laguna to the Hila (phonetic) if we are going to not control materials from the dam. It just isn't, you know, we're spinning our wheels; we've done that before. And if we could find a more permanent solution to keep it above, since you guys have the dredge working there all the time anyway that we could keep it up with both (inaudible).

JOHNNY: One more. What's the purpose of the rock?

MR. SIMES: The rock, we're -- actually, Don

could probably answer that one best.

MR. YOUNG: It pulls water service elevation up for the -- facility works upstream, so the facility basing would be more efficiently removing the materials as it gets down.

JOHNNY: In other words, no matter what you do below, it needs to stay (inaudible).

MR. YOUNG: Yes.

MS. GARVEY: Any other comments or questions? Okay. We are going to continue with the open house. All the reclamation employees are still going to be available to answer questions one-on-one if you have any more questions. I've got a paper easel out there, if anybody wants to provide comments even more informally.

And if we go back to the end of the slides and look at the handout that everybody received on how to provide input. We have all your comments that we made here in the meeting, and if you want to still provide more detailed comments in writing, E-mail or anything like that, you are more than welcome. Any of those ways on how to provide input, and we can get those issues addressed in the environment assessment. Again, thank you guys for coming. We really appreciate your input.

(End of meeting at 7:12 p.m.)

STATE OF CALIFORNIA)
)
COUNTY OF RIVERSIDE)

I, Silvia D. Giddis, C.S.R. 12014, Certified Shorthand Reporter for the State of California do hereby certify;

That the foregoing meeting was transcribed by me, and that the foregoing is a true record of the same.

I further certify that I am not of counsel nor attorney for either of the parties hereto or in any way interested in the event of this case, and that I am not related to either of the parties hereto.

WITNESS my hand this 30th day of September 2005.

_____
SILVIA D. GIDDIS
C.S.R. NO. 12014

APPENDIX C COMMENT LETTERS RECEIVED

- **FEDERAL AGENCY COMMENTS**
  - Bureau of Land Management, Aaron Curtis
  - U.S. Department of the Interior, U.S. Fish and Wildlife Service, Stephen L. Spangle
- **STATE AGENCY COMMENTS**
  - Arizona Game and Fish Department, Russell K. Engel
- **NON-GOVERNMENTAL ORGANIZATION COMMENTS**
  - Center for Biological Diversity, Michelle T. Harrington
  - Yuma Valley Rod and Gun Club, Jim Ammons

FEDERAL AGENCY COMMENTS

Comments of Aaron Curtis, Bureau of Land Management (via e-mail)

These comments are in reference to the Bureau of Reclamation Yuma Area Office's proposed Laguna Dam Restoration project. According to U.S. Department of the Interior Departmental Manual, Part 613, the Bureau of Land Management (BLM) is primarily responsible for managing natural resource-based recreation on Reclamation acquired and withdrawn lands along the lower Colorado River.

If implemented, the project may create up to 150 acres of additional open water behind Laguna Dam for the purpose of improving water delivery capablities along the lower Colorado River. The BLM Yuma Field Office anticipates that the proposed project would also indirectly create additional recreational boating access and fishing opportunities behind Laguna Dam. From demonstrated public comments throughout the project's scoping process and past experience in these matters, the BLM believes that these new opportunities may drastically increase the existing recreational use of the area. This may warrant the installation of recreation facilities to address public health and safety and resource protection concerns. The BLM looks forward to future coordination to ensure that any recreation developments in this area will not affect Reclamation's management responsibilities of the lower Colorado River.

If you have any further questions please contact BLM Outdoor Recreation Planner Aaron Curtis at (928) 317-3238 or BLM Wildlife Biologist Jeffrey Young at (928) 317-3213.

Comments of Stephen L. Spangle, U.S. Department of the Interior, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office

See attached letter.

ENV-9.00 - Environmental Assessment

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

In Reply Refer to:
AESO/SE
02-21-02-I-0271
02-21-04-F-0161

September 22, 2005

Memorandum

To: Director, Resource Management Office, Yuma Area Office, Bureau of Reclamation, Yuma, Arizona (YAO-7210, ENV-1.10)

From: Field Supervisor

Subject: Laguna Restoration Project, Yuma County, Arizona and Imperial County, California

This responds to your request for public and agency input on the development of the Environmental Assessment for the Laguna Restoration Project in Yuma County, Arizona and Imperial County, California. The proposed action would take place above Laguna Dam on the lower Colorado River.

The current project design calls for the removal of more than two million cubic yards of sediment from the existing reservoir area above Laguna Dam to create a 1,110 acre-feet water storage basin. This storage would be used primarily to trap sluicing flows, with opportunities to trap overflows from Imperial Dam for later release to meet water orders downstream.

The current project design for a 1,110 acre-foot storage basin is included in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) as a covered action for the Bureau of Reclamation. As documented and provided for in the Biological Assessment, Biological Opinion, and Habitat Conservation Plan for the LCR MSCP, the loss of marsh, honey mesquite, and cottonwood-willow riparian habitats that support the LCR MSCP covered species is mitigated through the implementation of the Habitat Conservation Plan. A final determination of the coverage to the proposed action from the LCR MSCP will be required once the final project plans are completed to ensure that the project has not significantly deviated from that described in the Biological Assessment.

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Keywords

Julian Rex

Thank you for the opportunity to provide comments on the Laguna Restoration Project. If we may be of further assistance, please contact me at (602) 242-0210 x244 or Lesley Fitzpatrick (x236).

Steven L. Spangle

cc: Program Manager, LCR MSCP, Bureau of Reclamation, Boulder City, NV (LC-8000)
Federal Projects, Fish and Wildlife Service, Phoenix, AZ
Ms. Marjorie Blaine, Corps of Engineers, Tucson, AZ

W:\Lesley Fitzpatrick\02-271 Laguna Rest scoping.doc:cgg

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COMMENTS FROM STATE AGENCIES

Comments of Arizona Game and Fish, Russell K. Engel

See attached letter.

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THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV

Yuma Office, 9140 E 28" Street, Yuma, AZ 8536S3596 (928) 342-0091

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DIRECTOR
DUANE L. SHROUFE

October 14, 2005

Ms. Kim Garvey Bureau
of Reclamation Yuma
Area Office 7301 Calle
Agua Salada Yuma, AZ
85364

Re: Preliminary Comments on Proposed Laguna Restoration Project

Dear Ms. Garvey:

The following are Arizona Game and Fish Department's (Department) preliminary comments on the proposed Laguna Restoration project based on information presented at a meeting on September 27th, 2005 and subsequent information received by electronic mail on October 6th, 2005.

The Department follows direction given by the Arizona Game and Fish Commission (Commission) through Commission Policy when evaluating and making recommendations on land and water projects. Commission policies, that have direct bearing on this proposed project, include the following:

> "It is the policy of the Arizona Game and Fish Commission that the Department shall recognize riparian habitats as areas of critical environmental importance to wildlife and fisheries. The Department shall actively encourage management practices that will result in maintenance of current riparian habitat, and restoration of past or deteriorated riparian habitat in accordance with the Department Wildlife Habitat Compensation procedures." The Department's Wildlife and Wildlife Habitat Compensation Procedures are attached for your reference.
>
> "It is the policy of the Arizona Game and Fish Commission that the Department shall seek compensation at a 100% level, when feasible, for actual or potential habitat losses resulting from land and water projects."

The Department notes that the only information that has been provided at this time includes a proposed "footprint" of the project along with a map showing the vegetation types that occur within the project area and a table with the number of acres of each habitat type that will be impacted. The Bureau of Reclamation indicates that only 7 acres of wetlands will be impacted by this project. From the maps provided and a site inspection it appears to the Department that more than 7 acres of wetlands will be removed by this project.

The Department further notes that there is no analysis of potential impacts to wildlife presented at this time. This analysis must be done through the National Environmental Policy Act (NEPA) process and we look forward to reviewing that analysis. This analysis will enable the Department to comment on specific impacts to wildlife and mitigation that may be required for potential impacts. We recognize and understand that this project is included in the Multi-Species Conservation Plan (MSCP) for the Lower Colorado River. We further understand that potential impacts to Threatened and Endangered species listed under the Endangered Species Act will be mitigated through implementation of the MSCP. Impacts to all wildlife species must be analyzed and disclosed through the NEPA process and consistent with the Fish and Wildlife Coordination Act. After an analysis of impacts to all wildlife and wildlife habitats has been conducted a determination of the need, if any, for additional mitigation for impacts to wildlife and wildlife habitat not covered by MSCP can be made.

Of special concern to the Department is how the reservoir behind Laguna Dam will be operated after completion of this proposed project. We note that there is high value riparian habitat in the "old river channel" adjacent to the project area that would be adversely impacted if the reservoir is operated at a lower elevation than it is currently operated at.

Thank you for the opportunity to provide these preliminary comments. If you have any questions regarding these comments please contact me at 928-341-4042.

Sincerely,

Russell K Engel

Russell K. Engel Habitat
Program Manager Region IV,
Yuma

RKE:rke

cc: Larry Voyles, Regional Supervisor, Region IV

Bob Broscheid, Chief, Habitat Branch

Marjorie Blaine, U.S. Army Corps of Engineers

Leslie Fitzpatrick, U.S. Fish and Wildlife Service

Arturo Delgado, California Department of Fish and Game

Attachment

Department Policy: It shall be the policy of the Department to develop adequate compensation plans for actual or potential habitat losses resulting from land and water projects in accordance with State and Federal laws. Habitat compensation plans will seek compensation at a 100% level, where feasible, and will be developed using habitat resource category designations. See Commission ^Policy A2.16.

Authority: The Director of the Arizona Game and Fish Department is authorized under A.R.S. Title 17-211, Subsection D, to perform the necessary administrative tasks required to manage the wildlife resources of the State of Arizona. Pursuant to those duties and in accordance with federal environmental laws and resource management acts, such as the National Environmental Policy Act, Fish and Wildlife Coordination Act, and Endangered Species Act, the Director is further charged with cooperating in the determination of potential impacts to Arizona's wildlife resources resulting from federally funded land and water projects. In addition, a Commission M.O.U. assigns similar responsibilities for evaluating proposed projects on lands administered by the State Land Department. An integral part of this process is the development of adequate compensation measures aimed at eliminating or reducing project-associated impacts.

Procedure: Criteria used to identify general compensation goals are as follows:

A. Resource Category I.

1. **Designation Criteria.** Habitat in this category are of the highest value to Arizona wildlife species, and are unique and/or irreplaceable on a statewide or ecoregion basis.
2. **Compensation Goal.** No loss of existing in-kind habitat value.
3. **Guideline.** The Department will recommend that all potential losses of existing habitat values be prevented. Insignificant changes that would not result in adverse impacts to habitat values may be acceptable provided they will have no significant cumulative impact
4. **Habitat Types.** Habitat types associated with Resource Category I shall include, but not limited to the following examples:
   a. Perennial Stream Habitats.
   b. Wetlands and Riparian habitats of at least one acre in size which are associated with perennial waters. Biotic communities included in this classification follow descriptions provided in Brown (1982) and Henderson and Minckley (1984).
   c. Key utilization areas for species listed or proposed for listing under the Endangered Species Act of 1973 as Threatened or Endangered and Endangered State Threatened Native Wildlife species.

B. Resource Category II.

1. **Designation Criteria.** Habitats in this category are of high value for Arizona wildlife species and are relatively scarce or becoming scarce on a statewide or ecoregion basis.
2. **Compensation Goal.** No net loss of existing habitat value, while minimizing loss of in-kind value.
3. **Guideline.** The Department will recommend that all potential losses of Resource Category II habitat values be avoided or minimized. If significant losses are likely to occur, the Department will recommend alternatives to immediately rectify, reduce, or eliminate these losses over time.
4. **Habitat Types.** Habitat types associated with Resource Category II shall include, but not limited to, the following examples:
   a. Key utilization areas for antelope and bighorn sheep.
   b. Key utilization areas for Threatened and Candidate State Threatened Native Wildlife species, candidate species for federal listing as Threatened or Endangered (Categories 1 and 2).
   c. Actual or potential reintroduction sites for species that are listed as Extirpated or Endangered on the State Threatened Native Wildlife list.
   d. Blue ribbon fishing areas (i.e., Lee's Ferry and Becker Lake).
   e. Isolated mountain ranges providing Subalpine-coniferous forest habitats (i.e., Pinaleno Mountains).
   f. State and federally operated game preserves, refuges or wildlife areas.
   g. Montane meadows.

C. Resource Category III.

1. **Designation Criteria.** Habitats in this category are of high to medium value for Arizona wildlife species, and are relatively abundant on a statewide basis.
2. **Mitigation Goal.** No net loss of habitat value.
3. **Guidelines.** The Department will recommend ways to minimize or avoid habitat losses. Anticipated losses will be compensated by replacement of habitat values in-kind, or by substitution of high value habitat types, or by increased management of replacement habitats, so that no net loss occurs.
4. **Habitat Types Involved.** Habitats in this category are of a natural, undisturbed condition or they involve bodies of water of economic importance and shall include, but not be limited to, the following examples:
   a. Chihuahua, Great Basin, Mohave, and Sonoran Desert habitat types.
   b. Desert-grasslands and Chaparral zones.
   c. Oak and coniferous woodlands and coniferous forests.
   d. Reservoir habitats.

D. Resource Category IV.

1. **Designation Criteria.** Habitats in this category are of medium to low value for Arizona wildlife species, due to proximity to urban developments or low productivity associated with these lands.
2. **Mitigation Goal.** Minimize loss of habitat value.
3. **Guideline.** The Department will recommend ways to avoid or minimize habitat losses. Should losses be unavoidable, the Department may make a recommendation for compensation, based on the significance of the loss.
4. **Habitat Types Involved.** Habitat types associated with Resource Category IV shall include, but not be limited to, the following examples:
   a. Agricultural Lands.
   b. Undeveloped urban areas (i.e., land proximal to waste water treatment facilities, municipal mountain preserves, and undeveloped lands in proximity to municipal and industrial areas).
   c. Habitats exhibiting low wildlife productivity as a result of man's influence.

COMMENTS FROM NON-GOVERNMENTAL AGENCIES

Comments of Michelle T. Harrington, Center for Biological Diversity

See attached letter.

Comments of Jim Ammons, Yuma Valley Rod and Gun Club

See attached letter.

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CENTER FOR BIOLOGICAL DIVERSITY

BECAUSE LIFE IS GOOD.

October 20, 2005

Ms. Kimberly Garvey
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85364

Sent via email to: kgarvey@lc.usbr.gov

Re: Laguna Dam Restoration Project Environmental Assessment

Dear Ms. Garvey:

The Center for Biological Diversity (CBD) is a non-profit, public interest, conservation organization whose mission is to conserve imperiled native species and their threatened habitat and to fulfill the continuing educational goals of our membership and the general public. On behalf of our 14,000 members the CBD submits the following comments for consideration in the preparation of an environmental assessment for the Laguna Dam Restoration Project. These comments are not meant to be exhaustive. We anticipate the future opportunities to provide further comment as part of the NEPA process.

CBD's understanding of the purpose of the project is to remove more than two million cubic yards of sediment from the reservoir to restore storage capacity and restore and maintain regular operations of the dam. We request that the EA review the history of the dam, provide current storage data and current impacts as well as potential impacts resulting from the proposed action. We also request the Bureau review whether an EA is the proper vehicle for evaluation of impacts. We suggest that the full environmental implications of a no-action alternative as well as an alternative that would include the decommissioning of the dam be included in an EIS. The original functions of the dam have been replaced by Imperial Dam, and the necessity of continued operation of Laguna Dam is in question. Economic analyses of the actions would also be appropriate. If the Bureau does not agree that the full range of alternatives should be evaluated, please provide justification.

We request you explain the implications of the Lower Colorado River Multi-species Conservation Program (MSCP) on the proposed project. If the project is a "covered action" within the MSCP, please review and relate the cross-section of allowed habitat loss, actual habitat loss (if any) and mitigation implied in the MSCP. Whether

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P.O. Box 39629 Phoenix, Arizona 85069 602-628-9909 www.biologicaldiversity.org

or not the project is covered by the MSCP, we request the Bureau fully explore the potential impacts to any endangered, threatened, or candidate species or species of concern. These species include the Yuma clapper rail, razorback sucker, southwestern willow flycatcher, and bonytail chub among many others.

Thank you for the opportunity to provide comments on the proposed project. If you have any questions, please contact me at (602) 628-9909 or mharrington@biologicaldiversity.org.

Sincerely,

Michelle T. Harrington
Rivers Program Director
Center for Biological Diversity
PO Box 39629
Phoenix, Arizona 85069
602-628-9909 cell
mharrington@biologicaldiversity.org

September 29, 2005

Ms. Kimberly Garvey, Natural Resource Specialist
US Bureau of Reclamation, Yuma Area Office (YAO)
7301 Calle Agua Salada
Yuma, Arizona 85364

Re: Written Comments Regarding Environmental Assessment (EA) For Laguna Restoration Project Above Laguna Dam

Dear Ms. Garvey,

On behalf of the Yuma Valley Rod and Gun Club (YVRGC), I would like to take this opportunity to thank the Yuma Area Office for the opportunity to provide comment on the scope and content of an EA for the proposed Laguna Restoration project. The YVRGC supports this project, particularly as it holds opportunity for expansion and enhancement of fish habitat and fishing opportunity.

It is our understanding the YAO has determined that an increase water storage capacity above Laguna Dam is needed in order to capture sluicing flows released from Imperial Dam, maintain operational integrity of Laguna Dam and allow for efficient and effective operation of the river below Imperial Dam.

The YVRGC respectfully request that YAO seriously consider enhancing the following areas while the dredge is in place removing deposition above Laguna Dam.
1) Re-open small channel along spillway from Laguna Dam to Betty's Kitchen
2) Re-open channel from confluence of old river channel upstream to to existing boat ramp
3) Provide for fresh water to flow downstream in old river channel into river

Thank you in advance for Reclamation's intentions of this necessary project and will look forward to the enhanced fisheries and fishing opportunity as this project is completed. Please contact Mr. Jon Fugate @ 928.919.0219 should this letter require further explanation.

Respectfully,

Jim Ammons, President

Appendix B

Air Quality Emission Calculations

Table B-1. Emission Source Data for the Laguna Reservoir Dredging Project.

Activity/Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs/ Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Vegetation Removal								
Bulldozer - D6	170	0.50	1	85	7	595	14	8,330
Bulldozer - D7	215	0.50	1	108	7	753	14	10,535
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	5	NA	14	70
Construct Launch Ramp								
Water Truck	400	0.25	1	100	7	700	7	4,900
Grader	165	0.40	1	66	7	462	7	3,234
Dump Truck - 14 CY	400	0.25	2	200	7	1,400	7	9,800
Mobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381
Dredging								
Bulldozer - D6	170	0.50	2	170	6	1,020	480	489,600
Dredge - Pump Engine	950	0.75	1	713	18	12,825	480	6,156,000
Dredge - Generator	125	0.90	1	113	18	2,025	480	972,000
Dredge - Aux. Engine - Hydraulics	350	0.75	1	263	18	4,725	480	2,268,000
Booster Pump	425	0.90	1	383	18	6,885	90	619,650
Tug Boat	330	0.10	1	33	2	66	350	23,100
Work Boat	50	0.10	1	5	2	10	480	4,800
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	2	NA	480	960
Access Road Construction & Maintenance								
Grader	165	0.40	1	66	3	198	5	990
Water Truck	400	0.25	1	100	3	300	5	1,500
Dump Truck - 14 CY	400	0.25	1	100	3	300	5	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	1	NA	5	5
Demobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381

Table B-2. Emission Source Data for the Laguna Reservoir Maintenance Dredging Project.

Activity/Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs/ Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Vegetation Removal								
Bulldozer - D6	170	0.50	1	85	7	595	14	8,330
Bulldozer - D7	215	0.50	1	108	7	753	14	10,535
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	5	NA	14	70
Construct Launch Ramp								
Water Truck	400	0.25	1	100	7	700	7	4,900
Grader	165	0.40	1	66	7	462	7	3,234
Dump Truck - 14 CY	400	0.25	2	200	7	1,400	7	9,800
Mobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381
Maintenance Dredging								
Bulldozer - D6	170	0.50	1	85	6	510	150	76,500
Bulldozer - D7	215	0.50	1	108	7	753	16	12,040
Dredge - Pump Engine	950	0.75	1	713	18	12,825	150	1,923,750
Dredge - Generator	125	0.90	1	113	18	2,025	150	303,750
Dredge - Aux. Engine - Hydraulics	350	0.75	1	263	18	4,725	150	708,750
Booster Pump	425	0.90	1	383	18	6,885	60	413,100
Tug Boat	330	0.10	1	33	2	66	75	4,950
Work Boat	50	0.10	1	5	2	10	150	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	2	NA	150	300
Access Road Construction & Maintenance								
Grader	165	0.40	1	66	3	198	5	990
Water Truck	400	0.25	1	100	3	300	5	1,500
Dump Truck - 14 CY	400	0.25	1	100	3	300	5	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	1	NA	5	5
Demobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381

Construction Schedule (Estimate based on 10/25/05 Schedule)

Vegetation Removal -	May 1 '06 - June 17 '06
Construct Launch Ramp -	June 17 '06 - June 24 '06
Mobilize Dredge -	June 24 '06 - July 1 '06
Pipe Assembly -	June 24 '06 - July 1 '06
Dredge Operations -	July 3 '06 - April 3 '09 (36 months)
Access Road Construction & Maintenance -	June 17 '06 - June 24 '06 + during dredge operations
Disassemble Piping -	April 3 '09 - April 10 '09
Demobilize Dredge -	April 3 '09 - April 10 '09
Periodic Maintenance Dredging -	Occurs every 4 years.

Table B-3. Air Emission Factors for the Construction/Operation of the Laguna Reservoir Project.

Source Type	*Fuel Type*	*Emission Factors (Grams/Horsepower-Hour)*						*References*
		ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*	
Off-Road Equipment - 25-50 Hp	D	2.06	5.92	5.94	0.10	0.70	0.70	(1)
Off-Road Equipment - 51-120 Hp	D	1.11	3.77	7.56	0.10	0.77	0.77	(1)
Off-Road Equipment - 121-175 Hp	D	0.71	3.04	6.94	0.10	0.42	0.42	(1)
Off-Road Equipment - 176-250 Hp	D	0.46	1.48	6.66	0.10	0.23	0.23	(1)
Off-Road Equipment - 251-500 Hp	D	0.37	1.73	5.51	0.10	0.20	0.20	(1)
Off-Road Equipment - 501-750 Hp	D	0.46	1.99	6.66	0.10	0.24	0.24	(1)
Off-Road Equipment - >750 Hp	D	0.47	2.02	6.48	0.10	0.20	0.20	(1)
Dredge Generator - 121-175 Hp - Year 2002	D	0.68	2.70	6.90	0.10	0.38	0.38	(2)
Booster Pump - 251-500 Hp - Year 2000	D	0.32	2.70	6.25	0.10	0.15	0.15	(2)
Dredge Pump Engine - >750 Hp - Year 2002	D	0.68	2.70	8.17	0.10	0.38	0.38	(2)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	27.50	13.75	(3)
Off-Road Equipment - Gasoline (Lbs/hp-hr)	G	0.02	0.44	0.01	0.001	0.001	0.001	(4)

Notes: (1) Composite emission factors developed from ARB OFFROAD emissions model (1999) and based on average California equipment fleet age distributions for project year 2005.

