

# RECLAMATION

*Managing Water in the West*

## Environmental Assessment

**Needles-Topock Area (River Mile A-240.5 to A-238.5)  
Bankline Stabilization Project**



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

**May 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.

# **Environmental Assessment**

**Needles-Topock Area (River Mile A-240.5 to A-238.5)  
Bankline Stabilization Project**

*Prepared for:*

**Yuma Area Office  
Environmental Group**

*Prepared by:*

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Yuma, Arizona  
Contract No.: 03-PE-34-0230

# Acronyms and Abbreviations

<b>ACB</b>	Articulated concrete block
<b>ADEQ</b>	Arizona Department of Environmental Quality
<b>AGFD</b>	Arizona Game and Fish Department
<b>AMM</b>	Avoidance and Minimization Measure
<b>BCO</b>	Biological and Conference Opinion
<b>BE</b>	Biological Evaluation
<b>BMP(s)</b>	Best Management Practice(s)
<b>CAA</b>	Clean Air Act
<b>CDFG</b>	California Department of Fish and Game
<b>CEQ</b>	Council of Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>cfs</b>	Cubic feet per second
<b>cu yds</b>	Cubic yards
<b>CWA</b>	Clean Water Act
<b>DM</b>	Department Manual
<b>DOI</b>	United States Department of the Interior
<b>EA</b>	Environmental Assessment
<b>EO</b>	Executive Order
<b>EPA</b>	United States Environmental Protection Agency
<b>ESA</b>	Endangered Species Act
<b>FONSI</b>	Finding of No Significant Impact
<b>FR</b>	Federal Register
<b>ft</b>	Feet
<b>FWCA</b>	Federal Wildlife Coordination Act
<b>gmp</b>	Gallons per minute
<b>HNWR</b>	Havasu National Wildlife Refuge
<b>LCR</b>	Lower Colorado River
<b>MSCP</b>	Multi Species Conservation Program
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NEPA</b>	National Environmental Policy Act
<b>NHPA</b>	National Historic Preservation Act
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>NRHP</b>	National Register of Historic Places
<b>OHW</b>	Ordinary high water
<b>OLW</b>	Ordinary low water
<b>P.L.</b>	Public Law
<b>POLs</b>	Petroleum, oil, or lubricants
<b>PM<sub>10</sub></b>	Particulate matter less than 10 microns in diameter
<b>PWC</b>	Personal Watercraft
<b>Reclamation</b>	Bureau of Reclamation
<b>RM</b>	River mile
<b>SHPO</b>	State Historic Preservation Office
<b>SIP</b>	State Implementation Plan
<b>SWPPP</b>	Storm Water Pollution Prevention Plan
<b>USC</b>	United States Code
<b>USFWS</b>	United States Fish and Wildlife Service

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# 1.0 Purpose of and Need for the Proposed Action

## 1.1 Introduction

The Bureau of Reclamation (Reclamation) has prepared this environmental assessment (EA) to evaluate potential impacts associated with the Proposed Action and alternatives, including the No Action Alternative, of the Needles Topock Bankline Stabilization Project. This EA complies with the National Environmental Policy Act (NEPA) (42 USC 43421 *et seq.*), in accordance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1509), and the Department of Interior and Reclamation NEPA procedures (516 DM 14).

## 1.2 Location

The project is located in the Mohave Valley Maintenance Division of the Lower Colorado River (LCR), between Needles, CA and the I-40 bridge crossing near Topock, AZ. The specific section of bankline is along the Western boundary of the Havasu National Wildlife Refuge (HNWR), in Mohave County, Arizona from river mile A-240.5 to A-238.5, as depicted in Figure 1.

## 1.3 Background

The operation of motor boats and personal watercraft (PWC) in this section of the LCR creates a significant amount of wave action against the unprotected Arizona bankline. The California bankline in San Bernardino County is armored, stable, and is not eroding. The boat wave action of the larger tour boats traversing from Laughlin, NV to Lake Havasu City, AZ has been observed to cause much larger wave action along the shoreline. Further, PWC operating in this stretch of the river are able to travel closer to the shoreline, at higher rates of speed, which produces a wave action of greater intensity than typical boat traffic. Over the past several years, there has been an increase in development along the LCR in the Needles, CA and Laughlin, NV areas. Along with the expanded development there has been an increase in recreational use of the LCR in this area which is exacerbating erosion of the sandy, unarmored bankline in the project area.





Figure 1 - General Location of the Project Area.

## **1.4 Purpose of the Proposed Action**

The purpose of the Proposed Action is to stabilize and protect approximately two miles of the Arizona bankline on HNWR land, and maintain and manage a stable channel that will accommodate bank-full flows and protect the integrity of the Arizona levee.

## **1.5 Need for the Proposed Action**

The channel banks need to be stabilized to control erosion caused by boat wave action and to prevent further widening of the river channel. Further, the project is needed to maintain an acceptable buffer between the Arizona levee and the river, thereby helping to protect the integrity of the Arizona levee in the event of flood flows. The existing buffer between the flood control levee and the bankline in the project area is fairly narrow, averaging 450 feet in width.

## **1.6 Scope of Analysis**

The primary issues raised during scoping and stakeholder involvement were related to Aesthetics, Biological Resources, Land Use, and Water Resources. Consequently, these topical areas have received the greatest emphasis in the evaluations presented in this document. Other issues are also addressed and evaluated in this EA, but to a lesser degree than the issues identified above. For each of the other issues, the level of evaluation and depth of discussion in this document are commensurate with the relative degree of importance attributed to each issue in the scoping and decision process.

## **1.7 Decisions to be Made**

This EA will be forwarded through Reclamation for review to determine whether a Finding of No Significant Impact (FONSI) is appropriate. This decision is based on a determination that all potential impacts are either less than significant or can be reduced to less than significant levels through the implementation of mitigation measures. If any potential impacts are considered significant and cannot be avoided or reduced to less than significant levels, then the preparation and processing of an environmental impact statement is required.

## 2.0 Proposed Action and Alternatives Considered

This chapter presents a discussion of the Proposed Action and alternatives considered, including the No Action alternative. The Proposed Action and alternatives were developed and evaluated against the following screening criteria:

- Stop Bankline Erosion – primary cause is boat wake action on unprotected shoreline
- Stabilize Bankline for Bank-full Flow – approximately 43,000 cubic feet per second (cfs)
- Prevent Channel from Exceeding Design Width – 400 to 450 ft
- No Adverse Effect on Levee Design Flow Capacity – approximately 70,000 cfs
- Design Feasibility – must be reasonable in terms of constructability
- Available Technology – use of proven technology
- Environmental Considerations – avoids or minimizes adverse impacts
- Non-Damaging – avoids or minimizes adverse impacts to wetlands and waters of the U.S.
- Cost – reasonably justified cost for construction and maintenance

Section 2.1 describes the Proposed Action. Section 2.2 describes other alternatives analyzed in detail in the EA, including the No Action Alternative. Brief descriptions of other alternatives considered but eliminated from further detailed analysis are provided in Section 2.3. Section 2.4 presents a summary comparison of the environmental consequences associated with the Proposed Action and those alternatives analyzed in detail.

### 2.1 Proposed Action (Alternative A)

The Proposed Action is to construct bankline features that will serve to prevent further erosion of the bankline and stabilize the channel width. There has been an increasing amount of bankline erosion along this two mile section of the Arizona bankline, which is not armored (see Appendix A).