(2) Emission factors obtained from the ARB OFFROAD emissions model to match known manufactured years for these equipment.

(3) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 75% from uncontrolled levels to represent compliance with SCAQMD Rule 403 - Fugitive Dust.

(4) Emission factors for uncontrolled gasoline engines and units in lbs/Hp-hr from section 3.3 of AP-42 (EPA 1996).

Table B-4. Total Emissions for the Laguna Reservoir Dredging Project.

	Tons/Activity					
Activity/Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Vegetation Removal						
Bulldozer - D6	0.01	0.03	0.06	0.00	0.00	0.00
Bulldozer - D7	0.01	0.02	0.08	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	0.96	0.48
Subtotal	0.01	0.05	0.14	0.00	0.97	0.49
Construct Launch Ramp						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
Grader	0.00	0.01	0.02	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.02	0.06	0.00	0.00	0.00
Subtotal	0.01	0.04	0.11	0.00	0.00	0.00
Mobilize/ Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00
Dredging						
Bulldozer - D6	0.38	1.64	3.74	0.05	0.22	0.22
Dredge - Pump Engine	4.61	18.32	55.44	0.68	2.58	2.58
Dredge - Generator	0.73	2.89	7.39	0.11	0.41	0.41
Dredge - Aux. Engine - Hydraulics	0.93	4.33	13.78	0.25	0.50	0.50
Booster Pump	0.22	1.84	4.27	0.07	0.10	0.10
Tug Boat	0.01	0.04	0.14	0.00	0.01	0.01
Work Boat	0.04	1.05	0.03	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	13.20	6.60
Subtotal	6.92	30.12	84.79	1.16	17.02	10.42
Access Road Construction & Maintenance						
Grader	0.00	0.00	0.01	0.00	0.00	0.00
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.00	0.01	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	0.07	0.03
Subtotal	0.00	0.01	0.03	0.00	0.07	0.04
Demobilize/Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00

Table B-5. Annual Emissions for the Laguna Reservoir Maintenance Dredging Project.

	Tons/Year					
Activity/Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Vegetation Removal						
Bulldozer - D6	0.01	0.03	0.06	0.00	0.00	0.00
Bulldozer - D7	0.01	0.02	0.08	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	0.96	0.48
Subtotal	0.01	0.05	0.14	0.00	0.97	0.49
Construct Launch Ramp						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
Grader	0.00	0.01	0.02	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.02	0.06	0.00	0.00	0.00
Subtotal	0.01	0.04	0.11	0.00	0.00	0.00
Mobilize/ Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00
Maintenance Dredging						
Bulldozer - D6	0.06	0.26	0.58	0.01	0.04	0.04
Bulldozer - D7	0.01	0.02	0.09	0.00	0.00	0.00
Dredge - Pump Engine	1.44	5.73	17.32	0.21	0.81	0.81
Dredge - Generator	0.23	0.90	2.31	0.03	0.13	0.13
Dredge - Aux. Engine - Hydraulics	0.29	1.35	4.31	0.08	0.16	0.16
Booster Pump	0.15	1.23	2.85	0.05	0.07	0.07
Tug Boat	0.00	0.01	0.03	0.00	0.00	0.00
Work Boat	0.01	0.33	0.01	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	4.13	2.06
Subtotal	2.19	9.83	27.50	0.38	5.32	3.26
Access Road Construction & Maintenance						
Grader	0.00	0.00	0.01	0.00	0.00	0.00
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.00	0.01	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	0.07	0.03
Subtotal	0.00	0.01	0.03	0.00	0.07	0.04
Demobilize/Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00
Total Peak Annual Emissions (1)	2.22	9.96	27.89	0.39	6.37	3.79
NEPA Significance Thresholds	100	100	100	100	100	100

Note: (1) The peak annual emissions period would include all activities.

Table B-6. Peak Annual Emissions for the Laguna Reservoir Dredging Project.

	Tons/Year					
Activity/Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Dredging						
Bulldozer - D6	0.19	0.82	1.87	0.03	0.11	0.11
Dredge - Pump Engine	2.31	9.16	27.72	0.34	1.29	1.29
Dredge - Generator	0.36	1.45	3.70	0.05	0.20	0.20
Dredge - Aux. Engine - Hydraulics	0.46	2.16	6.89	0.13	0.25	0.25
Booster Pump	0.11	0.92	2.13	0.03	0.05	0.05
Tug Boat	0.00	0.02	0.07	0.00	0.00	0.00
Work Boat	0.02	0.53	0.01	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	6.60	3.30
Subtotal	3.46	15.06	42.39	0.58	8.51	5.21
Demobilize/Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00
Total Peak Annual Emissions (1)	3.46	15.08	42.45	0.58	8.51	5.21
NEPA Significance Thresholds	100	100	100	100	100	100

Note: (1) The peak annual emissions period only would include dredging and demobilizing/dredge and piping activities.

Table B-7. Conformity Emission Source Data for the Laguna Reservoir Dredging Project.

Activity/Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs/ Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Vegetation Removal								
Bulldozer - D6	170	0.50	1	85	7	595	14	8,330
Bulldozer - D7	215	0.50	1	108	7	753	14	10,535
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	5	NA	14	70
Construct Launch Ramp								
Water Truck	400	0.25	1	100	7	700	7	4,900
Grader	165	0.40	1	66	7	462	7	3,234
Dump Truck - 14 CY	400	0.25	2	200	7	1,400	7	9,800
Mobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381
Dredge Operations								
Bulldozer - D6	170	0.50	2	170	6	1,020	480	489,600
Dredge - Pump Engine	950	0.75	1	713	18	12,825	480	6,156,000
Dredge - Generator	125	0.90	1	113	18	2,025	480	972,000
Dredge - Aux. Engine - Hydraulics	350	0.75	1	263	18	4,725	480	2,268,000
Booster Pump (1)	Not Applicable							
Tug Boat	330	0.10	1	33	2	66	350	23,100
Work Boat	50	0.10	1	5	2	10	480	4,800
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	2	NA	480	960
Access Road Construction & Maintenance								
Grader	165	0.40	1	66	3	198	5	990
Water Truck	400	0.25	1	100	3	300	5	1,500
Dump Truck - 14 CY	400	0.25	1	100	3	300	5	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	1	NA	5	5
Demobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381

Note: (1) The booster pump requires an ICAPCD air permit and therefore is exempt from the Conformity Analysis.

Table B-8. Conformity Emission Source Data for the Laguna Reservoir Maintenance Dredging Project.

Activity/Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs/ Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Vegetation Removal								
Bulldozer - D6	170	0.50	1	85	7	595	14	8,330
Bulldozer - D7	215	0.50	1	108	7	753	14	10,535
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	5	NA	14	70
Construct Launch Ramp								
Water Truck	400	0.25	1	100	7	700	7	4,900
Grader	165	0.40	1	66	7	462	7	3,234
Dump Truck - 14 CY	400	0.25	2	200	7	1,400	7	9,800
Mobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381
Maintenance Dredging								
Bulldozer - D6	170	0.50	1	85	6	510	150	76,500
Bulldozer - D7	215	0.50	1	108	7	753	16	12,040
Dredge - Pump Engine	950	0.75	1	713	18	12,825	150	1,923,750
Dredge - Generator	125	0.90	1	113	18	2,025	150	303,750
Dredge - Aux. Engine - Hydraulics	350	0.75	1	263	18	4,725	150	708,750
Booster Pump (1)	Not Applicable							
Tug Boat	330	0.10	1	33	2	66	75	4,950
Work Boat	50	0.10	1	5	2	10	150	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	2	NA	150	300
Access Road Construction & Maintenance								
Grader	165	0.40	1	66	3	198	5	990
Water Truck	400	0.25	1	100	3	300	5	1,500
Dump Truck - 14 CY	400	0.25	1	100	3	300	5	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	1	NA	5	5
Demobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381

Note: (1) The booster pump requires an ICAPCD air permit and therefore is exempt from the Conformity Analysis.

Table B-9. Conformity Emissions for the Laguna Reservoir Dredging Project (Peak Year).

	Tons/Year		
Activity/Equipment Type	*ROG*	*NOx*	*PM10*
Dredging			
Bulldozer - D6	0.19	1.87	0.11
Dredge - Pump Engine	2.31	27.72	1.29
Dredge - Generator	0.36	3.70	0.20
Dredge - Aux. Engine - Hydraulics	0.46	6.89	0.25
Tug Boat	0.00	0.07	0.00
Work Boat	0.02	0.01	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	3.30
Subtotal	3.35	40.26	5.16
Demobilize/ Dredge & Piping			
Boom Truck - 15 Ton	0.00	0.03	0.00
Forklift	0.00	0.01	0.00
Lattice Boom Crane	0.00	0.02	0.00
Subtotal	0.00	0.05	0.00
Total Emissions	3.36	40.31	5.16
Conformity Thresholds	100	100	100

Note: (1) The booster pump requires an ICAPCD air permit and therefore is exempt from the Conformity Analysis.

Table B-10. Conformity Emissions for the Laguna Reservoir Maintenance Dredging Project.

	Tons/Year		
Activity/Equipment Type	*ROG*	*NOx*	*PM10*
Vegetation Removal			
Bulldozer - D6	0.01	0.06	0.00
Bulldozer - D7	0.01	0.08	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.48
Subtotal	0.01	0.14	0.49
Construct Launch Ramp			
Water Truck	0.00	0.03	0.00
Grader	0.00	0.02	0.00
Dump Truck - 14 CY	0.00	0.06	0.00
Subtotal	0.01	0.11	0.00
Mobilize/ Dredge & Piping			
Boom Truck - 15 Ton	0.00	0.03	0.00
Forklift	0.00	0.01	0.00
Lattice Boom Crane	0.00	0.02	0.00
Subtotal	0.00	0.05	0.00
Maintenance Dredging			
Bulldozer - D6	0.06	0.58	0.04
Bulldozer - D7	0.01	0.09	0.00
Dredge - Pump Engine	1.44	17.32	0.81
Dredge - Generator	0.23	2.31	0.13
Dredge - Aux. Engine - Hydraulics	0.29	4.31	0.16
Tug Boat	0.00	0.03	0.00
Work Boat	0.01	0.01	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	2.06
Subtotal	2.04	24.65	3.19
Access Road Construction & Maintenance			
Grader	0.00	0.01	0.00
Water Truck	0.00	0.01	0.00
Dump Truck - 14 CY	0.00	0.01	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.03
Subtotal	0.00	0.03	0.04
Demobilize/Dredge & Piping			
Boom Truck - 15 Ton	0.00	0.03	0.00
Forklift	0.00	0.01	0.00
Lattice Boom Crane	0.00	0.02	0.00
Subtotal	0.00	0.05	0.00
Total Emissions	2.07	25.04	3.72
Conformity Thresholds	100	100	100

Note: (1) The booster pump requires an ICAPCD air permit and therefore is exempt from the Conformity Analysis.

Table B-11. Emission Source Data for the Laguna Reservoir Dredging Project (Alternative 2).

Activity/Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs/ Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Vegetation Removal								
Bulldozer - D6	170	0.50	1	85	7	595	30	17,850
Bulldozer - D7	215	0.50	1	108	7	753	30	22,575
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	5	NA	30	150
Construct Launch Ramp								
Water Truck	400	0.25	1	100	7	700	7	4,900
Grader	165	0.40	1	66	7	462	7	3,234
Dump Truck - 14 CY	400	0.25	2	200	7	1,400	7	9,800
Mobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381
Dredging								
Bulldozer - D6	170	0.50	2	170	6	1,020	998	1,017,960
Dredge - Pump Engine	950	0.75	1	713	18	12,825	998	12,799,350
Dredge - Generator	125	0.90	1	113	18	2,025	998	2,020,950
Dredge - Aux. Engine - Hydraulics	350	0.75	1	263	18	4,725	998	4,715,550
Booster Pump	425	0.90	1	383	18	6,885	186	1,280,610
Tug Boat	330	0.10	1	33	2	66	725	47,850
Work Boat	50	0.10	1	5	2	10	998	9,980
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	2	NA	998	1,996
Access Road Construction & Maintenance								
Grader	165	0.40	1	66	3	198	5	990
Water Truck	400	0.25	1	100	3	300	5	1,500
Dump Truck - 14 CY	400	0.25	1	100	3	300	5	1,500
Fugitive Dust - Acres disturbed/day and total days	NA	NA	NA	NA	1	NA	5	5
Demobilize/Dredge & Piping								
Boom Truck - 15 Ton	300	0.50	1	150	7	1,050	4	4,200
Forklift	65	0.50	1	33	7	228	4	910
Lattice Boom Crane	345	0.35	1	121	7	845	4	3,381

Table B-12. Total Emissions for the Laguna Reservoir Dredging Project (Alternative 2).

	Tons/Activity					
Activity/Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Vegetation Removal						
Bulldozer - D6	0.01	0.06	0.14	0.00	0.01	0.01
Bulldozer - D7	0.01	0.04	0.17	0.00	0.01	0.01
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	2.06	1.03
Subtotal	0.03	0.10	0.30	0.00	2.08	1.05
Construct Launch Ramp						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
Grader	0.00	0.01	0.02	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.02	0.06	0.00	0.00	0.00
Subtotal	0.01	0.04	0.11	0.00	0.00	0.00
Mobilize/ Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00
Dredging						
Bulldozer - D6	0.80	3.41	7.78	0.11	0.47	0.47
Dredge - Pump Engine	9.59	38.09	115.27	1.41	5.36	5.36
Dredge - Generator	1.51	6.01	15.37	0.22	0.85	0.85
Dredge - Aux. Engine - Hydraulics	1.93	8.99	28.64	0.52	1.03	1.03
Booster Pump	0.45	3.81	8.82	0.14	0.21	0.21
Tug Boat	0.02	0.09	0.29	0.01	0.01	0.01
Work Boat	0.08	2.19	0.05	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	27.45	13.72
Subtotal	14.39	62.61	176.23	2.42	35.38	21.66
Access Road Construction & Maintenance						
Grader	0.00	0.00	0.01	0.00	0.00	0.00
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
Dump Truck - 14 CY	0.00	0.00	0.01	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	0.07	0.03
Subtotal	0.00	0.01	0.03	0.00	0.07	0.04
Demobilize/Dredge & Piping						
Boom Truck - 15 Ton	0.00	0.01	0.03	0.00	0.00	0.00
Forklift	0.00	0.00	0.01	0.00	0.00	0.00
Lattice Boom Crane	0.00	0.01	0.02	0.00	0.00	0.00
Subtotal	0.00	0.02	0.05	0.00	0.00	0.00

Table B-13. Peak Annual Emissions for the Laguna Reservoir Dredging Project (Alternative 2).

	Tons/Year					
Activity/Equipment Type (1)	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Dredging						
Bulldozer - D6	0.27	1.14	2.59	0.04	0.16	0.16
Dredge - Pump Engine	3.20	12.70	38.42	0.47	1.79	1.79
Dredge - Generator	0.50	2.00	5.12	0.07	0.28	0.28
Dredge - Aux. Engine - Hydraulics	0.64	3.00	9.55	0.17	0.34	0.34
Booster Pump	0.15	1.27	2.94	0.05	0.07	0.07
Tug Boat	0.01	0.03	0.10	0.00	0.00	0.00
Work Boat	0.03	0.73	0.02	0.00	0.00	0.00
Fugitive Dust - Acres disturbed/day and total days	0.00	0.00	0.00	0.00	9.15	4.57
Subtotal	4.80	20.87	58.74	0.81	11.79	7.22
Total Peak Annual Emissions (1)	4.80	20.87	58.74	0.81	11.79	7.22
NEPA Significance Thresholds	100	100	100	100	100	100

Appendix C

Correspondence

ENV-1.00

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

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DATE	INITIALS	CODE
5/17	JD	7210
5/17	JD	7200
		7000

Classification
Project
Control No. 6000888
Folder 1937
Keywords

In Reply Refer to:
AESO/SE
02-21-02-I-0271
02-21-04-F-0161

May 15, 2006

Memorandum

To: Director, Resource Management Office, Yuma Area Office, Bureau of Reclamation, Yuma, Arizona (YAO-7210, ENV-1.10)

From: Field Supervisor

Subject: Laguna Restoration Project, Yuma County, Arizona and Imperial County, California

This responds to your May 8, 2006, request for Fish and Wildlife Service (FWS) concurrence with your determination for the Laguna Restoration Project in Yuma County, Arizona and Imperial County, California as a covered action under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP).

The current project design for a 1,500 acre-foot storage basin is included in the list of Bureau of Reclamation (Reclamation) proposed actions as detailed in the Biological Assessment and confirmed in the Biological Opinion for the LCR MSCP. As documented and provided for in the LCR MSCP program documents, the loss of marsh, honey mesquite, and cottonwood-willow riparian habitats that support the LCR MSCP covered species is mitigated through the implementation of the Habitat Conservation Plan.

Thank you for the opportunity to provide our concurrence on the LCR MSCP status of the Laguna Restoration Project. If we may be of further assistance, please contact me at (602) 242-0210 x244 or Lesley Fitzpatrick (x236).

Brenda H Smith

Steven L. Spangle

cc: Program Manager, LCR MSCP, Bureau of Reclamation, Boulder City, NV (LC-8000)
Federal Projects, Fish and Wildlife Service, Phoenix, AZ
Ms. Marjorie Blaine, Corps of Engineers, Tucson, AZ

\\lfw2azp-fp1\workfiles\Lesley Fitzpatrick\02-271 Laguna Rest concurrence.doc:bml

S.H.P.O.- 2005 - 2245 (26321)

United States Department of the Interior

BUREAU OF RECLAMATION
Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
LC-2632
ENV-3.00

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ARIZONA STATE PARKS/S.H.P.O.

Mr. James Garrison
State Historic Preservation Officer
Arizona State Parks
1300 West Washington
Phoenix, AZ 85007

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ACTION CODE ✓
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DATE	INITIALS	CODE
1/3	Kic	7210
12/21	TB	7200
		7300
		7000

Classification
Project
Control No. 5002523
Folder I.D.
Keyword 1008

Subject: Laguna Dam Restoration Project Cultural Inventory - Finding of No Historic Properties Affected

Dear Mr. Garrison:

Reclamation has plans to dredge approximately two million cubic yards of accumulated silt from a 150-acre area behind Laguna Dam on Reclamation and Reservation land. We initiated consultation with your office in October 2005 (letter enclosed). ASM Affiliates have conducted a cultural resources inventory over the accessible portions of the project area. A representative from the Quechan Tribe (Tribe) accompanied the archaeologist during the fieldwork. The enclosed report, "A Cultural Resources Inventory and Evaluation for the Laguna Dam Restoration Project, Imperial County, California, and Yuma County, Arizona," reports the negative findings. Per CFR 800.4(d)(1), Reclamation requests your concurrence on Finding of No Historic Properties Affected.

Reclamation will continue to consult with the Tribe and the Fort Yuma Agency of the Bureau of Indian Affairs as we proceed. The Tribe has acknowledged Reclamation's intent remove sediment from adjacent reservation land (see enclosed Project Layout and map with October 12, 2005 letter).

Due to massive accumulations of sediment and dense vegetation, the majority of the project area is considered culturally non-sensitive. We will require an archaeological monitor while dredging near the historic Laguna Dam and along the interface of the flood plain and first mesa. Dredge sediment materials will be removed and deposited in an existing dredge disposal area

known as the Laguna Desilting Site that is located on Reclamation land.

Thank you in advance for reviewing the report and concurring with Reclamation's finding of No Historic Properties Affected. If you have any questions on the methodology, findings, or proposed monitoring, feel free to contact Archeologist Ms. Renee Kolvet by phone at 702-293-8443 or email, rkolvet@lc.usbr.gov. If you have questions on the scope of work, please contact Project Manager, Kim Garvey by phone at 928-343-8227 or email, kgarvey@lc.usbr.gov.

Concur
Julianne Thatcher
for SHPO
Dec. 14, 2005

Sincerely,

Theresa Brick for
Cynthia Hoeft, Director,
Resource Management Office

Enclosures - 3 (Cultural Report, October 12, 2005 SHPO letter, and Project Layout Map)

cc: Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
California Department of Parks
and Recreation
1416 9th Street, Room 1442-7
Sacramento, CA 95814
(w/encl)

Mr. Bill Pyott
Bureau of Indian Affairs
Fort Yuma Agency
P.O. Box 11000
Yuma, AZ 85366
(w/encl)

Mr. Gary Cantley
Bureau of Indian Affairs
Western Regional Office
P.O. Box 10
Phoenix, AZ 85001
(w/encl)

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ENV-3.00

ARNOLD SCHWARZENEGGER, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov

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DATE	INITIALS	CODE
1/23	AH	7000
1/24	PK	7100
1/24	TB	7200
		7210

Classification 6000131
Project
Control No.
Key 1008

PRJ-13.00-Dam Laguna

January 6, 2006

In Reply Refer To: BUR051017C

Cynthia Hoeft, Director
Resource Management Office
U.S. Department of the Interior
Bureau of Reclamation, Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

Dear Ms. Hoeft:

Re: Laguna Dam Reclamation Project, Imperial County, California, and Yuma County, Arizona.

You are continuing consultation with me, regarding the above noted undertaking, pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act. The Bureau of Reclamation, Yuma Area Office (BUR) is proposing to dredge approximately two million cubic yards of accumulated sediment from a 150 acre area behind Laguna Dam on BUR and Quechan Indian Tribe Reservation lands (Fort Yuma Indian Reservation). The proposed dredging will restore approximate 1,100 acre-feet of storage capacity to the Laguna Dam Reservoir.

The Laguna Dam (completed 1909), which is located within the project Area of Potential Effects (APE), is identified by the BUR as individually eligible for the National Register of Historic Places (NRHP) under criteria A and C. Additionally, it is eligible as a contributing element of the Laguna Dam District, also under criteria A and C, and is a contributing feature of the Yuma Project Irrigation System, also a NRHP eligible district. In addition to your letter of November 22, 2005, you have submitted the following document in support of this undertaking:

- *A Cultural Resources Inventory and Evaluation for the Laguna Dam Restoration Project, Imperial County, California, and Yuma County, Arizona: Laguna Dam Restoration Project* (J. Schaefer and D. Laylander, ASM Affiliates, Inc.: September 2005).

After reviewing your revised letter (submitted via email) of January 4, 2006 and the supporting documentation, I have the following comments.