#### 2.1.1 Stabilization with Rock and Vegetation

Under the Proposed Action, Reclamation will use an excavator to modify the slope of the bankline, which is mostly vertical along the entire reach of the project. The bank will be laid back, with a slope varying from two to one and four to one, along the existing alignment. The contouring will be nearly continuous and varied so that the resulting bank configuration will be irregular and as natural as possible. The bankline will not be raised or straightened. Rock will be placed on the lower bankline, down to within two feet of the Ordinary Low Water (OLW) mark and will average seven inches in diameter. A layer of gravel, one to four inches in diameter and six inches deep, will be placed on the upper section of the bankline above the Ordinary High Water (OHW) mark, gravel maybe mixed with native river gravel and rock obtained from wash

fans<sup>1</sup>. Table 1 presents the amount of materials estimated to be used to complete all construction activities.

**Table 1 - Materials Associated with the Proposed Action**

<b>Material</b>	<b>Size</b>	<b>Estimated Quantity</b>	<b>Coverage</b>
Rock	4 to 10 in.	27, 128 cu. yds.	3.4 acres
Gravel access roads	1 in.	5,224 cu. yds.	6.4 acres
Gravel/Cobble	1 to 4 in.	5,340 cu. yds.	5.4 acres
Pole Plantings		500-800 poles	-
Mesquite/Palo verde		25-50 trees	-
			<b>16.2 acres</b>

Pole plantings will be obtained from nurseries located on the HNWR, and or comparable sources, and placed to mimic the natural progression and growth of species up the bankline. Pole cuttings of native trees (Coyote willow, Goddings willow, and Fremont cottonwood), will be planted in the gravel zone. Since similar vegetation currently occurs along much of the bankline, it is anticipated that with time, the entire upper bankline is expected to be covered with vegetation. Figure 2 represents a conceptual cross section of the Proposed Action.

A small area, less than 1/10 of an acre, on the upstream edge of the project area has some established growth of bulrush (see Plate 1 and 1a in Appendix A). This established vegetation appears to be functioning to minimize erosion by attenuating the boat wake action; therefore, this small section will not be sloped nor will rock or gravel be placed in the location. Reclamation will monitor this section to ensure the vegetation is sufficient to prevent future erosion from occurring behind the vegetated strip. If the established bulrush is not sufficient to prevent further erosion, Reclamation will evaluate and apply suitable bioengineering techniques (vegetated approaches) for application in this small section. This will provide valuable information for the viability of bioengineering applications for similar sites on the LCR.

### 2.1.2 Construction Staging and Support

Trucks will use the Arizona levee road to reach the project area and the two existing jetties (as shown on Figure 3) to gain access to the project area and the bankline area. Reclamation will grade and construct a permanent access road, approximately 24 feet wide, paralleling the bankline to provide access to the bankline for contouring and placing materials, and to support future maintenance and monitoring. Reclamation will clear vegetation parallel along the existing contour of the bankline and will lay down a gravel base six inches in depth.

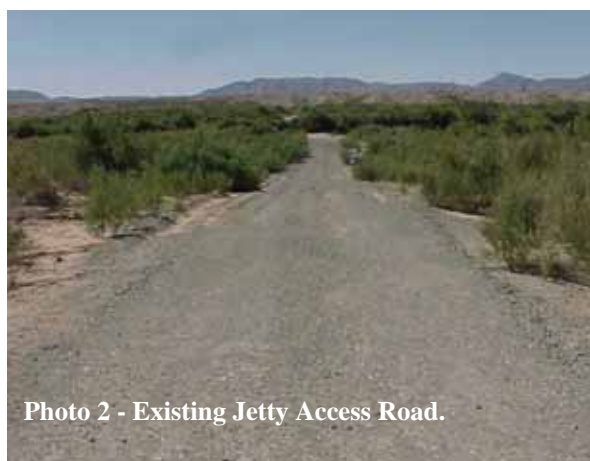


Photo 2 - Existing Jetty Access Road.

<sup>1</sup> Removal of wash fan material from the river is a separate project previously planned and permitted (Reference # 2005-02070-MB) to correct navigation problems caused by past storm events effecting washes upstream (Piute Wash at RM 251.7) and downstream (Vidal Wash at RM 166.0) of the project area.

In addition, three to four access roads will be constructed to tie-in from the levee road and the new bankline access road. These roads will be strategically placed between the existing jetties to support the flow of equipment and truck traffic and eliminate the need to construct turn-a-rounds along the bankline road. The access roads will be left in place for use by refuge personnel and as firebreaks. The roads will be blocked using a secured cabling system similar to those already in place on exiting jetty roads.

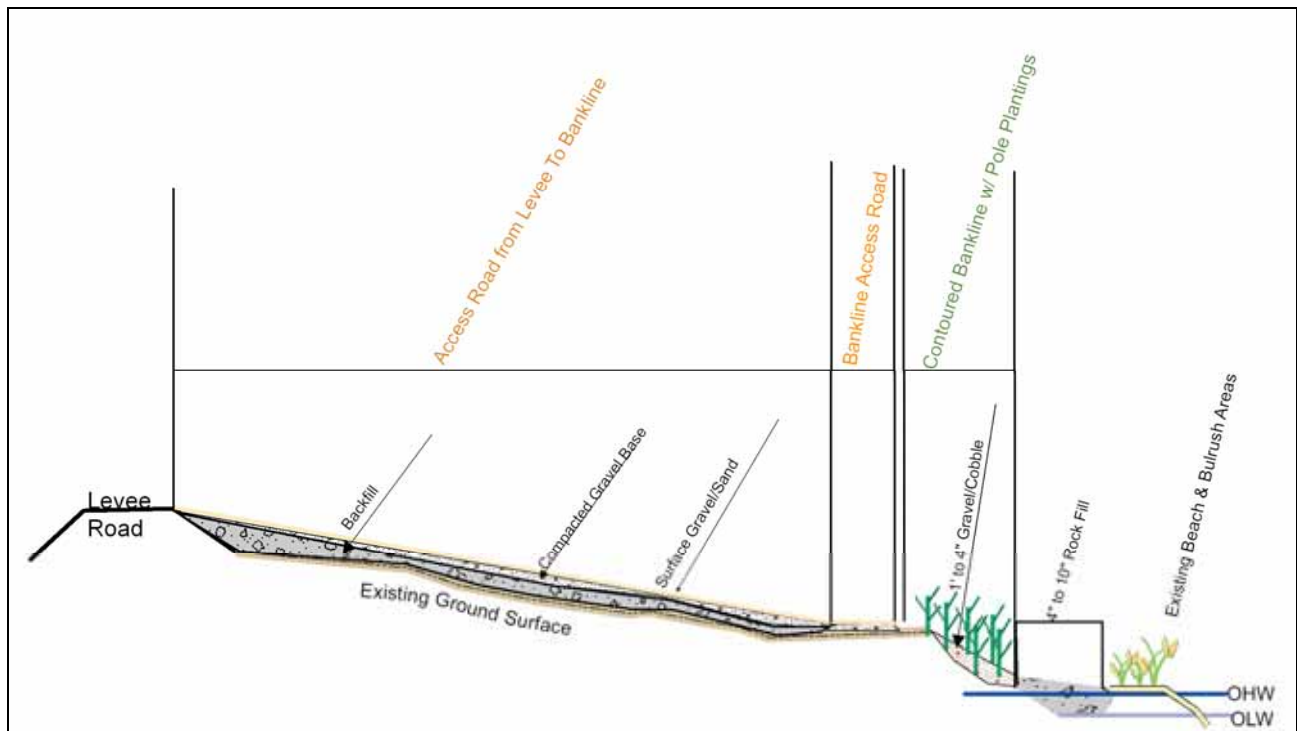


Figure 2 - Conceptual Cross Section of the Proposed Action.