1) I concur that the Area of Potential Effects is appropriate as per 36 CFR Part 800.4(a)(1) and 800.16(d) and that the efforts made to identify historic properties have been appropriate as per 36 CFR § 800.4(b).

2) I further concur that a finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR Part 800.5(b). My concurrence with this finding is predicated on the implementation, as

proposed by the BUR of proposed monitoring of project activities near the NRHP eligible Laguna Dam; and monitoring, by an archeologist that meets the Secretary of the Interior's professional qualification standards for archeology and a representative of the Quechan Indian Tribe (if so requested by the Tribe) of project activities along the interface of the flood plain and first mesa (i.e., boundary of silted basin). Any discoveries will be treated in accordance with 36 CFR Part 800.13.

3) Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the BUR may have additional future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and for considering historic properties in planning your project. If you require further information, please contact William Soule at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
Eastern Sierra Inland Deserts Region - R6
4665 Lampson Avenue, Suite J
Los Alamitos, CA 90720

November 7, 2005

Ms. Kimberly Garvey
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, AZ 85364

Re: Preliminary Comments on the Proposed Laguna Restoration Project

Dear Ms. Garvey:

The California Department of Fish and Game (Department) provides preliminary comments on biological resources that may be affected by the U.S. Bureau of Reclamation's ("USBR") Proposed Laguna Restoration Project ("Proposed Project") based on the information presented at the meetings on August 31st and September 27th, 2005, and subsequent information received by electronic mail on October 6th, 2005. The purpose of the Proposed Project is to: 1) capture sluicing flows released from Imperial Dam; 2) maintain the operational integrity of Laguna Dam; and 3) operate the river effectively and efficiently below Imperial Dam. The Proposed Project site is located immediately north of Laguna Dam, 13 miles northeast of Yuma, AZ and about five miles downstream from Imperial Dam.

California's fish and wildlife resources, including all plants and animals, are held in trust for the people of the State by and through the Department of Fish and Game. This public trust responsibility is best characterized by the Department's mission statement:

"*The mission of the Department of Fish and Game is to manage California's diverse fish and wildlife, and plant resources, and habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.*"

The public trust obligation mandates the Department to fulfill the policy of the State to encourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the State, including conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (Fish and Game Code, Section 1801 and 1802). The Department has a policy that fish and wildlife resources, and public use thereof, shall be preserved and maintained, in connection with impacts caused by land and water development

projects. The Department will strive to prevent further diminishment of these resources from such projects, to restore resources whenever possible, and to assure that fish and wildlife preservation measures are implemented concurrent with other project features. The Department will seek implementation of appropriate measures to prevent, or fully offset impacts to resources, including losses of habitat. In these capacities, the Department provides the following comments on the Proposed Project.

Project Description

Based on the information provided, the Department views the Proposed Project as having four major components: 1) dredging, excavation, and removal of soil/sediment, vegetation, and other materials to create the approximately 150-acre reservoir; 2) transfer of the materials removed from the created 150 acre reservoir site to disposal site(s), and deposition of materials at disposal site(s); and 3) operational changes of the Colorado River below Imperial Dam, between Imperial and Laguna Dam, and below Laguna Dam, including operations associated with California Sluiceway activities, managing reservoir surface elevations, managing flow releases below Laguna Dam, and any and all other activities associated with operation of the lower Colorado River after reservoir expansion; and 4) maintenance activities needed to maintain operational capacities and functions of reservoir. The Department recommends that a detailed project description for these and any other project components and associated activities be included in the Draft Environmental Assessment ("Draft EA").

Environmental Baseline

The Department believes that updated biological studies should be undertaken as part of establishing an accurate environmental baseline so that a comprehensive effects analysis can be completed. The Department recommends that a complete inventory and assessment of the flora and fauna within and adjacent to all areas directly or indirectly affected by the Proposed Project (as described above), with particular emphasis upon identifying state and federally endangered, threatened, and locally unique species and sensitive habitats be completed, including:

a. Conduct an updated (within the last 2 years) general biological study of the project areas to determine if any sensitive species or habitat (including those mentioned above) may be potentially impacted by the proposed project. A complete inventory and assessment of sensitive fish, wildlife, reptile, and amphibian species should be included in the Draft EA. Seasonal variations in use of the project areas should also be addressed;

b. A review of records from the California Natural Diversity Database

and other area resources indicate that the following species may occur in the project vicinity and could be affected by the Proposed Project: Amphibians and Fish: razorback sucker (*Xyrauchen texanus*); Birds: Coopers hawk (*Accipiter cooperili*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), gilded flicker (*Colaptes chrysoides*), sonoran yellow warbler (*Denroica petechia sonorana*), yellow-breasted chat (*Icteria virens*), Gila woodpecker (*Melanerpes uropygialis*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus*), Yuma clapper rail (*Rallus longirostris yumanensis*), Crissal thrasher (*Toxostoma crissale*), Arizona bell's vireo (*Vireo bellii arizonae*); Mammals: Yuma hispid cotton rat (*Sigmodon hispidus eremicus*); Plants: saguaro (*Carnegiea gigantea*); and all other fish and wildlife resources, including the wetland, and aquatic communities that provide habitat for such species in the area. The Department recommends that the potential direct, indirect, and cumulative impacts to the above-mentioned biological resources be analyzed as part of the Draft EA in assessing if the project may have a significant effect on the environment;

c. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities. Have a qualified botanist conduct a focused rare plant survey during the appropriate time of year following USFWS and/or Department protocols;

d. An updated (within the last 2 years) delineation (acreage and distribution) of cover types within and adjacent to the project areas should be completed to the finest spatial scale possible, and classified according to Anderson and Ohmart (1984). The Department acknowledges that that USBR has indicated that such updates will occur this year, and anticipates that cover type mapping will include all areas affected directly or indirectly by the Proposed Project;

e. Have a qualified biologist conduct focused surveys for state-listed species according to U.S. Fish and Wildlife Service (USFWS) and/or Department protocol. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable;

f. Have a qualified biologist conduct a general avian survey using the "Spot-Mapping Census Technique" in accordance with the following provisions:

- Ten to twelve survey trips through the project areas and a 150 meter buffer (where possible and appropriate based on habitat) around the project areas.
- Survey trips should be evenly distributed over a three month period, between March 15 and June 15 with a minimum of three survey trips per month and no more than one survey trip per week.
- Surveys should be conducted from one hour before to two hours after sunrise, or from two hours before to one hour after sunset.
- Surveys should provide 100 percent coverage of proposed project areas and the 150 meter buffer area;

g. Have a qualified biologist conduct bat and non-flying mammal surveys at the appropriate time of year and time of day when the species are active or otherwise identifiable; and

h. Wetlands should be inventoried and mapped according to the wetland definition and classification system adopted as part of the Fish and Game Commission's wetland policy. The Department has found this definition and classification system to be the most biologically valid of those definitions and classification systems presently utilized in California. Pursuant to the wetland definition and classification system, an area is designated a wetland if one or more of the following three attributes are triggered: 1) at least periodically the land supports predominantly hydrophytes; 2) substrate is predominantly undrained hydric soil; and 3) the substrate is non soil and is saturated with water or at least periodically covered by water. It is important to emphasize that only one of the above criteria needs to be triggered for an area to be designated a wetland. A cursory application of this system to cover types presented in the table entitled, "Laguna Restoration Table-Acres Impacted" indicates that the following vegetation cover types; arrowweed scrub (9.92 acres), bulrush (6.73 acres), cattail (0.08 acre), cattail/phragmites (0.21 acre), coyote willow/salt cedar/ arrowweed (0.46 acre), phragmities (4.86 acres), quailbush/ arrowweed scrub (2.56 acres), salt cedar/arrowweed scrub and woodland (66.51 acres), salt cedar/arrowweed/phragmites (0.20 acre), and screwbean mesquite/salt cedar/seepwillow/arrowweed (21.39 acres) would be defined as wetlands based on plant composition alone. Most, if not all of the plants comprising these vegetation cover types are listed as hydrophytes in the USFWS document entitled "National List of Vascular Plant Species that Occur in Wetlands", and based on the predominance of hydrophytic plants criteria alone, a minimum of 112.92 acres of the 150 acre site are by definition wetlands. A final calculation of wetlands,

pursuant to the Department's wetland definition and classification system, should be conducted following completion of updating the cover type maps and included in the Draft EA.

Effects Analysis

The Department recommends that the Draft EA include a thorough analysis of direct, indirect, cumulative, and growth-inducing impacts expected to adversely affect biological resources, with specific measures to offset such impacts. In particular, the Draft EA should address the following: 1) effects to biological resources within the 150-acre footprint area, and effects to adjacent biological resources through fragmentation and associated deleterious effects; 2) effects to biological resources within the disposal sites, and effects to adjacent biological resources through fragmentation and associated deleterious effects; and 3) effects to biological resources below Laguna Dam caused by elimination of "sluicing flows" that are released from Imperial Dam and flow downstream of Laguna Dam reservoir under existing conditions, and other operational changes.

Mitigation Measures

The Department offers the following comments on developing appropriate avoidance, minimization, or compensation measures. A range of alternatives should be analyzed and included in the Draft EA to ensure that alternatives to the Proposed Project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resource should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Compensation for unavoidable impacts through creation, acquisition, protection, or some combination thereof of high-quality habitat should be addressed and included in the Draft EA.

It is the policy of the State to strongly discourage development in or conversions of wetlands. The Department opposes, consistent with its legal authority, any development or conversion which would result in a reduction of wetland acreage or wetland habitat values. To that end, the Department opposes wetland development proposals unless at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage.

Relationship to Lower Colorado River Multi-Species Conservation Program

The Department recognizes and understands that some form of this project is covered in the biological and conference opinion (BCO) for the Lower Colorado River Multi-Species Conservation Program ("LCR MSCP"). The BCO addresses

the effects to 27 species for which six Federal agencies and 24 Permit Applicants from Arizona, California, and Nevada requested incidental take coverage under section 7 and section 10 of the Endangered Species Act ("ESA"). We further understand that incidental take of species covered under the BCO will be mitigated, pursuant to ESA, through implementation of conservations measures included in the LCR MSCP. All impacts to all biological resources, not solely the incidental take of covered species, must be analyzed and disclosed through the National Environmental Policy Act ("NEPA") process and consistent with the Fish and Wildlife Coordination Act ("FWCA"). After an analysis of impacts to all biological resources has been conducted a determination of the need, if any, for additional mitigation for impacts to all biological resources not covered or addressed by the LCR MSCP BCO can be made. Please also describe similarities and differences, if any, between the Proposed Project as described as part of this process and the one presented on page 105 of the BCO. The Department notes that the BCO only analyzed effects associated with dredging out portions of the settling basin that have filled in and now support vegetation (USFWS BCO, Page 105), which would indicate a smaller reservoir footprint than is currently being proposed. The BCO also did not analyze effects at the disposal sites or to environs downstream of Laguna Dam that could be adversely affected by operational changes at Laguna Dam. Please clarify and specifically identify the effects addressed in the BCO and those that were not addressed, but will be captured in the Draft EA. As previously indicated, the Draft EA should include a comprehensive effects analysis for all project areas that may be directly or indirectly affected by all components and activities of the project.

The Department reiterates that these are preliminary comments, and as more information becomes available additional questions and issues may surface that require further evaluation. The Department appreciates the opportunity to comment on the Proposed Project, and looks forward to working with your staff to ensure that our comments are considered and addressed as part of the NEPA and FWCA. If you have any questions regarding this letter please contact Canh Nguyen at (760) 921-2974.

Sincerely,

Chris Hayes
Senior Environmental Scientist

Copy:

Marjorie Blaine, U.S. Army Corps of Engineers

Leslie Fitzpatrick, U.S. Fish and Wildlife Service

Russell Engel, Arizona Game and Fish Department

Arturo Delgado, California Department of Fish and Game

QUECHAN INDIAN TRIBE
Ft. Yuma Indian Reservation

P.O. Box 1899
Yuma, Arizona 85366-1899
Phone (760) 572-0213
Fax (760) 572-2102

February 10, 2006

Jim Cherry, Area Manager
Yuma Area Office
7301 Called Ague Salad
Yuma, AZ 85364

Subject: Proposed Laguna Dam Restoration Project

Dear Mr. Cherry:

The Quechan Tribe (Tribe) appreciates the opportunity to have accompanied Reclamation's Archeologist during their recent Cultural Resource work above Laguna Dam (Dam) in support of this proposed project. We do look forward to receiving a copy of their report and regarding this initiative our Tribe would also like to provide the following comments.

Our Tribe supports this initiative and feels it's a sound environmental enhancement project for the Southwest. Anyway to save water benefits.us all. Additionally, we'd like to see, once Reclamation's dredge is in that area, if capacity above the Dam could be improved to handle additional water storage space from the toe of the weir by re-creating the channel that use to be there. To that end, Reclamation would have to dredge along the weir's toe between the California and Arizona abutments and cut a channel wide enough to allow boats to pass safely.

That area is almost a mile in-length and many years ago it was wide open and a popular recreation spot, with a boat ramps on both side above the dam. The 1982 flood releases on the Colorado River helped fill that area with sediment and the old channel is now choked-off and been replaced by a lot of non-native vegetation.

The Tribe would also like to suggest further area enhancements above and below the Dam:

1) Removing all non-native vegetation and plant native trees in there place.

2) Open the sediment choked backwaters below the Dam, to include the main channel. That would not only help with water storage but improve the area groundwater table too.

3) Installing picnic tables, armadas, bathrooms and barbecue grills similar to what was there prior to the controlled flood 1983.

Finally, again, the Tribe appreciates the opportunity to review and comment on Reclamation project plans and looks forward to working with you as partner in the future. In closing, please keep me posted on any Centennial plans your agency may have for this structure.

Sincerely,

Michael Jackson, Sr.
President

CENTER FOR BIOLOGICAL DIVERSITY

BECAUSE LIFE IS GOOD.

July 3, 2006

Mr. Julian DeSantiago
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salad
Yuma, AZ 85364

Dear Mr. DeSantiago:

Re: Environmental Assessment for the Laguna Reservoir Restoration Project, Lower Colorado Region, April 2006

Please accept my apologies for delivering these comments beyond the 30-day review schedule ending on June 16th. Thank you for agreeing to consider our comments as time allows in your current schedule as per your email dated Wednesday, June 21, 2006.

The Center for Biological Diversity (Center) is a non-profit, public interest, conservation organization whose mission is to conserve imperiled native species and their threatened habitat and to fulfill the continuing educational goals of our membership and the general public. On behalf of our more than 20,000 members the Center submits the following comments for consideration regarding the environmental assessment for the Laguna Dam Restoration Project.

Reclamation's continued operations of Laguna Dam and the presence of nonnative fish preclude the ability to restore native fish in that region of the river. Razorback sucker and bonytail continue to be imperiled throughout their range due in large part to predation and competition with nonnative fish, dams, and water diversions.

As noted on page 3-25 of the EA, the Laguna reservoir area was not designated as critical habitat for the southwestern willow flycatcher as the habitat was considered protected under the Lower Colorado River Multi-species Conservation Plan (LCRMSCP). The Center had argued against this exclusion as the courts have recognized that habitat protected under a conservation plan (MSCP or HCP) should be designated because of the very fact that special protection has been considered necessary.

Within the final rule for designation of critical habitat for the flycatcher, the U.S. Fish and Wildlife Service (USFWS) correctly acknowledged that habitat inside the boundaries of the conservation plans is essential to the conservation of the species. (USFWS 2005) Southwestern willow flycatcher habitat within the boundaries of the LCRMSCP also meets the definition of critical habitat <u>precisely because</u> it requires the special management purportedly provided by the

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conservation plan. This was the conclusion reached in a 2002 decision by U.S. District Judge David C. Bury in Center for Biological Diversity, et al., v. Norton (CV 01-409, District of Arizona, January 13, 2002.) According to Judge Bury,

> "Here, [the Service's] interpretation of 'critical habitat' is nonsensical. The plain language of the ESA's definition of 'critical habitat' includes habitat which may require species management . . . Hence, a plain reading of the definition of 'critical habitat' means lands essential to the conservation of a species for which special management or protection is possible."

Id. at 13-14, emphasis original.

> ". . . the fact that a particular habitat does, in fact, require special management is demonstrative evidence that the habitat is 'critical.' Defendant, on the other hand, takes the position that if a habitat is actually under 'adequate' management, then that habitat is not *per se* 'critical.' This makes no sense. A habitat would not be subject to special management and protection if it were not essential to the conservation of the species. The fact that a habitat is already under some sort of management for its conservation is absolute proof that habitat is 'critical.'"

Id at 14, emphasis added.

> "[The Service] argues that the phrase 'special management considerations or protection' is ambiguous. However [the Service's] own regulations implementing the ESA provide a clear and unambiguous definition of the phrase. The phrase means 'any methods or procedures useful in protecting physical and biological features of the environment for the conservation of listed species.' [Citation omitted]. Buy using the term 'any' the definition is all-inclusive . . . . . by being all-inclusive, the definition clearly and unambiguously contemplates the use of more than one method of protection for any particular habitat. So long as they are useful, the more protections the better."

Id. at 15.

> "[The Service's] interpretation of the 'special management considerations or protection' definition as somehow limiting the number of allowable protections to a listed species' habitat is not only unsupported by the English language, but runs contrary to one of the enunciated policies of the ESA. . . . The stated purpose is not for some agencies and departments to conserve endangered species; all must do so. Thus, any and every protective method or procedure should be employed to further that purpose. There is no ambiguity."

Id. at 15-16, emphasis original.

> "[The Service] knew or should have known that their decision not to designate critical habitat in Arizona or New Mexico on the basis that it would provide 'additional' protection was unlawful. Indeed [the Service has] been told by no fewer than three

> federal courts, including the Ninth Circuit, that its position is untenable and in contravention of the ESA. Nevertheless, with apparent disregard of the courts, [the Service] decided not to designate critical habitat . . . on the basis that 'adequate' plans were already in place and 'additional' protection was unnecessary. This argument has already failed three times. It fails yet again here."

Id. at 20.

The court has clearly established that USFWS cannot exclude essential habitat simply because it is covered by some management that may or may not be effective in recovering the flycatcher.

The Center therefore requests again that a full Environmental Impact Statement be prepared for the project to further evaluate habitat modification and loss, impacts to the Southwestern willow flycatcher, and mitigation at the recommended 3:1 ratio (SRP 2002; USFWS 2001, 2002a, 2002b). Impacts to Yuma clapper rail should also be further investigated and mitigated as wetland restoration in the vicinity of the project constitutes less than 30% of the stated wetlands lost. Additionally, as expressed as concerns by Arizona Game and Fish in scoping (pages C-9 to C-12 of the EA), the extent of wetland habitat loss appears to be more as reflected on the maps provided for the Proposed Action Alternative than is calculated by Reclamation.

Specific to the EA, on pages 3-47, 48, it's stated that the "current condition" reservoir elevation levels are based on one year's study – 2003. A much better model would be to study the elevations of several decades and determine monthly trends and averages, as has been done in the environmental analysis for operations at Roosevelt Dam. (SRP 2002, USFWS 2002b) These elevation models, combined with any gauging of water levels or other documentation for the area, will better the understanding of the impacts of the dredging and proposed return to pre-1983 operational water elevations.

According to the LCRMSCP Biological Assessment (BA), December 2004, page 2-64, lines 11-13: "With more capacity available, Laguna Reservoir would not have to be completely drained prior to sluicing, and the average water level during the year would remain at a higher level." (BOR 2004) However, the Laguna Reservoir Project EA on page 3-48 states instead that "…the average water elevation is anticipated to be lower, 148.6 feet rather than 149.3 feet." The EA fails to address this discrepancy between the documents and what would be the associated impacts. If the average water level will indeed be lower, whereas mitigation and operations under the MSCP was determined for a higher elevation, additional losses of habitat may occur and additional mitigation will be necessary.

The Center echoes the concerns expressed by Arizona Game and Fish in scoping (pages C-9 to C-12 of the Scoping Summary in the EA) as to potential impacts to the significant high-value riparian habitat within the area identified as the Old Colorado River Channel in Figure 1-2 of the EA that is maintained by higher water elevation levels. The EA does address the impacts of dredging activities on the Old Colorado River Channel. The EA fails to address the short-term and long-term impacts due to reduced average and increased variation of water elevation from the Proposed Action Alternative. Any loss of habitat in the "old channel" should be mitigated.

On page 2-65 of the LCRMSCP BA, "Habitat restoration and enhancement under this project area may be implemented under the LCR MSCP. The project includes a habitat restoration element designed to benefit riparian and aquatic species. The habitat restoration elements of the project could create wetlands and riparian habitat in or parallel to the excavated channel." (BOR 2004)

Under the Proposed Action Alternative, only 3.23 acres of the predicted 7.22 acres of wetland loss is proposed to be established within the Laguna Reservoir. The other 3.99 acres are proposed to be established up-river in the Imperial National Wildlife Refuge. Although increased restored/established habitat in the Refuge is desirable, the loss of habitat for wildlife within the Reservoir will not be equitably redeemed. AGFD policy of 100 percent mitigation for wetland loss within the state (as presented in their scoping letter, pages C-9 to C-12 of the EA) should also be included in the mitigation.

The EA states on page 3-27 that 89.3 acres of saltcedar will be lost in the dredging of the reservoir. Although no southwestern willow flycatcher nesting was observed in the project action area according to the 2003 survey as reported in the EA, nesting sites were identified within two miles of this habitat. The recent final rule for the designation of critical habitat for the flycatcher specifically states that the entire length of the lower Colorado River is used by flycatcher during migration. (USFWS 2005)

> "Koronkiewicz *et al.* (2004) and McLeod *et al.* (2005) described the use of the entire length of the lower Colorado River and its tributaries by willow flycatchers during migration." (USFWS 2005, p. 60893)

> "While southwestern willow flycatchers place their nests in dense riparian habitat (USFWS 2002), occupancy of habitat in river corridors by pre-breeding, breeding, and postnesting southwestern willow flycatchers extends beyond the dense vegetation where a nest is placed (Cardinal and Paxton 2005). Results from radiotelemetry studies determined that southwestern willow flycatchers explored a variety of riparian habitats of varying quality (Cardinal and Paxton 2005). Mixed (native and exotic) mature habitat was used 53 percent of the time (Cardinal and Paxton 2005). Smaller and younger immature vegetation comprised of willow and salt cedar was used 25 percent of the time (Cardinal and Paxton 2005). Also used were habitats classified as young (17 percent), open (4 percent), and mature exotic (1 percent) (Cardinal and Paxton 2005). Therefore, while vegetation required for nest placement is the most dense and specific of all habitats used by southwestern willow flycatchers, matrices of open spaces and shorter/sparser vegetation are also used…
>
> "…a dispersing young-of-the-year fledgling southwestern willow flycatcher was detected traveling over 24 km (15 mi) in a single day (Cardinal and Paxton 2005). Therefore, the use and occupancy of riparian habitat surrounding nesting areas by breeding and dispersing southwestern willow flycatchers is greater than previously believed, and is likely important for flycatchers to seek territories, to detect future nesting areas, search

for mates, forage, and/or stage for migration (Cardinal and Paxton 2005)." (USFWS 2005, p. 60907)

"Based upon continued surveys and recent telemetry studies on the use of habitat during the nesting season, the extent and diversity of habitat used is more widespread than previously believed. Pre-breeding, breeding, dispersing, and non-territorial flycatchers can use a wide variety of riparian habitats that can encompass hundreds of hectares (acres).