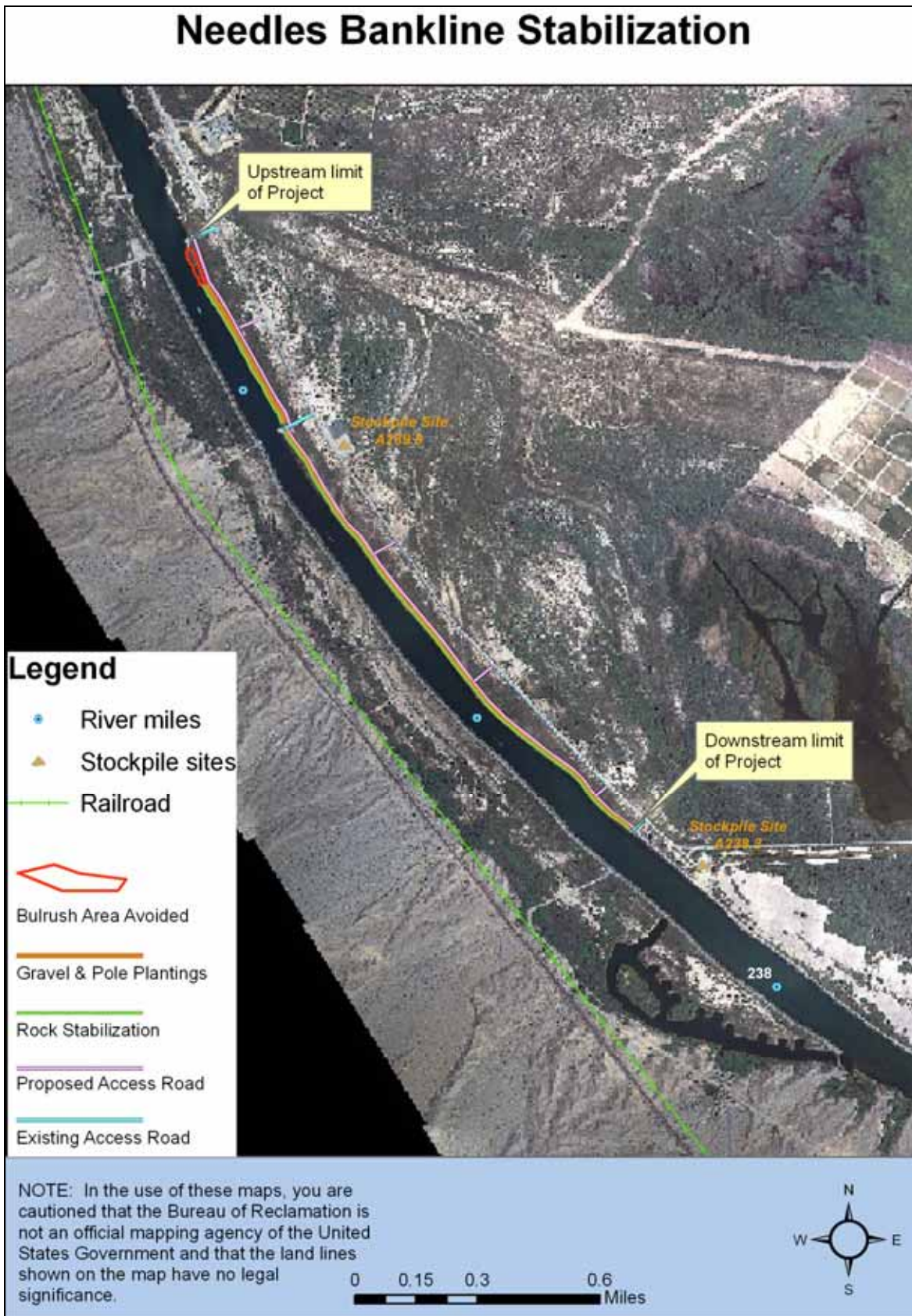


Figure 3 - General Overview and Layout of the Proposed Action.

Equipment used during site preparation and construction will include two each 20 cubic yard belly dump trucks and 14 cubic yard dump trucks, one excavator, two motor graders, two D7 crawlers, two loaders, and two 4,000-gallon water trucks. In addition, Reclamation will use the water trucks for dust suppression on the levee and access roads. Water will be applied up to 20-times per day, depending on site and weather conditions. The work week will consist of 10-hour work days, 5 days per week.

Processing the rock and gravel materials will start as early as April, with upland work (access roads stockpiling, etc...) beginning in late May and concluding in late July. Contouring below the OHW will occur from November to January, as river levels are typically lower during the fall and winter months. Pole planting will take place semi-concurrent (one week lag time) with upper bankline contouring and gravel placement. It is anticipated that the proposed planting schedule will result in a higher success rate as the timing coincides with ideal planting and growing seasons. Plantings are expected to begin budding in late February to early March.

During construction, Reclamation will use existing quarry sources located in California and or Arizona. There are two existing stockpile sites located adjacent to the project area (See Figure 3), one near the upstream portion of the project and a smaller one at the downstream end. Rock crushing to produce the gravel material will occur at the upstream stock pile. The upstream stockpile site will be temporarily expanded, on the northern end, by 300 sq ft to accommodate the placement of processing equipment. A gravel pad will be placed in the expanded area and removed at the end of the project. The expansion area will be reclaimed by planting native upland trees (Mesquite or Palo Verde). Reclamation will obtain suitable equipment and any applicable air quality permits will be obtained prior to beginning the rock crushing operations.

Only light maintenance, such as fueling will be performed at the stockpile sites and will be conducted in accordance with Best Management Practices (BMPs) as defined in an approved Storm Water Pollution Prevention Plan (SWPPP). In addition, only necessary amounts of petroleum, oil, or lubricants (POLs) will be located at the equipment site and will be stored and managed in a manner to prevent spills or leaks from occurring.

## **2.2 Bankline Stabilization, Jetties, and Habitat Restoration (Alternative B)**

This alternative proposed bankline protection in conjunction with a habitat restoration element as a demonstration project associated with the Multi Species Conservation Program (MSCP). The primary objectives were: (1) bank stabilization of the existing Arizona bankline with riprap; (2) re-contouring behind the bankline to establish MSCP restoration areas that would be inundated more frequently; and (3) renovating two existing jetties, constructing five straight jetties and three L-jetties that reestablish the desired sediment transport characteristics in the river and prevent floods from causing the river to shift into the MSCP restoration areas. A new built up bankline road would link the jetties and provide access and protection to the restoration areas. The construction staging and phases would be similar to that described under the Proposed Action; however, the amount of material used and timeframe would be greatly increased as significantly more earthmoving would be required and more rock material would be used.



## 2.3 No Action Alternative

Under the No Action Alternative, Reclamation would not stabilize the Arizona bankline on this stretch of the river. The No Action Alternative would result in continued erosion and may pose a threat to the integrity of the Arizona levee. The eroding bankline would continue to contribute to sedimentation deposition in Topock Gorge and Lake Havasu.

## 2.4 Alternatives Considered but Eliminated from Further Detailed Analysis

The following discussion describes alternatives that Reclamation considered during the alternatives development process. Armoring techniques applied in a continuous method, intermittent flow deflection, and energy reduction methods were considered in the course of the alternatives analysis (see Appendix B). Reclamation eliminated these alternatives because they did not meet the screening criteria for the project.

### 2.4.1 Intermittent Bankline Protection

Flow deflection techniques provide intermittent bankline protection and are based upon the principle that by redirecting higher velocity flows away from the bank, erosion can be reduced or eliminated in the areas between structures. There are multiple configurations available, but for this alternative straight spur jetties and L-shaped jetties were considered but eliminated from further analysis as it was determined that they would not provide adequate protection for erosion caused by from boat wakes.