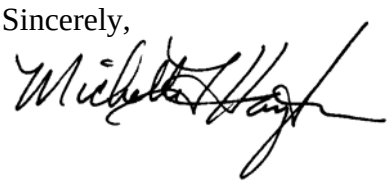
"Such migration stopover areas, even though not used for breeding, are critically important resources affecting productivity and survival (USFWS 2002: E–3). The variety of riparian habitats occupied by migrant flycatchers range from smaller patches with shorter/sparser vegetation to larger, more complex breeding habitats." (USFWS 2005, pp. 60909-60910)

The 89.3 acres of saltcedar, while invasive, still constitutes habitat potentially used by flycatcher that will be lost. Reclamation acknowledges this loss on page 3-31 of the EA. Although the Proposed Action Alternative includes the use of Avoidance and Minimization Measures as presented in the MSCP such as refraining from disturbing activities during the breeding season of listed avian species, no specific mitigation measures associated with this loss of 89.3 acres are identified.

The status of mitigation activities under the LCRMSCP was not clearly addressed in the EA. According to the Draft LCR MSCP FY2005 Accomplishments document available at http://www.usbr.gov/lc/lcrmscp/workplans/FY2005accomplishments.pdf, mitigation activities have thus far only included monitoring and studies rather than habitat restoration or enhancement. The "running tabulation of habitat created or restored by the LCR MSCP" was not included in this draft, and it appears that it will be years before the 512 acres of Yuma clapper rail habitat and 4,050 acres of southwestern willow flycatcher habitat is secured. It remains unclear when the mitigation relating to the activities for this project as covered under the LCR MSCP will take place.

Thank you for the opportunity to provide comments on the proposed project. If you have any questions, please contact me at (602) 628-9909 or mharrington@biologicaldiversity.org.

Sincerely,



Michelle T. Harrington
Rivers Program Director

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BOR 2004. Lower Colorado River Multi-Species Conservation Program. 2004. *Lower Colorado River Multi-Species Conservation Program, Volume III: Biological Assessment.* Final. December 17. (J&S 00450.00) Sacramento, CA. Bureau of Reclamation is the primary implementing agency.

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USFWS 2002b. Final Environmental Impact Statement for the Roosevelt Habitat Conservation Plan, Gila and Maricopa Counties, Arizona, Volume I of the FEIS, U.S. Fish and Wildlife Service, December 2002.

USFWS 2005. Endangered and Threatened Wildlife and Plants, Designation of Critical Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Final Rule, Department of the Interior Fish and Wildlife Service, Federal Register, Vol. 70, No. 201, Wednesday, October 19, 2005, Rules and Regulations, Page 60886.

Appendix D

Brown & Caldwell Technical Memorandum and Laguna Dam Flow and Water Surface Elevation Data Tables

D1 - Brown & Caldwell Technical Memorandum (April 2006)

TECHNICAL MEMORANDUM

Date: April 10, 2006

To: Russ Reichelt, Director, Reclamation, Technical Support Office, Yuma Area Office
Don Young, Reclamation, River Operations, Yuma Area Office
Rex Wahl, Reclamation, Environmental Compliance, Yuma Area Office

From: Ruben Zubia, Brown and Caldwell

Project: Reservoir Capacity Restoration Project

Subject: Comparison of Laguna Reservoir Inflow, Outflow and Water Surface Elevations Under 1982 and 2003 Reservoir Conditions

INTRODUCTION

This technical memorandum presents the results of an assessment of the pre-1983 and post-1983 Laguna Reservoir operations. This assessment compares the Laguna Reservoir inflow, outflow and water surface levels under 1982 and 2003 reservoir conditions. The Bureau of Reclamation (Reclamation) is evaluating a project that will restore lost storage capacity in Laguna Reservoir. The assessment is intended to provide an overview of how the reservoir operations may change with the expanded storage capacity. The 2003 reservoir operation conditions are believed to represent the current conditions and operation of the reservoir with the existing reduced capacity. In 1983, Colorado River flood flows deposited large amounts of silt in Laguna Reservoir which severely reduced its capacity. Prior to 1983, the Laguna Reservoir capacity was estimated to be approximately 1,500 acre-feet (AF). After 1983 and under current conditions, the storage capacity is estimated to be approximately 400 AF. The proposed project is intended to restore the Laguna Reservoir capacity to pre-1983 conditions. The 1982 reservoir operations are being evaluated to provide an indication on how the reservoir may be operated with the expanded capacity.

BACKGROUND

Laguna Dam and Reservoir are located on the main stem of the Colorado River approximately five miles downstream from Imperial Dam. The original purpose of this dam was to divert Colorado River water to the Yuma Project area. However, with the construction of the Gila Gravity Main Canal and All-American Canal (AAC) diversion from Imperial Dam, irrigation water for the Yuma Project has since been diverted at Imperial Dam. Laguna Dam now serves as a regulating structure for sluicing flows and for downstream toe protection for Imperial Dam. Figure 1 shows the location of Laguna Reservoir.

A significant portion of the storage capacity at Laguna Reservoir must be vacant so that it can be used to temporally store sluicing flows from Imperial Dam. These flows are made to carry sediment deposited in the California Sluiceway from the AAC Desilting Works downstream to the Laguna desilting basin, located about two miles upstream from Laguna Dam. Due to the size of the flows used in sluicing operations (normally ranging between 8,000 and 14,000 cubic feet per second (cfs)

for 20 minutes) the beginning water surface elevation of Laguna Reservoir must be low enough so that large sluicing flows do not overtop the Laguna Dam overflow weir.

Figure 1
Location Map

Under current conditions, water can be stored in Laguna Reservoir between water surface elevations 140.5 feet to 151.3 feet. However, because of the large amounts of silt deposition in the area between Laguna Dam and Imperial Dam, the effective storage area has been greatly reduced. Prior to the 1983 Gila River flood, the amount of available storage capacity was estimated at about 1,500 AF. However, the majority of this storage capacity has filled with sediment. The current estimate of available storage capacity at Laguna Reservoir, between elevation 140.5 feet and 151.3 feet, is believed to be approximately 400 AF. Additional storage can be obtained by forcing water into surcharge above the weir. By allowing a surcharge over the weir of about 0.5 feet, it is believed that an additional 300 AF of additional storage can be gained, albeit for a very short duration.

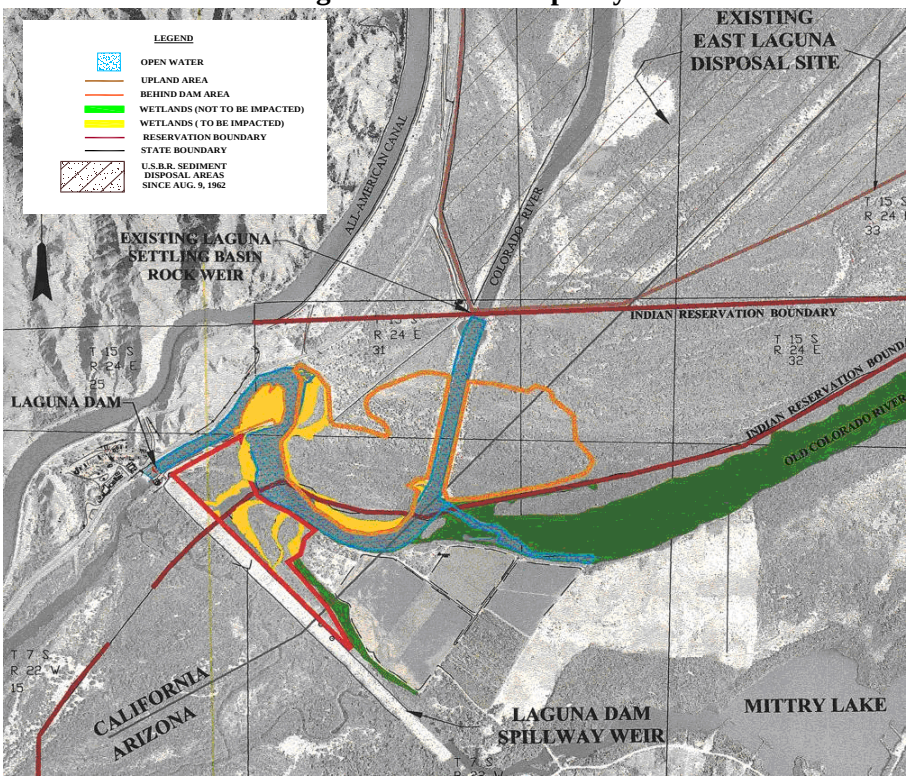
The existing Laguna Dam comprises of an approximately 4,780 foot long concrete surfaced rock filled weir. The elevation at the top of the existing overflow weir is reported to be 151.3 feet. There is a small bay or channel on the California side of the dam that previously served as the desilting works for the water diverted to the Yuma Main Canal. On the downstream end of this bay or channel are three large gates with a total opening width of approximately 100 feet. An installation similar to this exists on the Arizona side of the dam except that there is only one gate on this structure.

PROPOSED STORAGE CAPACITY RESTORATION PROJECT

Reclamation proposes to restore lost storage capacity at Laguna Reservoir through excavation of accumulated sediments. The affected area of Laguna Reservoir is the area located immediately

adjacent and upstream of Laguna Dam. The existing storage capacity available upstream of Laguna Dam is estimated to be approximately 400 AF. The project will provide incremental storage capacity of approximately 1,100 AF and a new total capacity of approximately 1,500 AF. The incremental storage capacity will be created by excavating material along the upstream side of the dam and adjacent to the open water channel as shown by the orange areas in Figure 1. The newly dredged areas, as shown on Figure 1, would provide the incremental storage capacity for Laguna Reservoir.

Figure 3
Laguna Reservoir Capacity



The base of the new excavation may range from an elevation of 138 feet to 144 feet. The total depth of the excavation will vary depending on the overburden existing at various locations throughout the area to be excavated. Operating water levels of the new storage may range between elevations 140.5 feet and 151.3 feet, similar to current operations. The proposed reservoir design would call for any new bankline cuts to have a three foot horizontal to one foot vertical slope (3:1).

The proposed project will provide additional storage capacity that will facilitate improved sluicing operations at Imperial Dam. The project will also clear hydraulic features of the dam which are functionally compromised. The outgrowth at the entrance to the gated outlet channel will be removed to provide unrestricted flow through the gated structures. The project will also remove sediments that have accumulated in the area immediately adjacent and upstream of the Laguna Dam spillway weir.

LAGUNA RESERVOIR INFLOWS

All the flows that enter Laguna Reservoir originate at Imperial Dam. Under normal operating conditions (non-flood conditions) there are four potential sources for these inflows; AAC desilting basin return flows, Imperial Dam gate leakage, sluicing flows to remove sediment deposited in the California Sluiceway from the AAC desilting basins, and sluicing flows from the Gila Gravity Main Canal desilting basin.

Imperial Dam straddles the California-Arizona border. The AAC diversion and its trashrack and headgates are located adjacent to the California abutment of the dam. Three desilting basins (design capacity is 4,000 cfs each) remove the sand and silt from the river water before it passes to the AAC. The sand and silt that accumulates in the AAC desilting basins is removed and deposited in the California Sluiceway. If not removed, the sediment can constrict the flows from the AAC desilting basins. The sand and silt is further removed from the California Sluiceway through sluicing. Under these sluicing operations, large flows are released into the California Sluiceway and these flows carry the sediment downstream to the Laguna desilting basin. The flows continue through the basin and enter the reservoir upstream of Laguna Dam.

The Gila Canal Headgates are located adjacent to the Arizona abutment of the dam. One desilting basin removes sediment from the water before it enters the Gila Gravity Main Canal, which serves the North Gila Valley, the South Gila Valley, the Yuma Mesa and the Wellton-Mohawk area. The sediment collected in the basin is removed about every three years by sluicing flows of about 3,000 cfs. The sediment is returned to the California Sluiceway and thence to the Laguna desilting basin. The sediment is sluiced from the basin by opening the sluice gates located on the bottom and downstream end of the basin.

The gate leakage and desilting basin return flows that enter the California Sluiceway below Imperial Dam provide a continuous flow to Laguna Reservoir. This baseflow ranges from about 265 cfs to 395 cfs.

The river operators at the Yuma Area Office (YAO) attempt to schedule sluice flows for the California Sluiceway on a bi-weekly basis or as needed. Since the most effective sluicing flows normally range from 8,000 cfs to 14,000 cfs, the sluicing event and magnitude of the sluice flow is, in actuality, based on the availability of sufficient water. On some occasions, the water that is scheduled to provide the flows for sluicing is needed to offset shortages in the water arriving at Imperial Dam. On other occasions, unscheduled excess flows arrive at Imperial Dam and the operators may choose to use these flows for sluicing.

Another element that affects the operator's ability to conduct a sluicing event is the availability of vacant storage capacity in Laguna Reservoir. Currently, sluicing flows with magnitudes between 8,000 cfs to 14,000 cfs can be sustained for no more than 20 minutes. At these flow rates and duration, the sluicing of the California Sluiceway results in a discharge volume to Laguna Reservoir of about 300 AF to 400 AF per sluicing event. The current capacity at Laguna Reservoir is estimated to be no more than about 400 AF before water will start to go over the overflow weir at Laguna Dam. As a result of the current limited operating capacity, the river operators at the YAO have to schedule the evacuation of most of the water from Laguna Reservoir before a sluicing event can begin. Thus this becomes a water scheduling and operational constraint since the only Colorado River water user located below Laguna Reservoir is Mexico. This constraint requires the operators to consider and schedule the Laguna Reservoir discharges in conjunction with the scheduled deliveries to Mexico.

The proposed restoration of storage capacity at Laguna Reservoir will provide increased flexibility in sluicing operations and in the management of the flows that result from these sluicing activities. It is anticipated that under normal operating conditions, water that is stored in Laguna Reservoir may

remain in storage for three days or longer, or until the opportunity arises whereby water can be released from Laguna Dam without over delivering water to Mexico. The reason for this is that the water that is scheduled to be released from Parker Dam to meet Mexico's order will need to be reduced by the amount of water that is available in the Laguna Reservoir and that can be released to meet Mexico's water order. On a shorter term basis, the water in storage at Laguna Reservoir can also be used to meet any shortfalls between the water orders of users on the U.S. side and water arriving at Imperial Dam. In this case, a portion of the water that was previously ordered and released from Parker Dam to meet Mexico's water order can be delivered to one or more users on the U.S. side and Mexico's water order is completed by releasing water stored in Laguna Reservoir.

The frequency and magnitude of flows that result from sluicing events on the Gila Gravity Main Canal desilting basin are less than those of the AAC desilting basins. However, the same general operational concerns apply to these flows that also result as inflow to Laguna Reservoir.

LAGUNA RESEVROIR WATER SURFACE ELEVATIONS

As previously noted, under current conditions, water can be stored in Laguna Reservoir between water surface elevations of 140.5 feet to 151.3 feet. The elevation at the top of the existing Laguna Dam overflow weir is reported to be 151.3 feet and this sets the maximum elevation where water can be contained within the reservoir. The current estimate of the available storage capacity at Laguna Reservoir, between elevations of 140.5 feet and 151.3 feet, is believed to be approximately 400 AF.

The proposed project will lower the invert elevation of a good portion of the reservoir to an elevation of about 140 feet. This will be accomplished mostly through excavation or dredging of the reservoir bottom. The total depth of the excavation will vary depending on the overburden existing at various locations throughout the area to be excavated. Operating water levels of the improved reservoir are expected to range between elevations of 140.5 feet and 151.3 feet, the same range in elevation that has occurred in the past.

LAGUNA RESEVROIR OUTFLOW

Water stored in Laguna Reservoir is normally discharged via the channel on the California side of the dam. On the downstream end of this bay or channel are three large gates with a total opening width of approximately 100 feet. A consideration in the releases from Laguna Reservoir is the capacity of the low flow Colorado River channel downstream of the dam. The Colorado River channel in the Yuma and Limitrophe Divisions has experienced considerable sediment aggradation (i.e., build-up) as a result of flood flows from the Colorado River in 1983 and more notably, from the Gila River in 1993. During the Gila River flood of 1993, an estimated 10 million cubic yards of sediment was deposited in the Yuma Division, the reach of the river from the confluence with the Gila River to Morelos Dam. The aggradation of the river channel increased normal flow elevations an average of approximately five feet and increased groundwater levels in the Yuma area between two and five feet above normal, depending on the location and its proximity to the Colorado River. As a result of this, flows in excess of about 8,000 cfs now have the potential to overtop the downstream low flow channel which can impact low lying private and public facilities downstream of Laguna Dam.

In the past, the maximum discharges from Laguna Dam operations (non-flood flow conditions) have ranged between 5,000 cfs to 7,000 cfs. These ranges of discharge flows are, for non-flood flow conditions, within the existing limited low flow capacity of the downstream river reaches. In the future, the maximum controlled flows from Laguna reservoir will continue to be within 5,000 cfs to 7,000 cfs. However, in the future and with the restored reservoir capacity, it is anticipated that releases from Laguna under normal operating conditions will normally be in the range of 300 cfs to 1,500 cfs. This lower outflow range will be facilitated by the greater storage capacity that will be available in Laguna Reservoir. More importantly, the increased capacity will enable the river

operators at the YAO to manage these releases in a way that the water deliveries to Mexico at NIB will not exceed Mexico's water order at NIB.

METHODOLOGY USED TO COMPARE PRE-1983 TO POST-1983 RESERVOIR OPERATIONS

An analysis was undertaken to compare the Laguna Reservoir inflow, outflow and water surface levels between pre-1983 and post-1983 conditions. The assessment is intended to provide an overview of how the reservoir operations may change with the expanded storage capacity (from 350 AF to 1,500 AF) that will result from the subject project.

For this analysis, the 2003 reservoir operation conditions were selected to represent the current conditions and operation of the reservoir with the reduced capacity. Previous high flow and flood conditions from the Colorado River, particularly those that occurred in 1983, deposited large amounts of silt in Laguna Reservoir which severely reduced its capacity. Prior to 1983, the Laguna Reservoir capacity was estimated to be approximately 1,500 AF. After, 1983 the storage capacity is estimated to be approximately 400 AF.

The proposed project is intended to restore the Laguna Reservoir capacity to pre-1983 conditions. As such, the 1982 reservoir operations were selected to represent the conditions and operation of the reservoir that existed prior to 1983, before the silt aggradation reduced the available storage capacity. Since the capacity that existed prior to 1983 is similar to that which will result from the proposed reservoir capacity restoration project, this comparison is expected to provide an indication on how the reservoir may be operated in the future with the expanded capacity.

In addition to the above noted factors, these periods were also chosen for the following reasons:

- The reservoir operations in 1982 were prior to the 1983 Colorado River flood and at a point in time when the Laguna Reservoir capacity was approximately 1,500 AF.
- The reservoir operations in 2003 were subsequent to the period when flood control and space building releases were made from Hoover Dam. Flood control or space building releases were made from Hoover Dam from 1983 through 1988 and from 1997 through 1999. Gila River flows also occurred in 1992, 1993, 1994 and 1995 which also impacted the way Laguna Reservoir was operated.
- Senator Wash Dam repairs were completed between 2000 and 2002. Senator Wash Reservoir was not used to store water during most of this time, which impacted operations at Laguna Reservoir. Senator Wash Reservoir operations returned to normal operating conditions in 2003, although the maximum reservoir elevation is currently restricted to 240 feet. In contrast, the maximum unrestricted water surface elevation of Senator Wash Reservoir under pre-1983 conditions was 251 feet.
- Calendar year 2003 represents a typical operation year with the Laguna Reservoir capacity reduced to 400AF.

Data Sources

Mean hourly data was obtained from Reclamation's YAO for historical flows below Imperial Dam, water surface elevations for Laguna Reservoir, and the flows below Laguna Dam for years 1982 and 2003. The flows below Laguna Reservoir for 2003 were calculated using a reservoir elevation and gate opening relationship table provided by the Imperial Irrigation District (IID). IID currently operates Imperial Dam and Laguna Dam through a contractual relationship with Reclamation. Additional 1982 flow information for flows below Laguna were obtained from USGS records.

In addition, elevation to storage volume curves for 1982 (provided by YAO) and 2003 (developed by Brown and Caldwell) were applied to calculate storage in Laguna reservoir. The 2003 elevation to storage volume curves were developed using topographic mapping of the Laguna Reservoir that was provided by Reclamation.

Laguna Reservoir Inflows

The Laguna Reservoir inflows were analyzed using the mean hourly flow data provided for both 1982 and 2003. In general, the baseflows ranged between 265 to 395 cfs, depending on the time of year. Analyses included calculating the resultant changes in reservoir level, storage, and outflows and comparing operational differences between 1982 and 2003. Minimum, median, and maximum values were calculated for monthly reservoir inflows, levels and reservoir releases.

Additionally, the flows that enter Laguna Reservoir as a result of sluicing operations were also analyzed. These flows strictly reflect the flows released for sluicing operations and are over and above the observed baseflow values.

Laguna Reservoir Stage and Storage Volume

The 2003 and 1982 stage to storage volume curves were used to evaluate the range and rate of change of the water in storage in Laguna Reservoir for both the 2003 and 1982 conditions. The reservoir capacity has changed over time and this has resulted in changes to the reservoir operations. The stage to storage volume relationships were also used to estimate the volumes of water that accumulated above Laguna Dam based on the corresponding water surface levels. The analysis included a comparison of the water surface elevations in the reservoir (under pre-1983 and current conditions). This data was then used to evaluate the frequency and volume of water in storage in Laguna Reservoir under historical and current conditions.

Laguna Reservoir Outflows

Laguna Reservoir has three gates that can be opened to varying degrees to release water from storage. The amount of water released is dependent on the reservoir stage height in combination with the number of gates open and to what degree each gate is opened. Using the IID reservoir stage to gate rating table, the amount of water released (reservoir outflow) was estimated. Because the table includes only major increments for stage and gate opening, a separate curve was created for each stage height spanning the minimum to maximum gate opening values, in increments of one-tenth of a foot. These equations were then used to obtain flow values between the values provided in the original gate rating table. The water released from the impoundment represents the flow in the Colorado River immediately downstream of Laguna Dam.