#### 2.4.1.1 Straight Jetties

The straight jetty design for this alternative presented 10 straight jetties spaced at 1,000 feet. To insure the jetties will function for at least 50 years, they would need to be designed so that wave action does not erode behind the structure of the jetties. Comparison of cross sections at RM 239 indicated that the channel has widened about 60 ft in a 25 year time span. Therefore it was assumed that the jetties should extend into the existing bank about 120 feet. Straight jetties provide minimal protection from boat wave action. Since boat waves have a large lateral component, straight jetties are not effective in dissipating the boat wave energy before impacting the bank.

#### 2.4.1.2 L-Jetties

This alternative presents a hybrid L-jetty design essentially creating thick straight jetties which would reduce the number of jetties, but increase the material required to construct the structure. The primary benefit of performing this type of design is that it could be used to reduce impacts to the shoreline in certain locations.

Jetties in general are intended to protect banks from erosion caused by river flows. Often these flows are being directed towards the bank at issue. This is not the case within the project area. Flows are relatively parallel to the banks and are not extremely erosive even at bank-full flow. In addition, the river alignment has remained relatively stable over the last 25 years. Although the channel has degraded and widened, it has not migrated and there is no evidence to indicate it will even during bank-full flows.

## **2.4.2 Continuous Bankline Protection**

In order to protect the bankline for both boat wave action and bank-full flows, some level of protection will be required from the OLV profile up to the top of the bank. Since the greatest erosion potential is from boat waves, the more resistant bank cover will need to be placed lower on the bankline.

The type and amount of cover required to protect from erosion due to river flow, even at bank-full flow, is relatively minor. A more aggressive means of bank protection is required to prevent further erosion due to boat wave action. Large jet boats are capable of generating about boat waves two feet in height. For elevations that aren't subject to constant boat wave action, a good layer of vegetation would likely prevent erosion due to river flows. This alternative provides a number of proven armoring techniques that provide bankline protection from aggressive erosion processes.

### **2.4.2.1 Gabions (Rock and Wire Mattress)**

Gabions are rock-filled wire baskets that are wired together to form continuous structures. By wrapping rock with fencing, lower quality and smaller size material can be used for bank protection. Gabions would provide some flexibility, but not as great as the larger rock cover. Since relatively small rock is required to stabilize the bank, rock and wire mattress are not cost effective this alternative was eliminated.

### **2.4.2.2 Articulated Concrete Block**

Articulated concrete block (ACB) systems are formed by interlocking pre-cast concrete blocks and placing them on a geotextile fabric. This method of bank protection resists the erosive forces of bank-full flows and wave action with good success. It could be used to an elevation of 2 ft above the OHW mark. However, large vegetative growth is not encouraged within the block because of the damage to the block that it causes and the aesthetics of the concrete block is not a desired result.

### **2.4.2.3 Timber Crib Walls**

Crib walls are constructed by interlocking boxes made from timber. The boxes are filled with crushed rock to create a free-draining structure. A disadvantage of crib walls along streams and rivers is that they deteriorate over time and would likely need to be replaced before other means of bank protection. This project would likely lose some of the advantages of crib walls because rock material would need to be used as backfill immediately behind the logs to prevent the native soil from eroding between the crib logs. In addition, substantial toe protection would still be required.

### **2.4.2.4 Grouted Rock**

Grouted rock consists of rock having voids filled with concrete grout to form a monolithic armor. Grouted rock is rigid and will not conform to changes in the bank geometry due to settlement. Smaller rock can be used and grouted, but would still be nonflexible and subject to structural failure. The grouted rock would only be required to a level of about 2 feet above the OHW then gravel size material could be used above that elevation. This would allow vegetation to be planted on the upper portion of the banks. No vegetation would be attempted in the grouted section. Since the erosion forces are not that great, there is no benefit in grouting rock when rock alone would suffice.

#### **2.4.2.5 Bioengineering**

Vegetation can serve as an armoring material and reduce the erosion forces from boat wave action. Nevertheless, the benefits of vegetation are not immediate; therefore, an additional stabilization method needs to be employed until the vegetation becomes well established. This technique is also not a proven technology in the highly erosive soils that are characteristic of the LCR.

### **2.4.3 Energy Reduction Methods**

New technologies have been developed to dissipate wave energy. Energy reduction methods function by reducing the ability of the river to erode bank material. The following energy reduction methods were considered but eliminated from further analysis.

#### **2.4.3.1 Wave Attenuation**

Wave attenuators could be used to break the boat wave energy before impacting the bank. These types of devices have been used in harbors, around docks, and to protect shoreline from erosion, but it is not common for river shore protection.

The intent would be to maintain the wave attenuators until the bankline stabilizes with vegetation. The bankline would be sloped back and vegetated to expedite removal of the attenuators. Although smaller rock is still used in the design, the rock is not sized to counter the wave action alone. The intent would be for vegetation and rock to accomplish erosion control in combination. This appears to be a reasonable assumption based on other banklines that have stabilized when vegetation has established in front of the bankline. This solution may not be as effective where there is no shelf in front of the bankline.

Where considerable wave action is present, the rock material typically required to protect the bank may be large enough that the cost for wave attenuation is competitive. For this project the only way the wave attenuators would be cost effective is if very few of the blocks were required. The cost of a block is in the vicinity of \$75. Therefore, in order for the wave attenuators to compete, the number of blocks would need to be minimized. The number of blocks and arrangement would potentially need to be adjusted before the optimal configuration is achieved. Temporary placement of wave attenuators during periods of increased boat activity is possible but removal, storage, and repositioning are arduous and potentially cost prohibitive over the long-term. The biggest drawbacks are that they would need to be visible at night and there is a strong likelihood that they would be vandalized and stolen. Because of the experimental nature of the devices, for this application and problems related to the isolation of the site, this concept was eliminated from further evaluation.

#### **2.4.3.2 Velocity Control**

Controlling the velocity of boat traffic by means of a “No Wake Zone” could reduce bankline erosion along the project area; however establishing a No Wake Zone is outside of Reclamation’s authority. Establishing a No Wake Zone in this area would likely require the support and agreement of multiple agencies including the U.S. Fish and Wildlife Service (USFWS); U.S. Coast Guard; Riverside County and San Bernardino County, CA; Mohave County, AZ; Arizona Game and Fish Department (AGFD); and the California Department of Fish and Game (CDFG). Further, the agencies ultimately responsible for establishing and

enforcing a No Wake Zone indicated that enforcement would be problematic due to limited personnel and already strained resources available in the area.

## 2.5 Comparison of Environmental Consequences

Table 2 presents a comparison summary of potential environmental consequences associated with the Proposed Action and alternatives considered, including the No Action alternative. The summaries are based on the analysis presented in Chapter 3.0.

**Table 2 – Comparison of Environmental Consequences**

<b>Resources</b>	<b>Alternative A (Proposed Action)</b>	<b>Alternative B</b>	<b>No Action</b>
Aesthetics	Minimal impacts to landscape characteristics, rock will be visible until vegetation establishes.	Significant changes to landscape characteristics from habitat restoration and enhanced aesthetic value.	No impacts
Air Resources	Potential for minimal impacts to PM <sub>10</sub> Non-Attainment Area in CA.	Potential minimal impacts to PM <sub>10</sub> Non-Attainment Area in CA.	No impacts
Biological Resources	Minimal disturbance to native and non-native vegetation. Temporary displacement of wildlife during construction activities.	Inclusion of the restoration element would create higher habitat values for wildlife in the project area.	No improvement accomplished through placing pole plantings of riparian species along the upper bankline.
Special Status Species	No listed vegetation or wildlife species are likely to occur in the project area; therefore no impact is anticipated	Inclusion of the restoration element would create higher habitat values for listed species that may transient the project area.	Without the pole plantings, native riparian species are not likely to establish and provide resting areas for listed avian species.
Land Use	Temporary impacts to recreation during construction, fishing from rock bankline may be difficult	Temporary impacts to recreation during construction, bird watching opportunities with the creation of habitat	Loss of HNWR land
Water Resources	Slight potential for groundwater impacts from spills	Potential groundwater impacts from spills, increase in surface water	Increased sediment levels, deposition downstream
Cultural	No impacts	No impacts	No impacts
Indian Trust Assets	No impacts	No impacts	No impacts
Environmental Justice	No impacts	No impacts	No impacts
Soils and Geology	Excavation along the bankline, material will be used in project area	Significant excavation from Habitat Restoration, material will be used in project area	Soil will continue to erode and deposit downstream

## 3.0 Affected Environment and Potential Consequences

This chapter provides a description of the affected resources determined to be applicable to the Proposed Action and alternatives, including the No Action alternative. The following resource areas are included for discussion. Other resources areas were determined to have little or no potential for impact resulting from the Proposed Action or alternatives and therefore not included for detailed discussion in this chapter.

- *Aesthetics*
- *Biological Resources*
  - *Vegetation*
  - *Wildlife*
- *Land Use*
  - *Adjacent*
  - *Recreation*
- *Cultural Resources*
- *Environmental Justice*
- *Air Quality*
- *Special Status Species*
  - *Federal and State Listed*
  - *MSCP Managed Species*
- *Water Resources*
  - *Groundwater*
  - *Surface Water*
- *Indian Trust Assets*
- *Soils and Geology*

To minimize repetition, the potential consequences, associated with the Proposed Action and alternatives considered, including the No Action Alternative, are included as a subsection under each resource along with any applicable mitigation measures.

### 3.1 Aesthetics

#### 3.1.1 Affected Environment

Visual resources consist of natural and manmade features that give a particular environment its aesthetic qualities. Landscape character is evaluated to assess whether the project will appear compatible with the existing features or would contrast noticeably with the setting and appear out of place. Visual sensitivity includes public values, goals, awareness, and concern regarding visual quality.

##### 3.1.1.1 Landscape characteristics

Landscape characteristics in the project vicinity include HNWR, which encompasses Topock Marsh and Topock Gorge. The refuge contains a cottonwood-willow forest and a series of small lakes that comprise Topock Marsh and provide habitat for residential and migratory wildlife. Topock Gorge offers scenic views within the gorge itself, but is not visible from the project area. Sandy shores along this section of the river are accessible by boat, and are used for recreational activities.

##### 3.1.1.2 Visual sensitivity

Groups and individuals interested in wildlife and scenic opportunities frequently visit areas on the HNWR, such as Topock Marsh, and Topock Gorge areas. Tourist boats traverse the river between Laughlin, NV and Lake Havasu City, AZ to take advantage of the scenic vistas within Topock Gorge

### **3.1.2 Potential Consequences**

#### **3.1.2.1 Proposed Action**

Landscape characteristics will be minimally altered from implementation of this alternative. Larger rock may be visible up to 2 ft above the OHW until vegetation is established that will obscure the rock from view. While tour boats frequently do traverse the river along the project bankline, they are generally traveling at rapid speeds near the project area prior to entering or after exiting Topock Gorge. While Topock Marsh is adjacent to the project area natural and existing manmade features obscure visual access to the Marsh, nor is the project visible from the Marsh. There may be short-term adverse effects to the aesthetic qualities of the project area during construction activities; however, implementation of the Proposed Action is not expected to adversely impact areas of aesthetic and visual sensitivity over the long-term.

The resulting bankline configuration will also be irregular and as natural as possible under the Proposed Action. Further, the pole plantings are anticipated to have a beneficial impact on the aesthetics' of the project area. Once the native trees are established and begin to mature, the visual quality will improve from both the river aspect and from the levee view.

#### **3.1.2.2 Bankline Stabilization, Jetties, and Habitat Restoration**

This alternative may have a minor adverse impact to the aesthetic and visual sensitivity of the project area, especially in the short term from the river aspect. However, once vegetation established along the built up bankline road and the habitat restoration portion of the alternative matures, the aesthetics' of the site would be enhanced from present conditions.

#### **3.1.2.3 No Action**

Baseline aesthetics resources would remain the same under this alternative. There is likely to be no improvement in the aesthetic or visual quality, as the site is currently dominated by non-native trees (Salt Cedar) and native vegetation is not likely to successfully establish with out the proposed pole plantings.

### **3.1.3 Mitigation Measures**

While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

## **3.2 Air Quality**

### **3.2.1 Affected Environment**

The project area is located in Mohave County, AZ which is currently classified as attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants. The California side of the project area in San Bernardino County has been designated as a Non-Attainment Area for particulate matter less than 10 microns in diameter (PM<sub>10</sub>).

### 3.2.2 Potential Consequences

#### 3.2.2.1 Proposed Action

Potential emissions could occur from heavy equipment movement and vehicle exhaust, rock quarrying and crushing activities. The PM<sub>10</sub> Non-Attainment Area could potentially be impacted should the emissions migrate across the river to California. Exhaust pollutants are quickly dispersed; therefore impacts to the area will be short-term and minimal. Conversely, placing rock and gravel over the existing loose sandy soil will help to reduce the amount of dust generated on windier days. No new permanent emission sources will be established as a result of the Proposed Action.

While, operation of equipment during construction activities may result in short-term adverse effects to air quality, implementation of the Proposed Action is not expected to adversely impact the long-term overall quality local or regional air resources.

#### 3.2.2.2 Bankline Stabilization, Jetties, and Habitat Restoration

Potential emissions could occur from heavy equipment movement and vehicle exhaust, rock quarrying and crushing activities. The PM<sub>10</sub> Non-Attainment Area could potentially be impacted should the emissions migrate across the river to California. Exhaust pollutants are quickly dispersed; therefore impacts to the area will be minimal. Similar to the Proposed Action, covering and replacing the existing sandy bankline, would result in less airborne on windier days. No new permanent emission sources will be established as a result of this alternative.

#### 3.2.2.3 No Action

Existing condition would continue and there would be no change to the air quality in the project area.

### 3.2.3 Mitigation Measures

During construction water will be applied to roads and top soil to minimize fugitive dust emissions.

## 3.3 Biological Resources

### 3.3.1 Affected Environment

The project area lies within Colorado River flood plain in the Mohave Valley. The Colorado River corridor 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, passerines, and shorebirds. Vegetation in the project area is sparse and there are no jurisdictional wetlands.

#### 3.3.1.1 Vegetation

Vegetation in the project area is predominately Salt Cedar and Arrowweed (Figure 4). Along the upper



Photo 3 - Typical vegetation between Levee road and bankline area.

bankline there are small inclusions of Coyote willow. The lower bankline is mostly sandy beach areas that are inundated periodical in conjunction with the release of water upstream at Davis Dam. There are also fragmented clumps of bulrush found along the sandy beach area; that range in size from less than one square foot up to 8 square feet. The patches are not contiguous and are typically separated by several hundred feet of sandy beach. There is one area on the upstream end of the project where a slightly large patch (approximately 1/10 of an acre) of bulrush has established. These characteristics are visible in the site photos and aerial images included in Appendix A.