Qualification of Data Used in the Analysis

The data that was provided by Reclamation and used for this analysis comprises mean hourly data. The data for the large flows from Imperial Dam that are referenced herein as sluicing flows do not necessarily reflect the actual magnitude of the sluicing flows. As noted before, under the reduced existing reservoir conditions, sluicing flows can often range between 8,000 cfs to 14,000 cfs with durations of no more than 20 minutes. However, because the flow measurements are reported on a mean hourly basis, these sluicing flows are reported as 2,667 cfs to 4,000 cfs. This occurs because the mean hourly flows are calculated as the average flow observed over the period of 60 minutes (one hour). The same is true for the reported water surface elevations at Laguna Reservoir, that is – the reported mean hourly stage is the average of the water surface elevations that occur over the period of 60 minutes. For this analysis, the river operations staff in the YAO determined that any reported mean hourly flow of 2,000 cfs or greater could be characterized as a sluicing flow, provided that flows prior to and after these large hourly flows return to the normal base flow.

The different analyses conducted using this data is believed to be valid and useful because the operations of Laguna Reservoir can accurately be represented by mean hourly flow data. While the instantaneous sluicing flows that are observed at the California Sluiceway can be as high as three times the reported mean hourly flow values, the fact that these flows are routed through the Colorado River Channel and the Laguna desilting basin, and the associated travel time, reduces the significance of these differences. The attenuation affect associated with the five miles of channel (distance between Imperial Dam to Laguna Dam) and the detention and backwater effect provided by the Laguna desilting basin, most likely flattens the flows entering Laguna Reservoir. The result of this is that the flows entering Laguna Reservoir most likely look very much like the reported mean hourly flows. More importantly, this analysis is mostly focused on the Laguna Reservoir inflows and resultant fluctuation in water surface elevations therein. Therefore, the mean hourly flow data is sufficiently adequate to depict the hourly changes in Laguna Reservoir inflow and water surface elevation.

RESULTS OF THE COMPARISON OF PRE-1983 TO POST-1983 RESERVOIR OPERATIONS

This section presents the results of the comparison of the Laguna Reservoir operations under pre-1983 and current conditions. As noted before, the 2003 reservoir operating conditions reflect current operations.

Laguna Reservoir Inflows

As previously noted, there are four general sources for Laguna reservoir inflows under normal operating conditions (non-flood conditions) and these include:

- Imperial Dam gate leakage,
- AAC desilting basin return flows,
- Sluicing flows to remove sediment deposited in the California Sluiceway from the AAC desilting basins, and
- Sluicing flows from the Gila Gravity Main Canal desilting basin.

There is a continuous baseflow that enters Laguna Reservoir that originates from two of these four sources. The base flows consist of Imperial Dam gate leakage and AAC desilting basin return flows. The range of the observed baseflow is between 265 cfs to 395 cfs. The baseflows in the higher end of the range appear to occur between the months of March through September. The baseflows are similar under the two years that were compared.

Figure 3 provides a graphical comparison of the mean hourly Laguna Reservoir inflows. Figure 4 provides a comparison of the exceedence probability of the range of flows observed for years 1982 and 2003. As shown on Figure 4, the frequency and magnitude of reservoir inflows for the two years are similar.

Figure 3
Comparison of Laguna Reservoir Inflow (1982 to 2003 Conditions)
Mean Hourly Inflows (cfs)

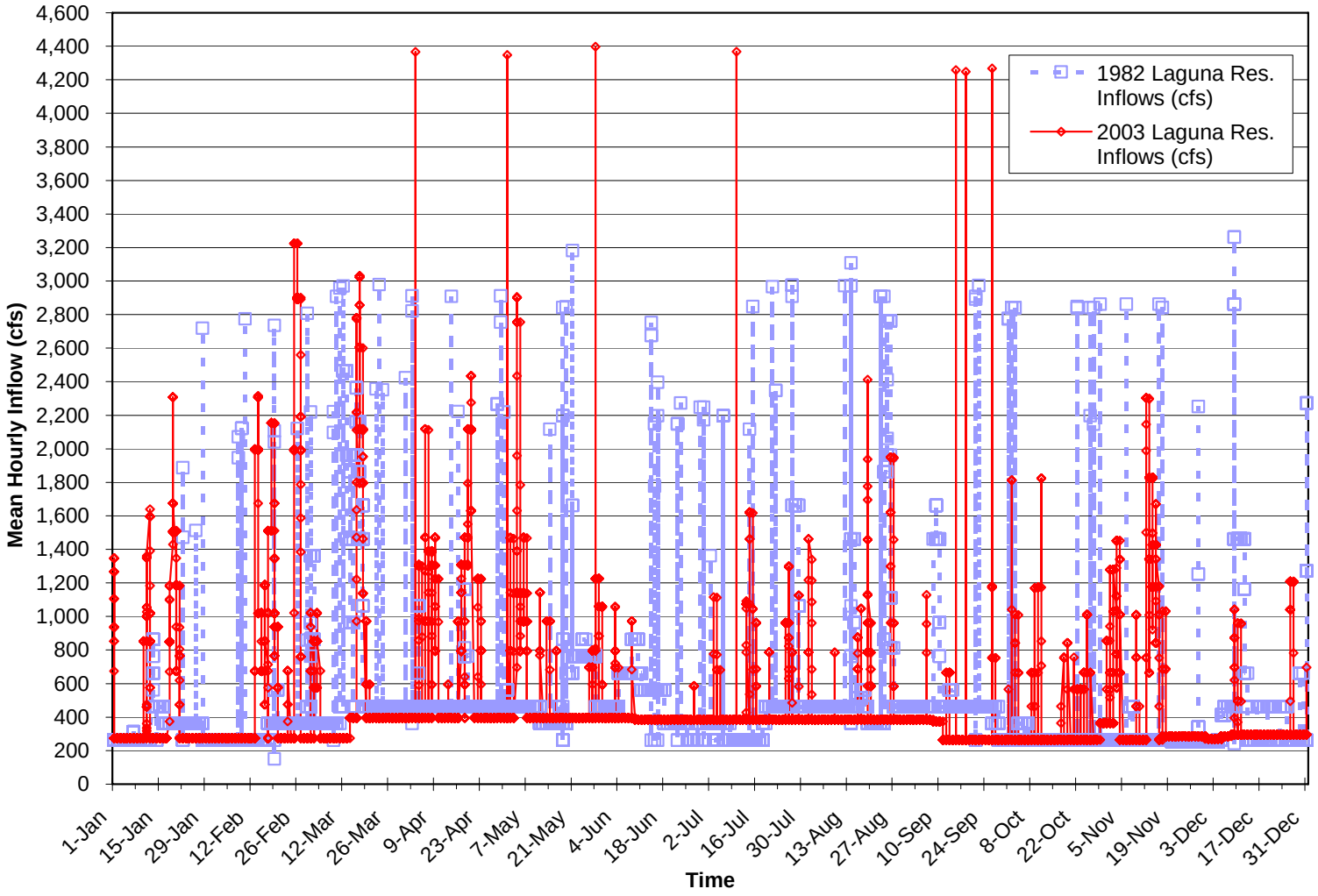


Figure 4
Comparison of Laguna Reservoir Inflows (1982 to 2003 Conditions)
Percent of Values Greater Than or Equal To

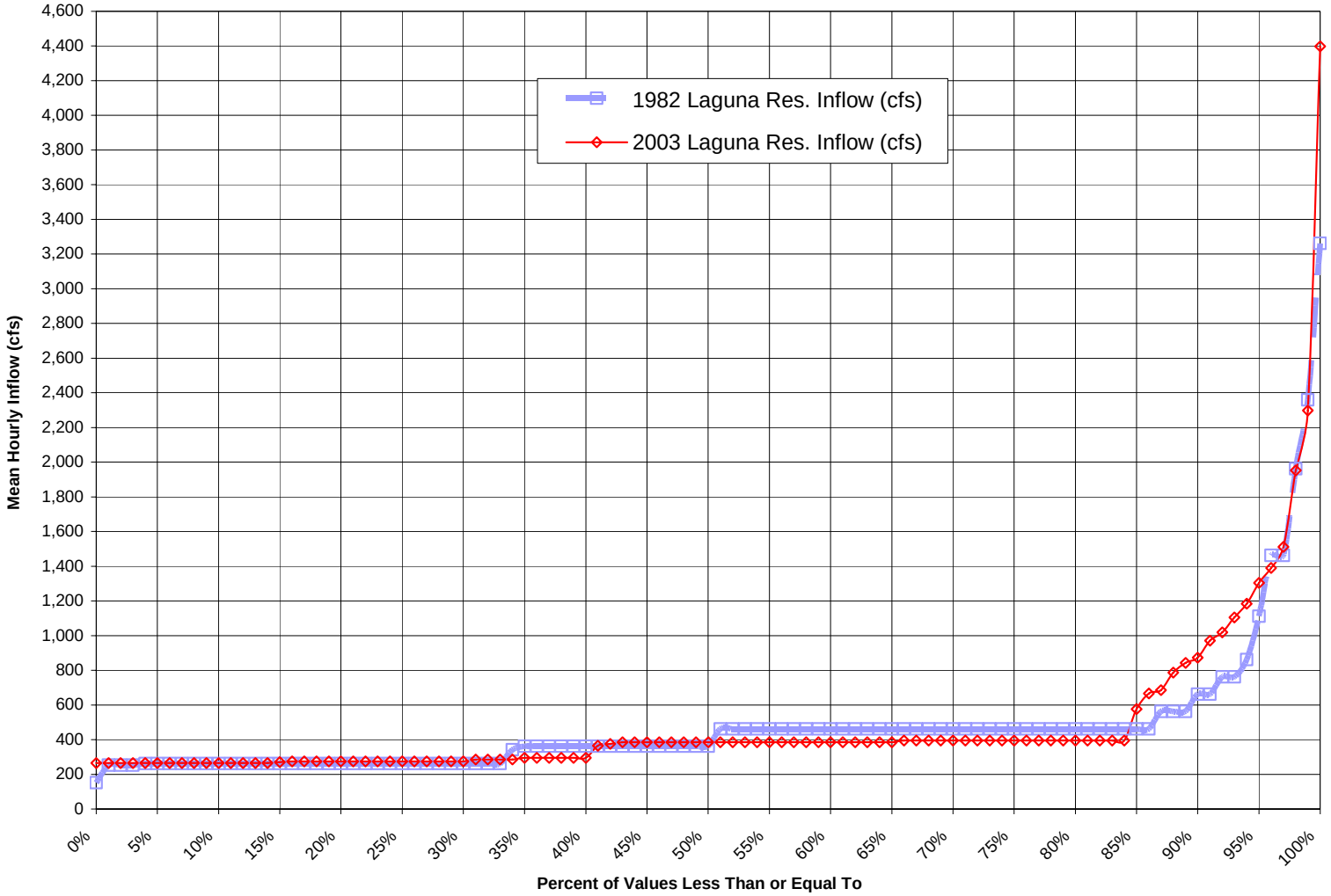


Table 1 provides a comparison and summary of the monthly baseflows and total monthly reservoir inflows for the two years. The observed inflows to Laguna Reservoir for year 1982 ranged from 151 cfs to 3,262 cfs. The average inflow for this period was 468 cfs. The observed inflows to Laguna Reservoir for year 2003 ranged from 200 cfs to 4,398 cfs. The average inflow for this period was 470 cfs. The average inflow for 1982 and 2003 are similar.

Table 2 and 3 provide summaries of the Laguna Reservoir inflow attributable to sluicing operations at Imperial Dam. For this analysis, river operations staff in the YAO determined that any reported mean hourly flow of 2,000 cfs or greater can be characterized as a sluicing flow. As shown on these two tables, the number of sluicing events (90 in 1982 and 89 in 2003) and the average Laguna Reservoir inflow per sluicing event (2,392 cfs in 1982 and 2,509 cfs in 2003) are similar in these two years. The differences in these two years are less than 5 percent which is comparable to degree of accuracy for the flow measuring devices used to measure the subject flows. Also, the larger maximum sluicing inflows to Laguna in 2003 are due to increasing the maximum size of a sluice from 12,000 cfs in 1982 to 14,000 cfs in 2003.

Table 1

Summary of Laguna Reservoir Inflows (1982 & 2003 Conditions)

Period	Average Baseflow (cfs)	All Laguna Reservoir Inflows		
		Minimum	Average	Maximum
1982 Year Data				
January	262	262	338	2,718
February	320	151	334	2,775
March	446	262	715	2,979
April	462	362	507	2,912
May	365	262	543	3,181
June	463	262	527	2,752
July	447	262	457	2,975
August	403	362	587	3,109
September	462	262	508	2,974
October	262	262	311	2,862
November	262	252	289	2,862
December	421	242	489	3,262
2003 Year Data				
January	275	275	435	2,308
February	275	275	673	3,224
March	347	275	522	3,031
April	395	395	663	4,366
May	395	395	559	4,398
June	391	385	339	1,059
July	395	395	461	4,378
August	385	385	455	2,412
September	278	265	340	4,268
October	272	265	343	1,823
November	295	200	220	2,304
December	295	270	327	1,209

Note: All flow values reported in mean hourly flow values

Table 2
Summary of Monthly Laguna Reservoir Inflows for Year 1982
Attributed to Sluicing Activities at Imperial Dam

Mon-Yr	Number of Sluicing Events	Average Mean Hourly Sluicing Flow (cfs)	Average Mean Hourly Sluicing Flow (AF/hour)	Monthly Laguna Reservoir Inflow from Sluicing Activities (AF/month)
Jan-82	1	2,456.0	203.0	203.0
Feb-82	2	2,443.0	201.9	403.8
Mar-82	14	2,172.4	179.5	2,513.5
Apr-82	5	2,399.8	198.3	991.7
May-82	3	2,628.0	217.2	651.6
Jun-82	3	2,138.7	176.7	530.2
Jul-82	5	2,512.4	207.6	1,038.2
Aug-82	26	2,437.1	201.4	5,236.8
Sep-82	3	2,462.7	203.5	610.6
Oct-82	11	2,569.5	212.4	2,336.0
Nov-82	5	2,472.4	204.3	1,021.7
Dec-82	12	2,271.7	187.7	2,252.9
Year	**90**	**2,392**	**198**	**17,790**

Note: For this analysis, the river operations staff in the YAO determined that any reported mean hourly flow of 2,000 cfs or greater, can be characterized as a sluicing flow.

Table 3
Summary of Monthly Laguna Reservoir Inflows for Year 2003
Attributed to Sluicing Activities at Imperial Dam

Mon-Yr	Number of Sluicing Events	Average Mean Hourly Sluicing Flow (cfs)	Average Mean Hourly Sluicing Flow (AF/hour)	Monthly Laguna Reservoir Inflow from Sluicing Activities (AF/month)
Jan-03	7	2,033.0	168.0	1,176.1
Feb-03	39	2,544.8	210.3	8,202.4
Mar-03	13	2,417.9	199.8	2,597.8
Apr-03	6	2,361.0	195.1	1,170.7
May-03	12	2,664.7	220.2	2,642.6
Jun-03	0	0	0	0
Jul-03	1	3,983.0	329.2	329.2
Aug-03	1	2,027.0	167.5	167.5
Sep-03	3	3,993.0	330.0	990.0
Oct-82	0	0	0	0
Nov-03	7	2,037.3	168.4	1,178.6
Dec-03	0	0	0	0
Year	**89**	**2,509**	**207**	**18,455**

Note: For this analysis, the river operations staff in the YAO determined that any reported mean hourly flow of 2,000 cfs or greater, can be characterized as a sluicing flow.

Laguna Reservoir Stage and Storage Volume

The amount of water storage in Laguna Reservoir is closely managed by the river operations staff in the YAO. Factors considered in determining the amount of water in storage include; inflows arriving due to operations at Imperial Dam, Mexico's scheduled water orders at NIB, and maximum releases from Laguna Reservoir based on downstream safety considerations.

Figure 5 provides a graphical comparison of the mean hourly water surface elevations of Laguna Reservoir under year 1982 and 2003 reservoir operations. As shown on this figure, the range of observed water surface elevations in these two years is between 141.2 feet to 153.7 feet. The water surface elevations above 151.3 feet represent incidents where Reclamation was surcharging the reservoir, this means that the water surface elevation of the water impounded in the reservoir was above the top of the Laguna Dam overflow spillway (elevation 151.3 feet).

Figure 6 provides a comparison of the exceedence probability of the range of flows observed for years 1982 and 2003. This graph shows that the range of water surface elevations in the two years were similar. However, the graph also shows that on average, the water surface elevations for year 2003 was slightly higher (approximately 0.7 feet) than those observed in year 1982.

Table 4 provides a summary of the monthly and annual mean hourly water surface elevations of Laguna Reservoir. The observed water surface elevations of Laguna Reservoir for year 1982 ranged from 141.2 feet to 151.8 feet. The average water surface elevation for 1982 was 148.6 feet. The observed water surface elevations of Laguna Reservoir for year 2003 ranged from 145.3 feet to 153.7 feet. The average water surface elevation for 2003 was 149.3 feet.

Figure 5
Comparison of Laguna Reservoir Water Surface Elevations (1982 to 2003 Conditions)
Mean Hourly Elevations (feet)

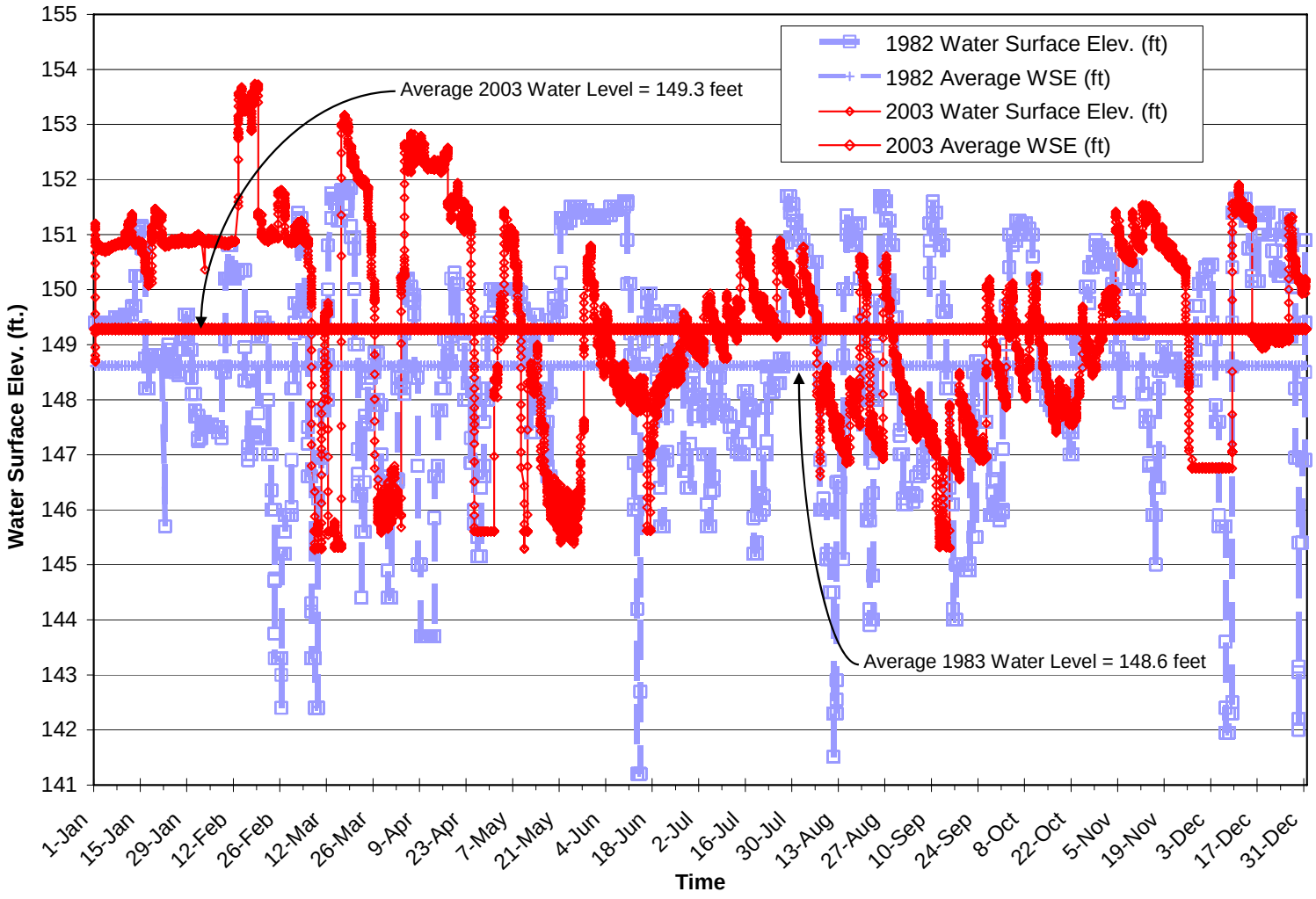


Figure 6
Comparison of Laguna Reservoir Water Surface Elevations (1982 to 2003 Conditions)
Percent of Values Greater Than or Equal To

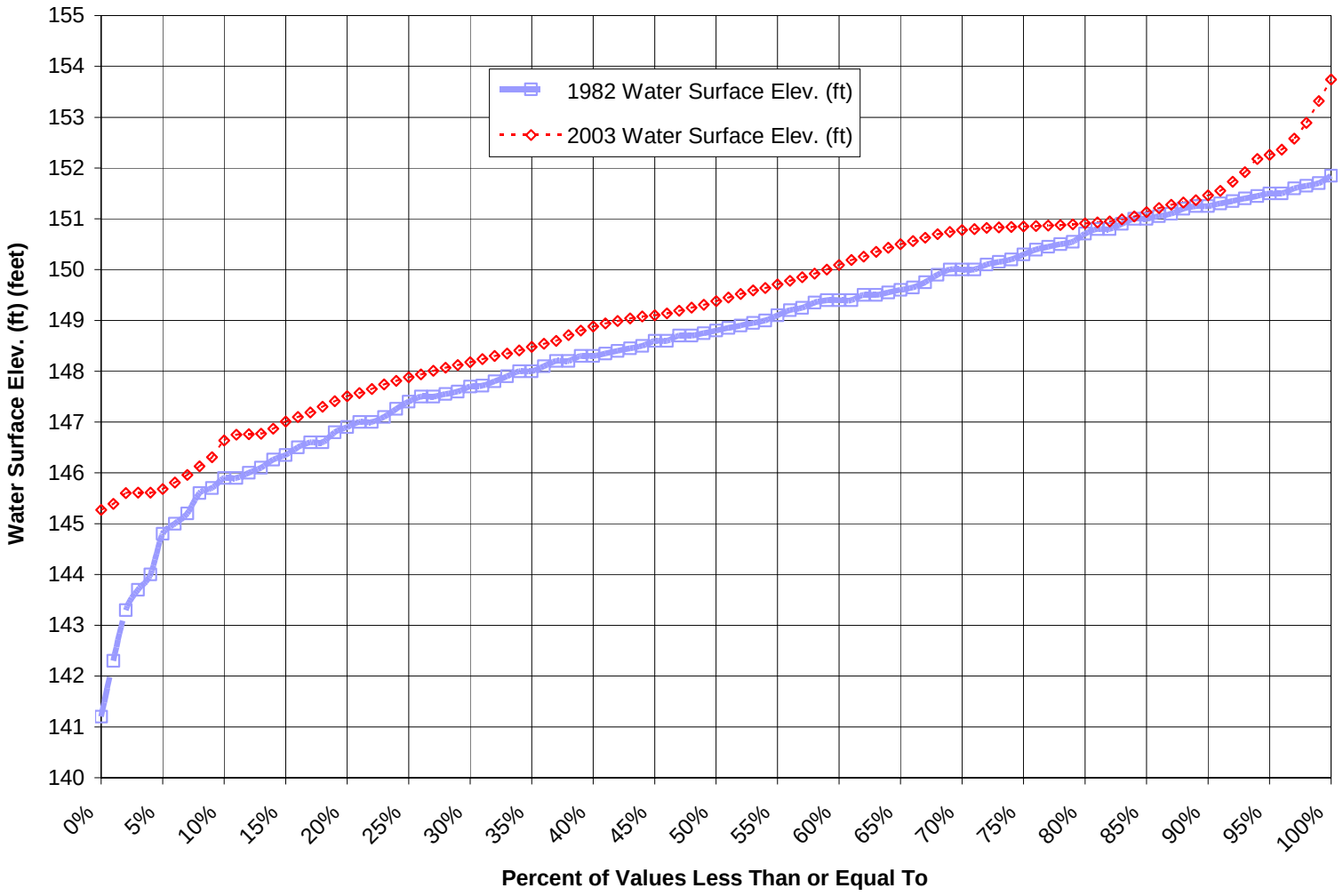


Table 4
Summary of Laguna Reservoir Water Surface Elevations (1982 and 2003 Conditions)