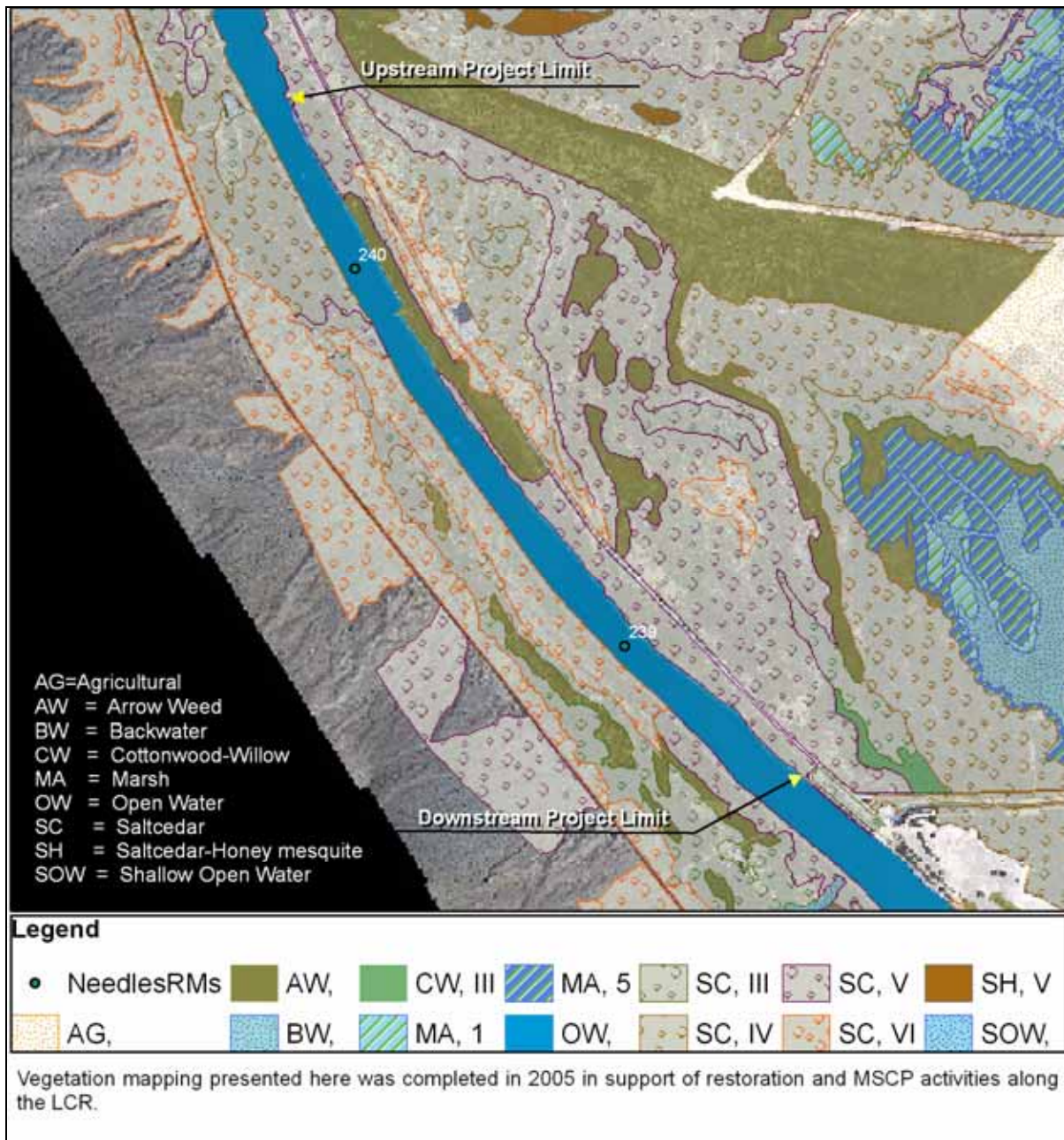


Figure 4 - Vegetation in the Project Area.



### **3.3.1.2 Wildlife**

Common birds found in the project vicinity include egrets, herons, flycatchers, and woodpeckers. A variety of both native and non-native fish inhabit the reach of river where the proposed project is located. Game fish species such as largemouth bass, smallmouth bass, bluegill, and catfish are common along this stretch of river.

Upland areas of the proposed project site contain habitat elements for various terrestrial wildlife including mammals and reptiles. Common species of small mammals which are likely to occur in or adjacent to the project area are pocket mice, cottontail rabbit, and packrat. Large mammals like coyote and feral swine are resident to the area as well and may pass through the project area on occasion. Reptiles that would inhabit the area include whiptails, rattlesnakes, and kingsnakes.

The woody riparian vegetation and wetlands found adjacent to the project area in Topock Marsh provide habitat for a variety of raptors, passerines, and shorebirds that include sharp-shinned hawks (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus johannis*), common black hawk (*Buteogallus anthracinus*), Harris's hawk (*Parabuteo unicinctus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*), and egrets, herons, flycatchers, and woodpeckers.

## **3.3.2 Potential Consequences**

### **3.3.2.1 Proposed Action**

Fish habitat is likely to improve where rock material is placed below the OHW. Some fragments of Bulrush may be disturbed during contouring of the lower bankline and placement of rock material. Likewise, vegetation on the upland area above the bankline will be cleared during construction of the access roads and contouring of the upper bankline area. Both native and non-native species would be temporarily displaced during construction activities. However, as similar habitat is abundant in the area, and wildlife is likely to return to the project at the conclusion of construction, significant loss of species diversity is not expected to occur as a result of the Proposed Action.

### **3.3.2.2 Bankline Stabilization, Jetties, and Habitat Restoration**

This alternative would have impacts similar to the Proposed Action, but would temporarily disturb a larger area of vegetation and larger number of wildlife. Areas of established bulrush are likely to be lost during construction of the built up bankline road. However, the restoration element of this alternative would create improved habitat for a wide variety of terrestrial and avian species.

### **3.3.2.3 No Action**

Bankline erosion will persist, resulting in a loss of vegetation and wildlife habitat. Existing bulrush areas could be impacted by continuous wave action.

## **3.3.3 Mitigation Measures**

Approximately 1/10 of an acre of established Bulrush on the upstream end of the project area will be avoided and monitored for up to 2-years to evaluate if the vegetation is providing

sufficient stabilization to prevent further erosion. Reclamation will make every effort to avoid disturbing the larger fragments of bulrush that have established along the shoreline. While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

### 3.4 Special Status Species

#### 3.4.1 Affected Environment

##### 3.4.1.1 Federal and State Listed

Based on consultation and coordination with the USFWS and the AGFD, the species included in Table 3 represent species that are classified as Threatened or Endangered by the USFWS and or Wildlife of Special Concern by the AGFD that have potential to occur in or transit the project area.