Period	Volume of Flows Arriving at Laguna Reservoir (w/o Baseflow) (AF)	Volume of Flows Arriving at Laguna Reservoir (With Baseflow) (AF)	Laguna Reservoir Water Surface Elevations (ft) Minimum	Average	Maximum
1982 Year Data					
January	2,425	4,469	146	149	151
February	1,731	2,233	142	148	151
March	17,100	23,474	142	148	152
April	2,700	4,113	144	148	150
May	8,422	15,519	146	150	152
June	5,597	12,363	141	149	152
July	5,561	7,595	146	148	152
August	9,344	13,505	142	149	152
September	3,925	6,483	144	147	152
October	2,651	2,933	146	149	151
November	2,651	2,933	145	149	151
December	9,061	12,821	142	149	152
1982 Total	**71,169**	**108,441**	**141**	**148.6**	**152**
2003 Year Data					
January	9,841	13,182	149	151	151
February	22,114	27,159	150	152	154
March	10,940	14,469	145	149	153
April	15,970	23,348	146	150	153
May	10,085	15,275	145	149	151
June	652	1,428	146	148	150
July	4,648	7,456	149	150	151
August	4,312	6,793	147	149	151
September	2,123	2,744	145	148	150
October	4,202	6,267	147	149	150
November	12,000	16,163	147	150	152
December	2,233	3,306	147	149	152
2003 Total	**99,120**	**137,590**	**145**	**149.3**	**154**

Laguna Reservoir Outflows

As noted before, there is a continuous inflow into Laguna Reservoir. Similarly, there is also a continuous outflow from Laguna Reservoir, albeit slightly lower. Again, this occurs due to the river operators' efforts to factor the Laguna Reservoir releases with the scheduled water deliveries to Mexico at NIB.

Figure 7 provides a graphical comparison of the mean hourly Laguna Reservoir outflows under year 1982 and 2003 reservoir operations. The range of observed mean hourly Laguna Reservoir outflows was between 61 cfs to 4,206 cfs as shown in Table 5. The year 1982 data had a greater range in outflow values. These values ranged from 61 cfs to 4,206 cfs. The average hourly outflow value for 1982 was 528 cfs. The range of mean hourly outflow values for year 2003 was between 225 cfs to 2,391 cfs. The average hourly outflow value for 2003 was 369 cfs.

Figure 8 provides a comparison of the exceedence probability of the range of flows observed for years 1982 and 2003. This graph shows that the outflows for year 1982 generally had higher values. On average, the Laguna Reservoir outflows for year 2003 were approximately 159 cfs higher than those observed in year 1982.

Figure 7
Comparison of Laguna Reservoir Outflows (1982 to 2003 Conditions)
Mean Hourly Outflow Values (cfs)

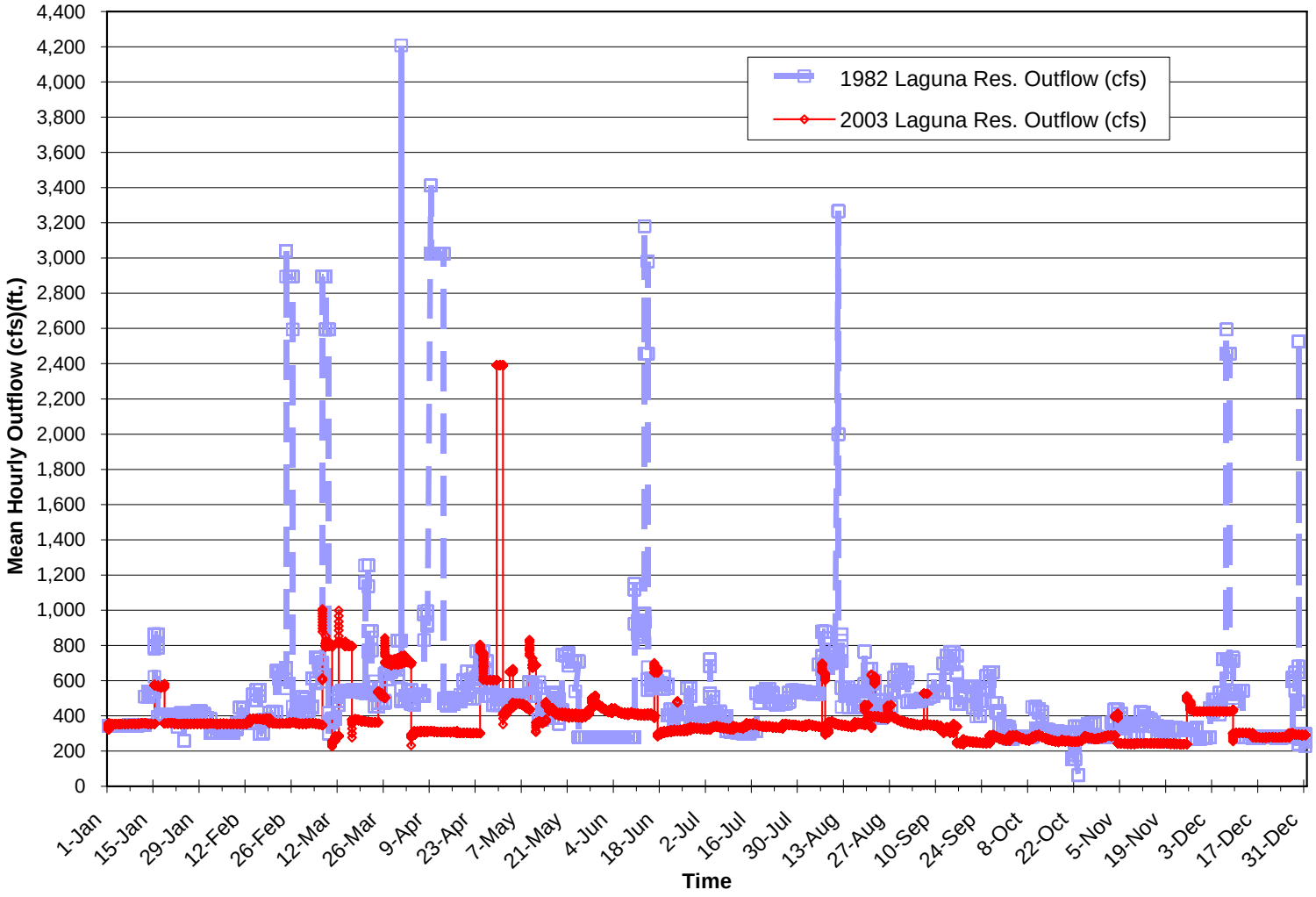


Figure 8
Comparison of Laguna Reservoir Outflows (1982 to 2003 Conditions)
Percent of Values Greater Than or Equal To

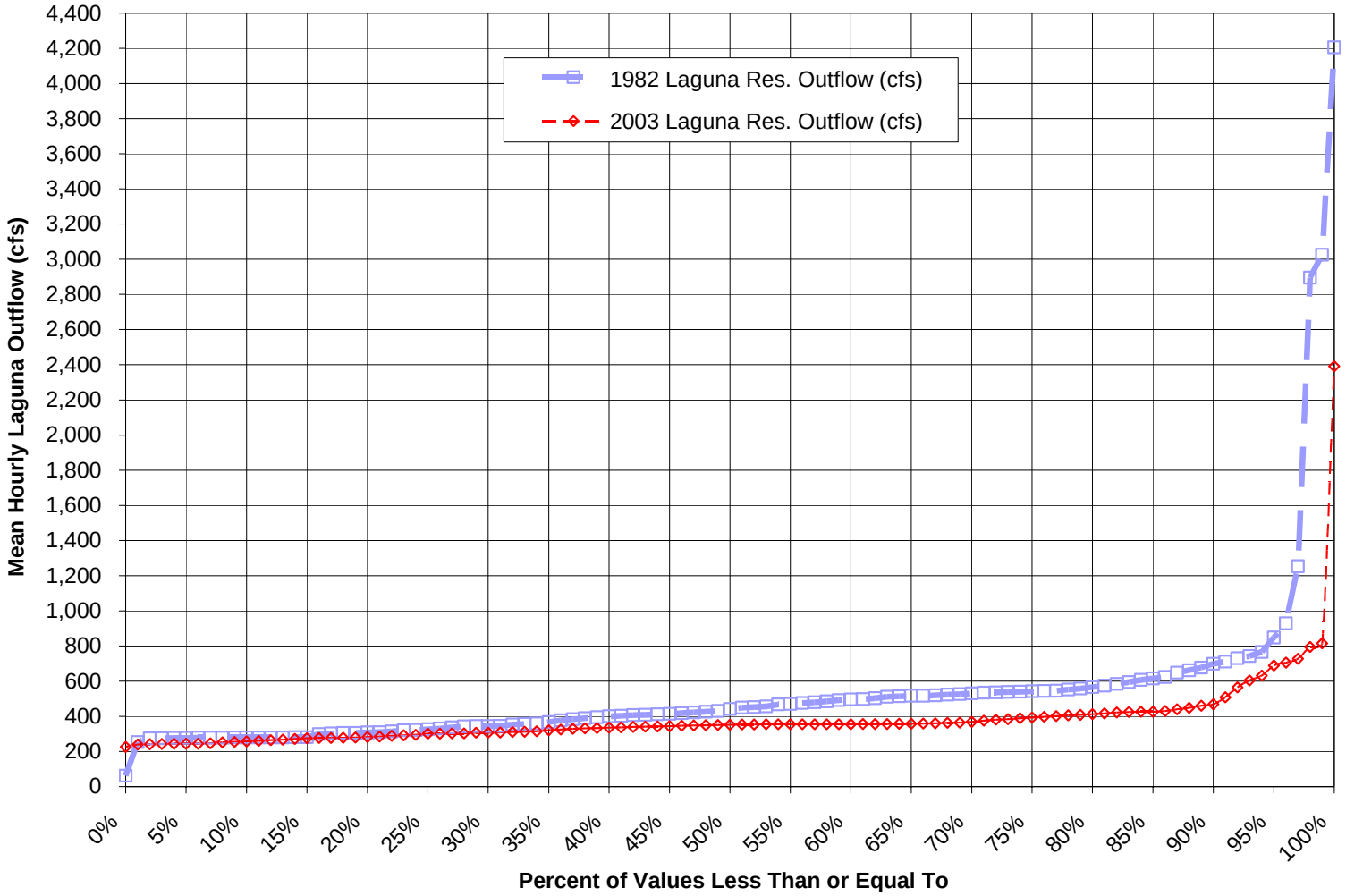


Table 5 provides a summary of the monthly and annual mean hourly Laguna Reservoir outflows. No obvious pattern was observed for the monthly or seasonal variations of these outflows.

Table 5
Comparison of Laguna Reservoir Outflows
(1982 and 2003 Conditions)

Period	Laguna Reservoir Releases (cfs)		
	Minimum	**Average**	**Maximum**
1982 Year Data			
January	257	411	863
February	296	562	3,041
March	299	709	4,206
April	456	929	3,411
May	278	470	754
June	278	533	3,180
July	299	432	719
August	387	573	878
September	339	541	762
October	61	306	450
November	251	328	435
December	226	457	2,593
1982 Total	**61**	**528**	**4,206**
2003 Year Data			
January	321	375	581
February	348	362	386
March	225	535	1,006
April	233	485	2,391
May	309	487	2,391
June	281	282	700
July	326	339	358
August	292	377	698
September	238	302	528
October	251	269	293
November	239	288	511
December	255	326	436
2003 Total	**225**	**369**	**2,391**

FUTURE LAGUNA RESERVOIR OPERATIONS

The proposed project will restore lost storage capacity at Laguna Reservoir. The project will provide approximately 1,100 AF of incremental storage capacity and a new total capacity of approximately 1,500 AF. The additional storage capacity is expected to facilitate improved sluicing operations at Imperial Dam and the improved ability to re-regulate the flows that arrive at Laguna Reservoir.

The reported mean hourly baseflows in years 1982 and 2003 ranged between 265 cfs to 395 cfs. These flows will not be affected by the subject project and are expected to continue to be within this same flow range under future operations.

Sluicing operations at Imperial Dam will also continue in future years. The frequency and magnitude of future sluicing flows are expected to fall within the range of sluicing flows that were observed in years 1982 and 2003. The frequency and magnitude of future sluicing flows will

continue to be based on the availability of water and available storage capacity at Laguna Reservoir. The restored Laguna Reservoir storage capacity will provide increased flexibility in the sluicing operations at Imperial Dam by reducing the constraint that currently exists due to the limited storage capacity in Laguna Reservoir. Under future reservoir operating conditions, sluicing flows will most likely continue to be between 8,000 cfs to 14,000 cfs, with maximum durations between 20 to 30 minutes.

The increased storage capacity is expected to improve Reclamation's ability to manage the baseflows and sluicing flows that arrive at Laguna Reservoir. It is anticipated that under normal operating conditions, the detention time of water that arrives at Laguna Reservoir may be increased to three days or more. This expanded detention time will enable the water that is scheduled to be released from Parker Dam to meet Mexico's order to be reduced by an amount of water that is equal to that which is available in the Laguna Reservoir. Subsequently, the water in storage can be released to meet Mexico's water order. This more efficient mode of operation will reduce the probability and frequency of over-deliveries to Mexico.

The expanded storage capacity will also enhance Reclamation's ability to use the water stored at Laguna Reservoir to meet shortfalls between the water orders of users on the U.S. side and water arriving at Imperial Dam. In this case, a portion of the water that was released from Parker Dam to meet Mexico's water order can be delivered to one or more users on the U.S. side and Mexico's water order is completed by releasing water stored in Laguna Reservoir.

Historical water levels in Laguna Reservoir have ranged between 140.5 to 151.3 feet. On some occasions, Reclamation has surcharged the reservoir and this has temporarily raised the reservoir water surface elevations to as high as 151.8 feet during non-flood periods. The duration of these surcharging events has ranged from approximately 12 hours to over 3 days. In the future, with the expanded reservoir storage capacity, the Laguna Reservoir is expected to continue to be operated within the range of elevations that have been observed in the past.

The expanded Laguna Reservoir storage capacity will most likely increase the average detention time of the water held in storage. However, because the storage capacity will be greater than under current conditions, the future average water levels may be closer to those observed under the 1982 reservoir conditions (148.6 feet) as compared to the 2003 reservoir conditions (149.3 feet), albeit a difference of no more than seven-tenths of a foot.

The current goal is to schedule sluicing operations on a bi-weekly basis. However, the limited storage capacity at Laguna Reservoir and periodic differences between water orders and water arriving at Imperial Dam make the frequency of actual sluicing operations somewhat irregular. The expanded storage capacity will permit a more regular frequency of sluicing operations and make this schedule more consistent with the current goal.

Future outflows from Laguna Reservoir are expected to be within the range of flows observed in past years. However, the expanded reservoir capacity will provide greater flexibility in managing and regulating these outflows. In the future, with the restored reservoir capacity, it is anticipated that releases from Laguna under normal operating conditions will most likely be in the range of 300 cfs to 1,500 cfs. This lower outflow range will enable the river operators at the YAO to manage these releases in a way that the water deliveries to Mexico at NIB will not exceed Mexico's water order at NIB.

CONCLUSIONS

The restoration of lost storage capacity at Laguna Reservoir will increase the flexibility of the sluicing operations and improve the re-regulation of flows arriving at Laguna Reservoir. However, future reservoir operations will be similar to those observed under the year 1982 reservoir operation

conditions. The amount of water that is kept in storage in Laguna Reservoir will continue to be closely managed by the river operations staff in the YAO. Future water surface elevations and the daily fluctuations thereof are expected to be managed and are projected to be within the range observed under historical conditions.

D2 - Laguna Dam Flow and Water Surface Elevation Data Tables

Table 1
1982 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

Day	January		February		March		April		May		June		July		August		September		October		November		December	
	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)	WSL (ft.)	(cfs)
1	149.40	293	147.30	338	146.90	407	146.50	477	149.80	469	151.30	425	149.95	366	150.80	529	146.50	543	148.70	311	150.55	276	150.35	259
2	149.40	292	147.50	305	149.50	482	146.20	492	150.00	481	151.30	420	148.35	381	150.71	532	146.30	490	149.10	288	145.25	298	150.45	346
3	149.35	290	147.60	324	152.35	694	148.20	495	150.00	483	151.35	430	147.70	519	150.50	529	146.30	427	148.20	273	150.50	411	149.30	517
4	149.35	287	147.60	325	150.90	480	148.60	483	150.00	491	151.35	432	145.70	381	150.50	524	146.15	470	149.80	274	148.95	434	147.60	501
5	149.40	282	147.50	319	149.40	600	150.20	495	150.00	489	151.50	615	146.30	350	150.50	571	146.60	494	151.75	308	148.80	370	145.80	472
6	149.40	282	147.50	312	147.20	622	149.80	481	150.00	488	151.45	636	148.40	376	149.20	718	146.63	495	151.00	284	149.35	307	143.00	543
7	149.50	279	147.40	301	144.30	464	149.80	631	150.00	488	151.50	634	148.40	369	147.80	717	142.70	486	151.10	285	149.35	309	140.90	556
8	149.50	279	148.50	300	152.40	373	146.80	788	149.95	489	151.50	631	148.00	312	146.00	609	147.15	494	151.10	271	150.30	327	141.90	523
9	149.50	279	149.50	292	145.35	351	146.30	550	149.80	544	151.60	786	147.75	267	145.20	578	150.70	834	151.00	260	150.45	330	151.50	626
10	149.55	277	150.20	318	146.85	369	143.87	512	149.20	582	150.50	956	147.70	264	144.50	589	151.20	1,010	150.40	445	150.20	368	151.60	1,270
11	149.55	277	150.40	353	148.80	439	143.87	501	148.70	563	148.80	889	147.50	261	142.30	517	151.00	542	149.25	432	149.35	403	151.60	1,390
12	149.65	279	150.30	271	149.70	501	143.87	492	147.40	439	146.20	764	147.20	256	144.60	504	150.80	571	148.45	359	148.10	406	151.65	1,250
13	150.85	483	150.30	279	151.65	1,450	145.60	472	148.50	396	143.20	639	147.45	254	146.50	534	149.65	726	148.25	304	147.35	401	151.35	558
14	151.05	525	150.25	411	151.65	1,590	146.80	481	144.30	419	145.30	566	147.00	256	148.50	557	145.20	724	148.00	300	146.50	389	150.75	408
15	151.15	701	148.55	525	151.25	1,410	148.20	469	148.00	340	149.50	574	147.60	256	151.10	711	146.20	652	147.90	288	143.90	365	150.10	369
16	148.30	831	147.15	393	151.80	2,010	148.40	481	147.80	391	149.50	592	144.80	256	150.80	527	144.00	533	147.80	278	145.50	319	150.15	341
17	148.75	471	147.40	317	151.75	1,890	148.80	486	146.20	447	149.83	581	147.80	318	150.80	531	145.00	521	147.70	280	148.60	316	151.00	382
18	148.80	490	147.40	374	151.65	1,230	148.65	489	148.95	421	149.55	578	145.50	402	151.20	591	145.00	526	147.65	279	148.93	321	151.60	505
19	148.80	489	147.75	391	151.85	686	150.20	550	149.45	409	147.60	560	145.40	414	149.60	705	145.00	518	147.50	278	148.60	298	151.40	495
20	148.80	493	149.30	430	150.65	744	149.35	565	149.60	709	146.50	455	146.30	488	147.80	618	144.80	521	147.50	277	148.70	280	151.00	366
21	148.80	496	149.30	471	146.50	894	149.25	504	151.30	721	146.90	360	146.50	451	147.00	563	145.55	503	147.40	276	148.72	289	150.70	351
22	148.65	477	148.00	589	145.20	605	149.30	580	151.10	721	147.70	372	148.50	488	144.20	441	148.25	481	148.10	287	148.60	296	150.35	348
23	148.70	423	146.35	540	145.20	507	148.30	646	151.25	742	149.30	395	148.00	481	147.50	421	148.70	525	147.05	292	148.50	295	150.25	342
24	148.75	401	142.35	495	142.70	492	147.30	637	151.26	773	149.20	389	148.25	486	148.80	418	148.50	539	148.95	285	148.35	291	150.15	357
25	148.55	383	143.30	413	148.30	488	146.00	568	151.40	787	149.50	388	148.30	502	151.55	1,740	148.30	564	148.80	281	148.35	280	151.35	464
26	148.90	398	142.55	364	148.85	568	141.50	518	151.40	784	148.70	397	148.30	515	151.60	1,670	147.20	585	145.00	296	148.35	261	151.00	352
27	148.90	447	145.60	358	148.50	627	146.50	463	151.45	763	147.20	387	149.70	537	151.55	718	145.90	526	150.40	330	148.35	264	150.30	542
28	149.32	465	143.90	338	147.30	612	147.70	495	151.45	747	146.40	290	151.20	1,330	151.85	622	146.50	449	150.50	314	148.90	263	146.50	699
29	149.80	429			147.75	594	140.50	483	151.30	495	147.50	335	151.45	1,080	149.75	661	145.50	376	150.85	283	150.10	258	145.40	478
30	149.30	425			144.40	564	149.50	475	151.35	437	147.60	358	151.30	610	148.30	654	145.85	322	150.35	271	150.20	265	146.90	343
31	147.75	411			146.40	515			151.35	430			151.00	535	147.20	620			150.65	275			150.80	900
Month Days	**31**		**28**		**31**		**30**		**31**		**30**		**31**		**31**		**30**		**31**		**30**		**31**	
Maximum Value	**151.15**	**831**	**150.40**	**589**	**152.40**	**2,010**	**150.20**	**788**	**151.45**	**787**	**151.60**	**956**	**151.45**	**1,330**	**151.85**	**1,740**	**151.20**	**1,010**	**151.75**	**445**	**150.55**	**434**	**151.65**	**1,390**
Average Value	**149.27**	**408**	**147.53**	**373**	**148.61**	**750**	**147.20**	**525**	**149.75**	**546**	**148.98**	**528**	**147.98**	**444**	**148.65**	**652**	**146.90**	**548**	**149.04**	**299**	**148.59**	**323**	**149.25**	**544**
Minimum Value	**147.75**	**277**	**142.35**	**271**	**142.70**	**351**	**140.50**	**463**	**144.30**	**340**	**143.20**	**290**	**144.80**	**254**	**142.30**	**418**	**142.70**	**322**	**145.00**	**260**	**143.90**	**258**	**140.90**	**259**

Notes:

1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**365**	**365**
Annual Maximum Value	**152.40**	**2,010**
Annual Average Value	**148.49**	**496**
Annual Minimum Value	**140.50**	**254**

Table 2
2000 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

	January		February		March		April		May		June		July		August		September		October		November		December	
Day	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**
1	148.02	444	146.04	328	150.14	1,030	150.72	549	149.73	530	150.31	649	151.12	996	151.06	780	149.99	500	149.38	552	148.77	474	148.65	429
2	151.56	1,020	146.06	327	149.66	1,080	150.64	658	149.88	545	150.28	560	150.30	549	151.42	1,060	149.58	488	148.97	537	149.87	448	148.65	423
3	151.09	861	146.07	327	149.22	1,060	150.99	754	150.67	683	149.66	541	149.67	534	151.39	1,180	149.26	479	148.28	533	151.06	543	148.79	425
4	150.23	484	146.08	327	148.91	1,060	150.29	527	150.31	545	149.14	616	149.13	509	151.43	1,140	149.37	478	150.86	577	149.20	556	150.23	477
5	149.30	461	146.06	327	148.23	1,050	149.67	519	149.91	534	151.36	769	148.65	483	151.22	1,020	151.51	1,560	151.39	1,300	148.93	541	149.85	460
6	148.93	443	146.29	329	150.12	1,170	149.24	510	149.76	529	150.90	661	148.29	472	150.52	552	151.03	883	150.99	962	150.53	518	149.56	463
7	148.11	423	148.22	387	148.41	1,620	148.67	499	149.30	598	150.14	565	149.59	514	151.45	1,230	150.38	522	151.20	914	149.99	500	149.62	478
8	142.30	394	148.64	398	144.98	1,700	148.77	505	151.34	833	149.47	545	151.02	724	151.51	1,690	149.91	503	151.59	1,880	149.52	494	150.34	521
9	146.73	374	146.86	377	146.45	2,080	148.84	509	151.49	1,180	148.91	527	150.41	510	150.78	560	150.24	521	151.40	1,600	148.71	491	150.66	549
10	146.42	361	146.90	359	143.86	1,000	148.47	503	151.07	704	148.54	513	150.81	553	150.05	494	149.72	506	151.86	2,900	148.54	487	150.31	527
11	146.26	354	146.53	349	143.76	824	149.22	525	150.48	560	148.24	505	150.00	482	149.44	478	149.23	484	151.59	2,220	148.57	416	149.93	518
12	146.18	349	146.58	354	141.71	391	148.66	515	149.86	537	148.05	498	149.29	469	148.91	461	148.85	473	151.70	2,390	148.87	354	149.64	515
13	142.14	378	146.45	349	141.69	351	148.25	508	149.39	519	142.90	493	148.84	452	148.56	449	148.59	464	151.82	2,930	150.41	463	149.45	500
14	150.29	438	147.23	371	144.73	344	148.22	513	149.83	643	147.75	470	150.38	494	149.51	487	148.38	459	151.31	1,460	149.89	527	149.29	485
15	149.38	420	146.85	379	146.19	387	150.37	698	151.57	1,580	147.62	466	151.37	913	151.00	716	148.25	454	151.68	2,240	149.53	498	149.16	488
16	148.30	408	147.52	365	147.22	416	151.71	1,900	151.14	921	147.53	467	150.83	549	150.06	505	150.00	603	151.35	1,510	149.26	479	149.04	475
17	149.60	431	146.50	355	147.61	421	151.02	920	151.25	974	147.46	463	151.20	690	149.54	490	151.32	1,070	151.51	1,760	149.04	470	148.96	480
18	148.51	406	146.37	346	147.82	427	151.22	750	150.58	569	147.56	465	151.10	677	149.22	484	151.22	927	151.41	1,310	149.04	463	148.92	469
19	147.55	382	146.31	341	147.92	432	150.96	717	151.40	932	148.28	487	151.18	706	151.86	1,480	150.00	760	151.24	951	148.26	459	148.89	477
20	146.84	360	146.30	345	148.38	463	150.29	578	151.39	1,180	151.02	737	150.57	513	151.63	989	150.30	547	151.45	824	148.21	455	148.87	471
21	146.50	351	148.85	446	149.51	471	149.67	712	151.06	759	151.30	953	151.38	896	151.05	870	149.62	513	151.64	925	148.68	451	148.84	475
22	146.29	343	151.52	1,220	149.02	458	151.64	1,990	151.09	952	151.13	718	151.30	991	150.37	519	149.36	484	151.71	1,890	148.64	452	148.79	466
23	146.18	336	151.61	1,550	150.91	552	151.58	1,600	151.38	560	150.24	587	150.49	645	149.79	497	148.65	464	151.84	3,100	148.64	448	148.78	472
24	146.13	333	150.87	759	150.71	531	150.29	787	150.19	545	149.55	560	150.94	753	149.37	487	148.36	450	152.06	3,660	148.65	441	148.22	478
25	146.14	328	149.90	453	149.91	506	150.17	573	149.77	532	148.91	536	151.30	583	149.52	475	148.30	448	151.98	3,210	148.64	444	148.26	472
26	146.14	331	148.99	428	151.08	1,180	149.43	539	149.29	516	148.41	516	151.40	656	151.02	844	148.68	460	150.99	819	148.64	442	148.81	479
27	146.12	329	148.10	554	151.44	1,200	148.89	525	148.93	505	148.06	499	151.21	675	150.98	931	151.10	657	150.42	566	148.64	438	148.82	487
28	146.10	327	148.88	927	151.37	1,020	148.49	511	148.99	505	147.86	490	150.44	558	151.49	1,470	150.44	546	149.96	533	148.64	438	148.81	484
29	146.07	326	149.82	992	151.62	1,570	148.16	495	151.26	767	149.43	564	149.71	500	151.59	2,020	144.29	513	149.57	502	148.65	435	148.78	485
30	146.04	328			151.47	1,270	148.37	495	151.38	923	151.59	1,640	149.15	458	151.19	1,080	149.84	528	149.21	487	148.65	433	148.80	483
31	146.04	328			151.33	884			151.29	846			150.64	510	150.52	543			148.99	479			148.80	491
Month Days	**31**		**29**		**31**		**30**		**31**		**30**		**31**		**31**		**30**		**31**		**30**		**31**	
Maximum Value	**151.56**	**1,020**	**151.61**	**1,550**	**151.62**	**2,080**	**151.71**	**1,990**	**151.57**	**1,580**	**151.59**	**953**	**151.40**	**996**	**151.86**	**2,020**	**151.51**	**1,560**	**152.06**	**3,660**	**151.06**	**556**	**150.66**	**549**
Average Value	**147.27**	**415**	**147.67**	**495**	**148.24**	**855**	**149.76**	**720**	**150.48**	**715**	**149.05**	**566**	**150.38**	**622**	**150.56**	**840**	**149.53**	**594**	**150.95**	**1,536**	**149.09**	**470**	**149.18**	**480**
Minimum Value	**142.14**	**326**	**146.04**	**327**	**141.69**	**344**	**148.16**	**495**	**148.93**	**505**	**142.90**	**463**	**148.29**	**452**	**148.56**	**449**	**144.29**	**448**	**148.28**	**502**	**148.21**	**354**	**148.22**	**423**

Notes:
1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**366**	**366**
Annual Maximum Value	**152.06**	**3,660**
Annual Average Value	**149.36**	**692**
Annual Minimum Value	**141.69**	**326**

Table 3
2003 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

	January		February		March		April		May		June		July		August		September		October		November		December	
Day	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**	**WSL (ft.)**	**(cfs)**
1	150.50	505	150.92	267	150.87	307	146.20	438	145.61	437	149.29	539	148.91	512	149.60	519	148.12	457	148.17	363	149.80	593	146.76	386
2	150.75	312	150.93	265	150.87	357	146.07	434	148.53	491	148.90	519	148.85	508	150.58	800	147.92	448	147.16	368	149.62	605	146.76	400
3	150.73	278	150.86	274	151.03	663	147.90	370	149.68	558	148.52	514	148.81	507	150.16	536	147.63	443	149.16	397	149.77	1,140	146.76	367
4	150.71	269	150.85	269	151.23	884	150.40	403	150.23	1,290	149.44	540	149.65	538	149.90	506	147.57	436	149.88	448	150.35	1,060	146.76	360
5	150.73	270	150.88	271	150.90	432	152.30	564	150.78	1,440	148.83	522	149.71	547	149.67	483	147.40	425	149.27	397	150.98	560	146.76	354
6	150.77	268	150.85	274	150.86	351	152.52	998	150.42	1,320	148.43	492	149.44	531	149.49	647	147.99	438	148.78	387	150.78	353	146.76	357
7	150.82	278	150.86	285	149.90	613	152.30	976	150.84	1,070	148.25	477	149.18	519	147.15	605	147.55	430	148.38	373	150.64	345	146.76	355
8	150.82	281	150.86	283	145.30	470	152.44	904	150.17	601	148.10	472	149.00	506	148.16	451	147.50	423	148.09	359	150.56	342	146.76	349
9	150.82	283	150.81	283	145.67	338	152.43	1,000	149.29	697	148.56	491	148.85	494	148.43	526	147.38	416	148.64	378	150.57	511	147.80	324
10	150.84	298	150.80	284	145.35	292	152.37	625	145.45	604	148.70	477	149.26	507	148.00	510	147.20	410	149.44	396	151.00	487	151.49	336
11	150.95	577	150.86	285	148.90	244	152.21	447	145.61	448	148.03	473	149.44	513	147.61	494	147.08	393	149.96	548	150.84	355	151.80	352
12	151.31	1,280	150.88	284	149.10	407	152.21	438	148.41	469	148.00	479	149.31	499	147.42	484	145.60	329	149.38	376	150.86	619	151.51	345
13	150.85	338	151.81	415	145.60	315	152.20	438	148.22	458	147.95	478	149.16	492	147.27	476	146.66	370	148.83	363	151.26	1,300	151.35	343
14	150.83	288	153.30	2,200	145.63	400	152.29	444	148.93	519	147.94	482	149.94	750	147.14	469	145.44	330	148.54	353	151.50	1,690	151.33	342
15	150.83	288	153.31	1,330	145.37	427	152.16	433	147.58	559	147.97	485	150.71	907	146.98	462	146.50	335	148.14	345	151.33	1,230	151.23	338
16	150.53	310	153.28	1,060	145.34	505	152.44	529	147.39	530	147.62	683	150.56	648	148.08	494	147.00	326	147.63	337	151.21	756	149.12	335
17	150.25	299	153.00	719	153.00	2,440	152.54	862	146.41	487	145.78	450	150.48	554	147.85	495	146.85	297	147.65	333	150.86	381	149.05	331
18	150.93	444	153.48	1,990	152.90	2,630	151.28	1,090	146.26	463	147.55	423	150.00	518	148.07	484	147.55	317	148.17	347	151.00	461	149.02	328
19	151.30	1,340	152.40	1,680	152.29	744	151.55	1,640	146.04	461	147.93	447	149.74	505	148.21	547	147.86	326	147.82	344	150.82	358	149.02	328
20	151.19	1,280	151.30	954	152.26	509	151.77	2,310	145.98	455	148.06	451	149.58	499	150.49	795	147.58	320	148.03	349	150.69	348	149.10	317
21	151.00	741	150.92	342	152.10	427	151.20	697	145.78	449	148.21	460	149.73	504	149.94	625	147.36	318	147.67	342	150.64	343	149.14	314
22	150.80	286	150.90	308	151.96	419	151.11	718	145.75	451	148.36	475	149.50	502	147.87	689	147.23	315	147.66	338	150.59	338	149.09	317
23	150.82	275	150.94	320	151.92	416	151.28	861	145.81	451	148.14	481	149.38	498	147.39	463	147.14	312	147.77	338	150.45	338	149.08	315
24	150.84	279	150.98	337	151.80	468	151.07	615	145.67	451	148.44	480	149.29	497	147.26	450	147.01	310	148.21	357	150.39	334	149.08	316
25	150.85	275	150.94	711	150.85	508	148.30	774	145.66	451	148.47	469	149.21	513	147.09	444	147.03	309	149.66	394	150.26	513	149.12	318
26	150.85	274	151.75	3,530	149.83	551	145.61	471	145.89	466	148.60	473	150.72	948	147.00	457	147.25	344	149.01	386	148.39	606	149.28	359
27	150.87	275	151.51	2,380	145.98	451	145.61	453	145.77	501	149.17	482	150.35	571	150.38	732	149.96	441	148.96	387	146.76	460	150.92	698
28	150.87	270	150.89	381	145.80	411	145.61	445	147.50	606	149.36	509	150.41	556	149.65	524	149.34	388	148.51	376	146.76	377	150.44	356
29	150.85	266			145.70	416	145.61	472	150.42	695	149.07	517	150.39	556	149.13	501	148.86	376	148.68	381	146.76	371	150.21	345
30	150.86	270			145.91	418	145.61	448	150.71	729	148.98	513	150.50	537	148.69	481	148.49	365	149.00	393	146.76	362	150.08	343
31	150.88	274			145.99	425			149.90	567			149.83	524	148.38	466			149.18	405			150.16	343
Month Days	**31**		**28**		**31**		**30**		**31**		**30**		**31**		**31**		**30**		**31**		**30**		**31**	
Maximum Value	**151.31**	**1,340**	**153.48**	**3,530**	**153.00**	**2,630**	**152.54**	**2,310**	**150.84**	**1,440**	**149.44**	**683**	**150.72**	**948**	**150.58**	**800**	**149.96**	**457**	**149.96**	**548**	**151.50**	**1,690**	**151.80**	**698**
Average Value	**150.84**	**418**	**151.47**	**785**	**149.04**	**600**	**150.22**	**719**	**147.76**	**616**	**148.36**	**491**	**149.67**	**559**	**148.49**	**540**	**147.47**	**372**	**148.56**	**374**	**150.07**	**592**	**149.11**	**355**
Minimum Value	**150.25**	**266**	**150.80**	**265**	**145.30**	**244**	**145.61**	**370**	**145.45**	**437**	**145.78**	**423**	**148.81**	**492**	**146.98**	**444**	**145.44**	**297**	**147.16**	**333**	**146.76**	**334**	**146.76**	**314**

Notes:

1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**365**	**365**
Annual Maximum Value	**153.48**	**3,530**
Annual Average Value	**149.24**	**530**
Annual Minimum Value	**145.30**	**244**

Table 4
2004 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

Day	January		February		March		April		May		June		July		August		September		October		November		December	
	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)
1	149.91	340	150.87	355	150.83	482	144.84	896	145.26	502	148.37	522	148.17	445	149.63	472	146.32	416	145.18	313	149.37	313	147.10	429
2	149.80	333	150.86	350	150.99	604	145.16	803	145.41	509	147.66	501	148.52	440	149.57	570	148.75	508	148.13	401	149.25	308	146.30	406
3	149.71	333	150.90	342	151.24	1,090	151.21	2,540	145.34	492	148.03	499	150.44	503	146.04	762	149.82	560	149.69	479	148.98	416	145.57	386
4	150.65	621	150.88	341	151.21	1,080	151.46	4,200	145.14	469	148.90	521	150.79	783	143.32	481	150.32	1,000	149.87	490	146.19	642	144.84	364
5	151.23	1,370	150.82	341	150.59	729	151.09	2,800	145.01	464	149.79	546	150.43	571	144.40	531	150.37	1,010	149.63	353	141.58	424	144.32	347
6	151.30	1,810	150.79	348	148.00	836	150.88	1,880	146.34	505	149.76	558	150.05	474	146.32	583	149.69	656	149.23	287	145.29	519	144.69	373
7	150.95	989	150.84	356	146.21	542	150.30	1,050	146.87	524	149.07	541	149.74	460	146.85	553	148.69	538	149.01	277	147.21	383	149.39	870
8	150.77	444	150.84	355	149.08	526	NR	642	146.33	493	148.39	524	149.49	450	146.14	499	147.78	512	149.28	273	147.22	389	149.86	1,220
9	150.62	360	150.18	590	148.75	663	NR	692	146.56	489	147.75	509	149.28	441	146.86	545	147.32	486	149.95	342	146.69	373	149.63	938
10	150.47	346	149.60	440	144.97	683	NR	1,040	147.14	522	148.61	523	149.15	437	145.39	477	148.46	524	149.99	369	146.31	364	149.28	572
11	150.33	341	150.02	312	143.24	549	NR	1,210	146.11	475	151.00	892	149.07	431	146.06	490	150.21	695	149.76	340	146.02	359	148.81	462
12	150.11	337	150.18	313	143.03	555	NR	694	144.82	452	151.04	1,280	148.93	425	145.19	558	150.48	1,070	149.67	318	145.86	355	149.26	493
13	149.96	335	150.37	314	143.00	562	NR	614	145.59	443	150.24	621	148.76	417	142.33	460	149.70	640	149.99	457	146.97	379	148.28	442
14	149.88	333	150.21	539	143.47	569	NR	594	145.75	445	149.35	602	148.68	404	144.83	472	148.79	552	149.88	373	146.58	371	147.39	386
15	149.77	325	147.56	818	145.85	600	NR	667	145.86	443	148.56	603	148.66	395	149.41	669	148.36	542	149.77	332	145.50	449	147.17	322
16	149.83	307	146.22	723	147.57	641	NR	634	148.34	457	151.03	979	148.67	396	150.06	861	147.30	504	149.50	291	141.14	405	147.14	305
17	149.90	312	145.76	548	150.73	834	NR	558	151.35	1,070	150.67	794	148.71	398	150.51	1,010	145.54	433	149.91	394	140.86	355	147.07	300
18	149.91	318	147.90	448	151.03	1,530	NR	662	151.31	1,100	149.93	544	148.73	399	150.79	1,860	144.04	358	149.78	390	141.29	344	147.06	300
19	149.97	322	148.56	393	150.55	1,020	NR	549	150.99	548	149.40	520	148.25	507	149.03	977	143.60	325	149.52	285	147.11	485	147.05	298
20	149.96	328	148.52	392	149.86	742	148.47	575	150.84	393	149.02	511	144.60	566	143.40	633	143.26	306	149.43	289	149.50	542	147.03	295
21	149.89	308	149.08	409	149.24	721	148.23	655	150.86	383	148.70	503	143.49	439	143.88	452	149.01	859	150.07	1,060	149.75	677	147.09	287
22	150.13	274	149.57	425	148.72	707	148.36	847	150.89	397	148.32	490	145.95	401	147.15	614	150.40	1,450	150.18	2,720	149.95	986	147.10	287
23	150.46	285	150.53	701	148.13	685	149.68	901	150.92	411	148.04	479	147.97	365	146.70	623	149.60	602	150.15	3,050	150.02	2,110	147.13	283
24	150.73	297	151.67	2,380	147.62	681	151.92	810	150.89	409	147.89	469	148.19	371	143.99	468	145.53	634	150.22	2,870	149.91	1,410	147.12	282
25	150.85	319	151.81	3,430	147.95	706	151.78	714	150.44	555	147.97	460	148.40	376	145.08	449	141.23	342	149.94	1,290	149.95	904	147.12	281
26	150.82	331	151.24	1,460	148.16	739	151.77	639	146.51	731	148.10	464	148.59	380	145.56	442	144.97	456	150.17	1,890	149.44	619	147.18	278
27	150.81	341	150.97	635	148.33	751	151.71	562	145.83	450	148.15	462	148.91	402	144.90	410	147.01	480	149.85	899	149.21	573	147.20	276
28	150.96	424	150.85	502	148.03	746	151.30	560	147.60	492	148.11	461	148.66	420	144.83	395	148.69	382	149.56	336	149.80	742	147.25	278
29	150.89	359	150.84	489	147.90	690	148.22	522	150.32	600	148.05	455	148.47	426	144.81	407	149.69	489	150.07	662	149.03	549	147.29	277
30	150.90	341			148.24	656	146.40	491	150.04	586	148.28	456	149.02	443	144.66	401	146.69	559	150.04	820	147.97	455	146.78	390
31	150.93	345			148.12	772			149.16	551			149.75	472	144.76	377			149.56	411			141.45	416
Month Days	**31**	**31**	**29**	**29**	**31**	**31**	**18**	**30**	**31**	**31**	**30**	**30**	**31**	**31**	**31**	**31**	**30**	**30**	**31**	**31**	**30**	**30**	**31**	**31**
Maximum Value	**151.30**	**1,810**	**151.81**	**3,430**	**151.24**	**1,530**	**151.92**	**4,200**	**151.35**	**1,100**	**151.04**	**1,280**	**150.79**	**783**	**150.79**	**1,860**	**150.48**	**1,450**	**150.22**	**3,050**	**150.02**	**2,110**	**149.86**	**1,220**
Average Value	**150.40**	**446**	**149.95**	**657**	**148.08**	**733**	**149.60**	**1,018**	**147.86**	**525**	**148.94**	**580**	**148.60**	**446**	**146.21**	**611**	**147.72**	**598**	**149.58**	**753**	**147.13**	**577**	**147.10**	**415**
Minimum Value	**149.71**	**274**	**145.76**	**312**	**143.00**	**482**	**144.84**	**522**	**144.82**	**383**	**147.66**	**455**	**143.49**	**365**	**142.33**	**395**	**141.23**	**306**	**145.18**	**273**	**140.86**	**308**	**141.45**	**276**

Notes:

1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)
3. NR = No Record available for the respective date(s)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**354**	**366**
Annual Maximum Value	**151.92**	**4,200**
Annual Average Value	**148.38**	**608**
Annual Minimum Value	**140.86**	**273**