**Table 3 - Special Status Species**

<b>Species</b>	<b>Status</b>
Razorback sucker ( <i>Xyrauchen texanus</i> )	<u>Federal</u> : Endangered, with critical habitat <u>State</u> : AZ - Wildlife of Special Concern
Bonytail chub ( <i>Gila elegans</i> )	<u>Federal</u> : Endangered, no critical habitat in project area <u>State</u> : AZ - Wildlife of Special Concern
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	<u>Federal</u> : Endangered <u>State</u> : AZ - Wildlife of Special Concern
Yuma clapper rail ( <i>Rallus longirostris yumanensis</i> )	<u>Federal</u> : Endangered <u>State</u> : AZ - Wildlife of Special Concern
Brown pelican ( <i>Pelecanus occidentalis</i> )	<u>Federal</u> : Endangered <u>State</u> : AZ - None
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	<u>Federal</u> : Threatened <u>State</u> : AZ - Wildlife of Special Concern
Western Yellow-billed Cuckoo ( <i>Coccyzus americanus occidentalis</i> )	<u>Federal</u> : Candidate <u>State</u> : AZ - Wildlife of Special Concern
American Peregrine falcon ( <i>Falco peregrinus anatum</i> )	<u>Federal</u> : Species of Concern <u>State</u> : AZ - Wildlife of Special Concern
Clark's grebe ( <i>Aechmophorus clarkii</i> )	<u>Federal</u> : None <u>State</u> : AZ - Wildlife of Special Concern
Sonoran Desert Tortoise ( <i>Gopherus agassizii</i> )	<u>Federal</u> : Threatened (Mohave population) <u>State</u> : AZ – Wildlife of Special Concern (Sonoran Population)
California leaf-nosed bat ( <i>Macrotus californicus</i> )	<u>Federal</u> : Species of Concern <u>State</u> : AZ - Wildlife of Special Concern
Flannelmouth sucker ( <i>Catostomus latipinnis</i> )	<u>Federal</u> : Species of Concern <u>State</u> : AZ – None
Cave myotis ( <i>Myotis velifer</i> )	<u>Federal</u> : Species of Concern <u>State</u> : AZ – None

**Sources:** (1) Arizona Game and Fish Department correspondence (December 28, 2005) (2) U.S. Fish and Wildlife Service (<http://endangered.fws.gov/wildlife.html#Species>).

### **3.4.1.2 Multi Species Conservation Program**

The USFWS issued a biological and conference opinion (BCO) for the Lower Colorado River Multi Species Conservation Program (MSCP) in March of 2005. The BCO addressed the effects of incidental take for 27 species (USFWS 2005). MSCP covered species which may inhabit or transit the project area include Arizona Bell's vireo (*Vireo bellii arizonae*), Colorado River cotton rat (*Sigmodon arizonae plenus*), elf owl (*Micrathene whitneyi*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), Sonoran yellow warbler (*Dendroica petechia sonorana*), summer tanager (*Piranga rubra*), and vermilion flycatcher (*Pyrocephalus rubinus*) (LCR-MSCP 2004a, b, c).

## **3.4.2 Potential Consequences**

### **3.4.2.1 Proposed Action**

Construction activities will temporarily disturb habitat that maybe transited by the special status species listed above; however, the disturbance would be short-term and is not likely to jeopardize the continued existence or cause a decline in population of a Federal or state listed species. The proposed enhancement feature of planting native trees (pole planting) will increase resting habitat commonly used by some of the avian species listed above.

### **3.4.2.2 Bankline Stabilization, Jetties, and Habitat Restoration**

Impacts of this alternative would be similar to those of the Proposed Action; however, disturbance would be longer and over a slightly larger area. While the area disturbed would be larger and includes more intensive construction activities, the restoration element of this alternative would create habitat characteristics preferred by several of the listed species listed above and would likely result in an increase of occurrence of these species in the project area.

### **3.4.2.3 No Action**

The No Action alternative would result in continued erosion of bankline and could cause sedimentation to adversely effect fish habitat along the project shoreline and in downstream areas. Further, there would be no enhancement or improvement in riparian vegetation that could attract both terrestrial and avian species.

## **3.4.3 Mitigation Measures**

The USFWS BCO addressed impacts of the Needles Bankline Stabilization project as a covered Federal action under the MSCP and includes incidental take statements for species likely to occur in the project area. In accordance with the MSCP-BCO, Avoidance and Minimization Measures (AMM) 1, 3, and 6 will eliminate or minimize potential impact to species managed under the MSCP (USFWS 2005).

AMM 1: To the extent practicable, avoid and minimize impacts of implementing the LCR MSCP (Conservation Plan) on existing covered species habitats.

AMM 3: To the extent practicable, avoid and minimize disturbance of covered bird species during the breeding season.

AMM 6: Avoid or minimize impacts on covered species habitats during dredging, bank stabilization activities, and other river-management actions.

Work performed below the OHW will be conducted during the low water season (November to January). This will avoid or minimize adverse effect to listed fish species. This schedule will further result in less disruption of recreational use of the beach areas as use during this time period is limited. While the pole plantings of native trees are not regulatory mitigation, they are considered an enhancement to the Proposed Action that will benefit the aesthetic quality of the site. Therefore, Reclamation will monitor the growth and success of the plantings up to 3-years after construction is completed.

## **3.5 Land Use**

### **3.5.1 Affected Environment**

#### ***3.5.1.1 Adjacent Areas***

Land uses along this section of the LCR are under the jurisdiction of several agencies including San Bernardino County, CA; Mohave County, Arizona; and HNWR managed by the USFWS. The nearest incorporated city is Needles, CA to the north of the project area. The Fort Mohave Indian Reservation is approximately 1.5 miles north of the project area.

#### ***3.5.1.2 Recreation***

The project area is located on public land managed by the USFWS for wildlife and recreational uses. Likewise the project area is primarily bounded by other public lands managed for similar uses. Typical land based uses in the project area include hiking, picnicking, camping, hunting, and shoreline fishing, while water based activities are focused on recreational boating and fishing. Sightseeing tour boats also traverse the project area while traveling between Laughlin, NV and Lake Havasu City, AZ.

### **3.5.2 Potential Consequences**

#### ***3.5.2.1 Proposed Action***

Construction would temporarily preclude fishing and other recreational activities along the shoreline. However, abundant recreational areas are available to the public for use during construction activities. Direct access to the bankline for fishing may be impacted due to placement of rocks; which can be harder to navigate than the sandy bankline. Under the Proposed action, the existing beach areas will not be covered by rock or gravel materials and may still be used by boaters as rest or picnicking areas, especially during lower flows.

#### ***3.5.2.2 Bankline Stabilization, Jetties, and Habitat Restoration***

Construction would temporarily preclude fishing and other recreational activities in the project area. The large size and quality of rock along the bankline would inhibit bankline fishing. Under this alternative the existing beach areas would be lost, eliminating recreational uses for boaters.

#### ***3.5.2.3 No Action***

Bankline erosion will persist, resulting in the loss of HNWR land. Recreational activities downstream could possibly be impacted by sediment deposition from continued erosion.

### **3.5.3 Mitigation Measures**

No significant impacts to river and/or land use are anticipated, mitigation measures are not required.

## **3.6 Water Resources**

### **3.6.1 Affected Environment**

The river and the underlying and adjacent river aquifer form a hydraulically connected system. River water extends from the flood plain for a considerable distance beneath the alluvial slopes (Wilson 1994).

#### **3.6.1.1 Groundwater**

Groundwater in the Colorado River alluvium occurs under water-table conditions. Sources of recharge to the groundwater reservoir are the Colorado River, unused irrigation water, runoff from precipitation, and underflow from bordering areas. Groundwater is discharged from the aquifer by wells and evapotranspiration. Depth to groundwater ranges from 5 to 12 feet. A nearby well belonging to the Havasu National Wildlife Refuge has a depth to water of approximately 7 ft with 1800 gpm discharge (Metzger 1973).

#### **3.6.1.2 Surface Water**

Topock Marsh is located adjacent to the project area and the water flow into the marsh and lake areas is controlled via inlet and outlet structures. Annual mean stream flow of the Colorado River near Topock, AZ is approximately 12,000 cfs.