Table 5
2005 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

	January		February		March		April		May		June		July		August		September		October		November		December	
Day	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)
1	143.72	288	148.68	311	149.51	788	145.52	690	149.15	704	145.98	405	143.25	434	142.68	457	143.35	405	142.20	332	148.81	348	143.27	502
2	148.17	282	148.54	307	149.35	350	143.05	541	149.09	788	149.27	521	143.51	433	145.34	608	143.27	405	142.20	329	148.80	351	144.34	475
3	148.70	290	148.23	407	149.16	309	142.43	489	148.96	435	148.52	474	143.45	427	149.66	1,060	143.19	406	142.19	332	148.81	350	145.59	503
4	149.88	922	144.43	583	149.01	300	142.89	510	148.97	399	147.85	462	143.46	427	149.23	532	143.16	405	142.20	330	148.84	353	144.57	476
5	149.91	2,330	140.64	339	149.72	767	144.12	609	149.00	401	147.29	451	143.24	426	149.00	431	143.16	406	142.14	329	149.18	474	143.98	459
6	149.81	2,180	140.57	323	149.62	727	142.09	461	148.96	398	146.81	443	143.58	432	148.82	426	145.22	414	142.17	331	148.44	482	143.74	449
7	149.88	1,540	140.49	316	149.26	332	141.85	431	148.95	393	146.46	431	145.23	502	148.62	425	148.33	477	142.18	331	145.46	540	143.79	449
8	149.71	1,010	140.84	336	148.78	443	142.05	457	148.95	393	146.23	426	145.71	545	148.43	425	149.08	532	142.20	333	144.12	412	145.06	486
9	149.78	901	141.03	330	145.39	653	141.95	466	149.15	458	146.04	423	144.53	495	149.75	917	148.36	496	142.10	333	143.53	399	146.07	523
10	149.67	767	143.07	505	142.56	346	142.90	508	149.46	765	145.97	422	143.67	429	149.93	1,860	146.09	441	142.92	340	143.49	386	146.44	537
11	149.27	855	148.73	1,220	145.87	323	145.65	663	149.78	1,860	145.88	423	143.56	411	149.79	2,280	143.76	415	147.94	409	146.47	449	146.69	553
12	149.37	517	149.94	2,410	145.17	468	146.11	637	149.26	591	146.35	434	143.55	411	149.78	1,080	143.07	411	149.21	506	145.16	497	146.93	563
13	148.48	568	149.73	1,460	144.22	438	148.87	1,060	149.34	383	147.66	473	145.70	509	149.57	648	142.99	410	148.43	369	142.41	542	147.73	587
14	142.46	633	149.20	355	143.77	418	148.64	887	149.36	368	147.14	461	146.16	554	149.27	413	142.99	407	148.66	351	140.58	475	149.16	1,010
15	141.44	326	148.88	309	143.73	421	147.76	505	149.46	522	146.71	456	146.07	461	148.99	406	142.66	406	148.39	349	140.20	405	149.41	1,360
16	145.15	282	148.70	301	143.70	428	147.64	441	149.46	410	146.31	447	145.74	435	148.88	404	143.15	466	148.17	348	140.18	405	149.21	1,060
17	145.42	305	148.50	294	143.68	431	147.64	441	149.47	359	146.03	442	146.09	435	148.71	403	142.42	808	149.10	525	140.21	412	148.65	682
18	147.28	303	148.33	292	143.78	406	147.65	444	149.46	361	145.85	438	146.96	470	148.23	440	141.62	606	149.64	1,700	140.20	409	147.75	547
19	147.36	300	148.38	291	144.99	375	147.68	441	149.46	367	145.78	436	147.15	476	144.85	503	141.17	442	149.62	1,960	140.20	414	146.87	511
20	147.44	301	149.71	826	145.67	398	147.70	438	149.48	362	146.26	447	147.67	500	142.34	414	142.47	365	149.05	705	140.22	415	146.27	481
21	147.50	300	149.19	311	146.33	418	147.75	436	149.51	363	145.73	443	147.54	499	142.30	407	142.50	358	148.92	352	140.20	415	145.70	454
22	147.57	300	148.98	304	148.30	731	147.76	431	149.52	364	146.90	458	147.17	479	142.27	406	142.50	353	148.89	335	140.34	412	145.11	426
23	147.62	300	149.54	942	149.70	1,780	144.97	441	149.39	426	148.01	501	146.74	469	142.19	406	142.43	349	149.10	354	143.38	524	144.64	400
24	147.66	298	149.99	3,050	149.15	582	145.62	437	148.99	459	147.28	569	147.37	458	145.96	402	142.43	348	149.12	354	146.80	690	144.32	385
25	147.71	296	149.83	1,400	148.65	482	147.88	437	148.24	520	144.20	591	149.84	956	147.37	398	142.35	345	149.01	339	146.54	707	144.12	370
26	149.34	522	150.00	2,170	148.21	473	147.95	434	147.11	563	142.28	457	149.98	1,750	147.30	404	142.41	346	149.43	472	142.35	550	143.98	360
27	150.05	1,540	149.99	2,420	148.54	608	149.35	998	146.31	589	142.32	444	149.68	1,090	145.65	419	144.30	356	149.22	417	140.77	440	143.90	351
28	149.68	638	149.95	2,060	149.85	1,460	149.19	741	144.66	517	143.85	484	149.41	512	144.10	410	144.63	354	149.02	348	141.72	478	143.91	343
29	149.33	347			149.48	785	149.02	492	143.22	427	144.37	471	148.76	529	145.10	415	142.53	337	148.93	345	143.75	616	143.89	342
30	149.05	323			149.19	582	149.07	495	143.19	387	143.63	440	144.73	698	143.70	408	142.20	331	148.86	345	142.34	460	143.84	340
31	148.85	315			148.10	663			144.22	378			141.97	473	143.41	406			148.82	345			143.83	334
Month Days	**31**		**28**		**31**		**30**		**31**		**30**		**31**		**31**		**30**		**31**		**30**		**31**	
Maximum Value	**150.05**	**2,330**	**150.00**	**3,050**	**149.85**	**1,780**	**149.35**	**1,060**	**149.78**	**1,860**	**149.27**	**591**	**149.98**	**1,750**	**149.93**	**2,280**	**149.08**	**808**	**149.64**	**1,960**	**149.18**	**707**	**149.41**	**1,360**
Average Value	**147.98**	**648**	**147.29**	**863**	**147.18**	**567**	**146.09**	**551**	**148.37**	**515**	**146.10**	**460**	**145.85**	**550**	**146.81**	**614**	**143.59**	**423**	**146.78**	**478**	**143.78**	**460**	**145.57**	**539**
Minimum Value	**141.44**	**282**	**140.49**	**291**	**142.56**	**300**	**141.85**	**431**	**143.19**	**359**	**142.28**	**405**	**141.97**	**411**	**142.19**	**398**	**141.17**	**337**	**142.10**	**329**	**140.18**	**348**	**143.27**	**342**

Notes:
1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**365**	**365**
Annual Maximum Value	**150.05**	**3,050**
Annual Average Value	**146.29**	**550**
Annual Minimum Value	**140.18**	**282**

Table 6
2006 Average Daily Water Surface Elevations and Mean Daily Releases (Flow) From Laguna Dam

	January		February		March		April		May		June		July		August		September		October		November		December	
Day	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)	WSL (ft.)	Flow (cfs)
1	145.27	359	149.35	1,280	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2	149.20	906	149.09	1,090	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
3	148.98	928	148.81	456	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4	148.91	729	148.36	358	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
5	148.44	498	148.19	347	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
6	147.61	416	146.53	589	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
7	146.93	390	145.09	385	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
8	146.72	374	144.52	363	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
9	147.10	381	144.98	354	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
10	146.44	359	146.60	1,030	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
11	145.34	417	148.67	661	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
12	140.92	387	148.19	505	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
13	140.36	302	149.16	975	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
14	140.38	300	148.82	582	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
15	142.09	322	148.60	452	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
16	144.04	328	148.22	437	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
17	143.27	312	147.44	421	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
18	143.07	305	146.68	404	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
19	143.02	304	146.11	389	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
20	142.84	304	145.85	381	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
21	142.83	305	146.09	374	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
22	142.80	305	148.82	614	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
23	142.92	301	148.02	388	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
24	144.00	335	147.48	372	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
25	143.21	328	146.99	359	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
26	144.31	347	146.64	350	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
27	148.23	491	146.38	344	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
28	149.36	1,370	146.05	336	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
29	149.26	1,490			NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
30	148.94	834			NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
31	149.11	862			NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Month Days	**31**	**31**	**28**	**28**	**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**		**0**	
Maximum Value	**149.36**	**1,490**	**149.35**	**1,280**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
Average Value	**145.35**	**503**	**147.35**	**521**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
Minimum Value	**140.36**	**300**	**144.52**	**336**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**

Notes:

1. WSL = Laguna Reservoir Average Daily Water Surface Elevations (feet)
2. Flow = Laguna Dam Mean Daily Releases (cfs)
3. NR = No Record available for the respective date(s)

Annual Values	WSL (ft.)	Flow (cfs)
Year Days	**59**	**59**
Annual Maximum Value	**149.36**	**1,490**
Annual Average Value	**146.30**	**512**
Annual Minimum Value	**140.36**	**300**

Appendix E

Comments on Draft EA

ENV-9.00-Environmental Assessment

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

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Project Control No. 0000889
Folder I.D. 3886
Keyword

In Reply Refer to:
AESO/SE
02-21-02-I-0271
02-21-04-F-0161

May 15, 2006

Memorandum

To: Director, Resource Management Office, Yuma Area Office, Bureau of Reclamation, Yuma, Arizona (YAO-7210, ENV-1.10)

From: Field Supervisor

Subject: Draft Environmental Assessment for the Laguna Restoration Project, Yuma County, Arizona and Imperial County, California

ENV-7.00

This responds to your May 8, 2006, request for Fish and Wildlife Service (FWS) comments on the draft Environmental Assessment (DES) for the Laguna Restoration Project in Yuma County, Arizona and Imperial County, California. The proposed action is a covered action under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP).

Generally the DEA is well written and complete. However, because this is a covered action under the LCR MSCP, the section on Biological Resources should contain a specific list of the covered species that may be present in the project area and the amount of habitat for each of those species that would be affected by the proposed action. The DEA discussion contains a table (Table 3-8) that contains both LCR MSCP species and other special status species that may be in the project area. The only two species discussed in detail are the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and Yuma clapper rail (*Rallus longirostris yumanensis*). It is unclear how much habitat for the flycatcher would be affected by the proposed action, since the discussion on page 3-25 and 26 focuses on survey locations rather than identified habitat for the species under the LCR MSCP.

Based on the information in the DEA, 7.22 acres of wetlands would be eliminated but it is not clear how much of this loss is in habitat for the clapper rail, least bittern (*Ixobrychus exilis hesperis*), or California black rail (*Laterallus jamaicensis coturniculus*). There is also no information on any surveys for clapper rails within the marsh habitat in the project area, although with the implementation of the avoidance, minimization, and mitigation measures, this information may not be essential. We do suggest that the final EA include information on when dredging would occur, and how long the project would take to complete.

The relationship between the 7.22 acres of wetland habitat to be mitigated for the proposed action and the use of wetlands developed on Imperial National Wildlife Refuge for the construction of the Imperial Ponds should be expanded. The connection is unclear, particularly in terms of how much mitigation the Imperial Ponds requires for its purposes and if the total acreage is to be applied to the LCR MSCP requirement for 512 acres of new marsh habitat. Of particular concern is that none of the developed wetlands meets the minimum patch size of five acres for creditable marsh habitat for the LCR MSCP. If the 7.22 acres of wetland mitigation is to meet the requirements of the Clean Water Act and is not part of the LCR MSCP marsh requirement, this should be stated clearly in the final EA.

Thank you for the opportunity to provide comments on this DES. If we may be of further assistance, please contact me at (602) 242-0210 x244 or Lesley Fitzpatrick (x236).

Brenda N Smith

for Steven L. Spangle

cc: Program Manager, LCR MSCP, Bureau of Reclamation, Boulder City, NV (LC-8000)
Federal Projects, Fish and Wildlife Service, Phoenix, AZ
Ms. Marjorie Blaine, Corps of Engineers, Tucson, AZ

\\lfw2azp-fp1\workfiles\Lesley Fitzpatrick\02-271 Laguna Rest DEA comments.doc:bml

ENV-9.00-Environmental Assessment

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
WESTERN REGION
P.O. Box 10
Phoenix, Arizona 85001

IN REPLY REFER TO

Environmental Quality Services
File TR-4301.3-P5
(602) 379-6750

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Folder I.D. 3886

Mr. Julian DeSantiago
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

Re: Laguna Reservoir Restoration Project Environmental Assessment

Dear Mr. DeSantiago:

The Bureau of Indian Affairs (BIA), Western Regional Office has reviewed the Environmental Assessment (EA) for the Laguna Reservoir Restoration Project (Project). We thank you for your coordination efforts with the BIA, Fort Yuma Agency on this project and providing a copy of the EA for review.

From our review of the EA it appears that the Project would be beneficial to the water rights of the Cocopah Tribe. It appears that it would improve the delivery of water from Laguna Dam to the Gila Gravity Main canal which serves Cocopah. No negative impacts are perceived from the project as it relates to tribal water resources.

We apologize for our delayed response in providing comments to your agency, and appreciate your willingness to accept our review response at this time. If you have any questions regarding these comments, please feel free to contact Ms. Amy Heuslein, Regional Environmental Protection Officer, at (602) 379-6750.

Sincerely,

Allen J. Anspach

Regional Director

Yuma Field Office Comments on Laguna Dam Environmental Assessment

Recreation

The Proposed Action involves dredging a portion of the Old Colorado River Channel up to the site identified as the "Alternative Dredge Launch Site and Staging Area." This site already includes an unpaved boat launch that has been historically used by the public for fishing access. From a recreation management perspective, improving the alternative site would provide beneficial impacts for the following reasons:

> The EA discloses that recreational use of the newly created open waters is expected to increase after implementing the Proposed Action. Installing and maintaining an unpaved boat launch and staging area would provide the public with safe and reliable boating access and a designated parking area while it is not in use by Reclamation.
> The other "Dredge Launch Site and Staging Area" on the California side of the river is located within the Fort Yuma Indian Reservation. By only improving this boat launch, the public may be encouraged to access the open waters from Reservation lands. While I am unfamiliar with the Tribe's recreation use policies, they should be made aware of this possible indirect impact.
> Utilizing the Alternative Dredge Launch Site and Staging Area for recreational purposes when not in use by Reclamation would be an efficient use of disturbed public lands. It would also preclude the BLM from the time consuming task of seeking additional funding to improve and maintain the area in order to meet local recreational demands. Overall, utilizing the alternative site for dual purposes would be an excellent example of agency cooperation on DM 613 lands.

If Reclamation decides to proceed with the development of the Alternative Dredge Launch Site and Staging Area they would need to work around the adjacent BLM habitat restoration area. This area is clearly identifiable in the EA's aerial photos, as it appears devoid of any vegetation (which isn't the case now). Reclamation should coordinate with Jennifer Green, BLM Natural Resource Specialist, on this matter.

Aaron Curtis
Outdoor Recreation Planner
BLM Yuma Field Office
(928) 317-3238

Recreation

As stated by Aaron Curtis, Outdoor Recreation planner, the alternate dredge launch site may have long term benefits to recreation due to increased accessibility. The current “staging area” is approximately 100 x 200 feet, and would require little additional expansion. If this was a staging area for the dredge, would there be room for the parking of boats and boat trailers in addition to the dredge? Would the dredge remain on site 7 days a week? Would it be parked at the staging area, or remain buoyed in the water most of the time? Also, the boat launch is currently only about 15 feet wide. Would the boat launch itself need to be expanded to 200 feet or could a smaller area accommodate the launching of the dredge? We would like to further coordinate on the site for the alternate dredge launch.

Biology

Please add Black crowned night heron and little green heron to your species accounts for the area. I have seen both of these birds using the area.

Jennifer Green, Natural Resource Specialist

ENV-9.00- Environmental Assessment

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD
PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV
Yuma Office, 9140 E 28th Street, Yuma, AZ 85365-3596 (928) 342-0091

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Keyword 3886

June 5, 2006

Julian DeSantiago
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, Az 85364

Re: Draft Environmental Assessment Laguna Reservoir Restoration Project, Yuma County

Dear Mr. DeSantiago:

The Arizona Game and Fish Department (Department) has reviewed your letter dated May 8, 2006 requesting comments on the above-referenced Draft Environmental Assessment (DEA) for the Laguna Reservoir Restoration Project at Laguna Dam on the Lower Colorado River. The following comments are provided for your consideration.

The Department understands that the project proposes to restore Laguna Reservoir to its original capacity of 1,500 acre-feet by dredging sediment and removing uplands. The increased capacity will improve operational capabilities for capturing sluicing flows from Imperial Dam operations. The preferred alternative proposes to remove 116.6 acres of vegetation and 7.22 acres of Section 404 jurisdictional wetlands. We note that the Army Corps of Engineers has not approved the proposed mitigation for the loss of jurisdictional wetlands at the date of this letter. This is a covered action under the Lower Colorado River Multi-Species Conservation Plan for compliance with Section 7 of the Endangered Species Act.

White-winged doves nest in salt cedar in the project area. The doves, nests, eggs and chicks are protected under the Migratory Bird Treaty Act. The Department recommends monitoring for nesting activity during the April 1 to August 1 nesting season and avoid working in salt cedar habitat when nests are present.

The impact analysis to open water habitats is based on surface elevation. For fish, a key component of this habitat is water deep enough to escape the high summer daytime water temperatures. We recommend analyzing water depths at different operating surface elevations to determine potential impacts to fish.

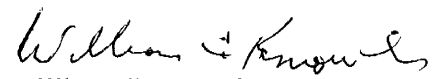
Arizona Pioneer Award for Quality
2005 Recipient

The Old River Channel consists of open water and emergent marsh habitats. The channel is dependent on water backing up from the dam. Loss of this water will result in the loss of this habitat. The Department recommends analyzing reservoir operations impacts to this important wildlife habitat.

The proposed project will result in a change to Laguna Dam operations. The Department recommends analyzing potential indirect and cumulative impacts to the downstream Yuma and Limitrophe Divisions that may result from this change in operations.

Thank you for the opportunity to review and comment on this proposed project. If you have any questions, please contact me at 928-341-4047.

Sincerely,



William C. Knowles
Habitat Specialist
Region IV, Yuma

cc: Russell Engel, Habitat Program Manager, Region IV
Rebecca Davidson, Proj. Eval. Prog. Supervisor, Habitat Branch
Chris Hayes, Environmental Specialist, California Department of Fish and Game

AGFD # 05-10-06 (A)

ENV-9.00- Environmental Assessment

IMPERIAL IRRIGATION DISTRICT

ENVIRONMENTAL, REGULATORY AND EMERGENCY PLANNING • P.O. BOX 937 • IMPERIAL, CA 92251
TELEPHONE (760) 482-9832 • FAX (760) 482-9896

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OR-EREP

May 15, 2006

Mr. Julian DeSantiago
Bureau of Reclamation
Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

Subject: Laguna Reservoir Restoration Project (Project) Environmental Assessment (EA)

Dear Mr. DeSantiago:

Thank you for providing the EA to the Imperial Irrigation District (IID) for review.

As a signatory party to the Lower Colorado River Multi-Species Conservation Program (LCRMSCP), the IID supports covered projects such as the proposed Laguna Reservoir Restoration Project. This project will provide increased water storage capacity of Laguna Dam by capturing sluicing flows released from Imperial Dam. Such water conservation projects benefit all Colorado River water users.

The IID does not have any further comments and supports the proposed project.

Sincerely,

Michel D. Remington

MICHEL D. REMINGTON
Supervisor, Environmental, Regulatory
& Emergency Planning Section

cc: Mr. Elston Grubaugh, IID Assistant General Manager
Mr. Michael King, IID Manager, Water Department
Mr. Brad Luckey, IID Manager, Operational Resources Department

PACIFIC
INSTITUTE

Research for People and the Planet

June 15, 2006

Mr. Julian DeSantiago
Bureau of Reclamation
7301 Calle Agua Salada
Yuma AZ 85364

via e-mail

Re: Environmental Assessment (EA) on the Laguna Reservoir Restoration Project

Dear Mr. DeSantiago:

The Pacific Institute respectfully submits the following comments on the Laguna Reservoir Restoration Project Environmental Assessment (EA). The Pacific Institute is an independent, non-partisan, non-profit center based in Oakland, California, created in 1987 to conduct research and policy analysis in the areas of environment, sustainable development, and international security.

The Institute has a strong interest in the management of the lower Colorado River and the protection and restoration of natural habitat within the former Colorado River delta. The Laguna Division of the Colorado River constitutes the northernmost extent of the former Colorado River delta. Some of the riparian, marsh, and open water habitats in this reach of the river could reasonably be restored and protected, complementing and enhancing the ecological value of the restoration efforts along the lower Gila River and within the limitrophe.

The Institute does not question the need for the proposed action, to remove accumulated sediment in the Laguna Reservoir, but suggests that this purpose be expanded in recognition of Reclamation's broader objective of conserving habitat and working toward the recovery of threatened and endangered species within the degraded lower Colorado River.

Given that thirteen species of concern can occur within the project area (Table 3-8), including two federally-listed endangered species, we question whether a Finding of No Significant Impact is appropriate for this project. The EA provides insufficient information to make such a determination.

The *Environmental Consequences* sections raise several important questions. For example, the statement "Non-breeding individuals would likely disperse in response to noise and equipment, reducing some of the potential adverse effects on these wildlife" (p. 3-29) raises the question of whether dispersal is itself an adverse effect. Do noise and other project-related activities that force individuals, especially secretive Yuma clapper rails, to abandon their territories constitute harassment? Could such activities increase the stress on individuals and expose them to predation or otherwise indirectly cause take?

654 13th Street, Preservation Park, Oakland, California 94612, U.S.A.
510-251-1600 | fax: 510-251-2203 | email: pistaff@pacinst.org | www.pacinst.org

The EA notes that "The Yuma clapper rail is know to occur in the project vicinity, including the old river channel" (p. 3-25), but fails to provide readily-available U.S. Fish & Wildlife Service (FWS) survey data on these numbers. For example, FWS reports that 46 Yuma clapper rails were detected in "Teal Alley" and "YPG Slough" in 2005; 10 clapper rails were detected at Mittry Lake in 2003, the last year surveys were conducted at that location. These data should be included in the EA, preferably with specific survey locations.

The Institute encourages Reclamation to provide a more robust account of listed species present in the project area and the potential impacts on biological resources caused by the preferred alternative.

Please also add my name to the list of parties interested in proposed projects and actions in the Laguna and Yuma divisions of the Colorado River.

Thank you for your attention to these comments.

Sincerely,

Michael Cohen
Senior Associate

Colorado office address:
Pacific Institute
948 North Street, Suite 7
Boulder CO 80304
mcohen (at) pacinst.org