#### **3.6.1.3 Water Quality**

A plume of the chemical chromium-6 in groundwater near Needles, CA thought to be related to Pacific Gas and Electric (PG & E) operations in the area has been observed moving toward the Colorado River. However, the project site is located further upstream from the PG & E site and no direct or indirect effects from the chromium-6 are known to occur in the vicinity of the bankline stabilization project.

### **3.6.2 Potential Consequences**

#### **3.6.2.1 Proposed Action**

The Proposed Action would not affect normal river operations or availability of water. Water turbidity could increase slightly from during the contouring and stabilizing of the upland and lower bankline but the effects would quickly disperse in the rapid current adjacent to the project area and would be temporary and short-term. The channel width will be stabilized to be consistent with upstream and downstream channel widths. There is slight potential for impacts to groundwater in quarry, staging and stockpile areas from releases of POL products and fuels.

#### **3.6.2.2 Bankline Stabilization, Jetties, and Habitat Restoration**

This alternative would not affect normal river operations or availability of water. During construction this alternative may increase turbidity of the water but effects would be temporary and short-term. There is slight potential for impacts to groundwater in quarry, staging, and stockpile areas from releases of POL products and fuels.

### **3.6.2.3 No Action**

Potential impacts to water from the No Action Alternative would occur from continued erosion of the bankline. Erosion will contribute to sediment levels, potential impacts due to sediment deposition may occur downstream of the project area. In extreme cases of sediment deposition, flooding can occur to upstream areas, as water becomes backed up and spreads out behind sediment build up.

### **3.6.3 Mitigation Measures**

Reclamation applied for a Section 404, Dredge and Fill, and a Section 401, Water Quality Certification, permits under the CWA. The Corps of Engineers has issued authorization under Nationwide Permit #13 (see Appendix D). Prior to construction Reclamation will prepare and have a SWPPP on site to prevent and/or minimize spill or storm event impacts in the project vicinity.

## **3.7 Cultural Resources**

### **3.7.1 Affected Environment**

A Phase I cultural resource survey of approximately 75 acres was conducted in May 2004. One prehistoric ceramic shard was discovered and documented as an isolated find. No cultural resources that qualify as sites were discovered during the survey (Finney 2004). Reclamation has requested and received a finding of No Historic Properties Affected from the Arizona State Historic Preservation Office (SHPO) (See Appendix C).

### **3.7.2 Potential Consequences**

No impacts to cultural resources will occur through implementation of the Proposed Action, the Bankline Stabilization, Jetties, and Habitat Restoration Alternative or the No Action Alternative.

### **3.7.3 Mitigation Measures**

In the event of a discovery of cultural resources at the project location, all work shall cease and the site supervisor shall contact Reclamation. Reclamation in conjunction with the Arizona SHPO will establish measures to avoid or mitigate any impacts.

## **3.8 Indian Trust Assets**

### **3.8.1 Affected Environment**

Indian trust assets are "...legal interests in assets held in trust by the Federal government for federally recognized Indian tribes..." There are no Indian Trust Assets located in the project area.

### **3.8.2 Potential Consequences**

Since there are no Indian Trust Assets located in the project area, none will be affected by the Proposed Action, the Bankline Stabilization, Jetties, and Habitat Restoration Alternative, or the No Action Alternative.

### **3.8.3 Mitigation Measures**

No mitigation measures are required or proposed for this resource area.

## **3.9 Environmental Justice**

Executive Order 12898 requires that proposed Federal actions address environmental justice on minority and low-income populations by identifying disproportionately high and adverse human health and environmental impacts.

### **3.9.1 Affected Environment**

A majority of the population in the project vicinity is White Non-Hispanic (U.S. Census Bureau 2006a). Census data states the Fort Mohave Indian Reservation population is 773 (U.S. Census Bureau 2006b).

### **3.9.2 Potential Consequences**

Implementation of the Proposed Action, Bankline Stabilization, Jetties, and Habitat Restoration Alternative, or the No Action Alternative would not create disproportionate impacts to minority and low-income populations in the communities of Needles, CA or the Fort Mohave Indian Reservation.

### **3.9.3 Mitigation Measures**

No mitigation measures are required or proposed for this resource area.

## **3.10 Soils and Geology**

### **3.10.1 Affected Environment**

The project area is in the Sonoran Desert section of the Basin and Range physiographic province and is located within the flood plain of the Colorado River. The Colorado River flood plain in Mohave Valley has a maximum width of 5 miles. A younger alluvium of unconsolidated gravel, sand, silt, and clay characterize the area (Metzger 1973). Gravel yields copious supplies and sand yields moderate supplies of water to wells.

### **3.10.2 Potential Consequences**

#### **3.10.2.1 Proposed Action**

The Proposed Action will excavate a portion of the bankline and lay in the rock in accordance with the design (see Appendix B). The bank will be sloped and follow the natural configuration of the existing shoreline. The excavated material will remain on site and be used to contour the sloped bankline. The Proposed Action would prevent further loss of soil and maintain the existing geological delineation.

**3.10.2.2 Bankline Stabilization, Jetties, and Habitat Restoration**

This alternative would require significant excavation efforts to create the habitat restoration portion. However, the excavated material will remain on site and be contoured for use in creating new landforms for the habitat restoration element.

**3.10.2.3 No Action**

If no action is taken soil will continue to erode and contribute to the sediment load and deposition downstream.

**3.10.3 Mitigation Measures**

Prior to construction Reclamation will prepare and have a SWPPP on site to prevent and/or minimize spill or storm event impacts in the project vicinity.



## 4.0 Cumulative Impacts

The CEQ guidance for implementing procedural provisions of NEPA (40 CFR Part 1500-1508) define “cumulative impact” as the impact on the environment that results from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time” (§1508.7).

The guidance stipulates that an EA should address cumulative impacts when they are significant. The discussion of cumulative impacts should reflect the severity of the impacts and their likelihood of occurrence, but it need not provide the same level of detail as the discussion of the environmental effects attributable to the project alone. Cumulative impacts should be addressed using standards of practicality and reasonableness.

The HNWR has prepared a *Lower Colorado River Refuges Master Plan* and a *Water Management Plan* for the HNWR. No uncontrolled activities such as mining, rock/artifact collecting, and off-road vehicle use are allowed on the HNWR. These factors, combined with the generally non-intrusive nature of recreational use, have resulted in a more controlled environment. In many respects, the overall impact of the USFWS use of HNWR has been, and will continue to be, positive since its use as a recreational area has protected resources against development.

Section 4.1 lists relevant projects while Section 4.2 discusses any cumulative environmental effects associated with the Proposed Action and the projects discussed in Section 4.1.

### 4.1 Ongoing and Reasonably Foreseeable Actions

Coordination with the FWS, Reclamation, and HNWR staff assisted in identifying past, present, and reasonably foreseeable actions on HNWR or the LCR. HNWR or LCR projects that could directly or indirectly interact with the Proposed Action are listed below and define the cumulative impacts area of the Proposed Action.

- PG&E Chromium-6 Investigation
- Reclamation Parker-Davis Project
- HNWR No name Lake
- HNWR North Refuge Revegetation
- HNWR Beal Lake
- HNWR Sacramento Wash Athel Forest Rehabilitation
- San Bernardino County Bankline Stabilization

These actions, which are all on HNWR or the LCR, are neither dependent on the Proposed Action addressed in this EA nor are they part of the proposed action. Other projects on the HNWR or the LCR that do not have the potential to interact cumulatively with the Proposed Action are not addressed in this EA. Where applicable, environmental analyses of the other

actions addressed in this section have been, or would be, conducted separately, with the results of those analyses incorporated into documents prepared specifically for those actions.

## **4.2 Environmental Analysis of Cumulative Effects**

NEPA requires only a discussion of those cumulative impacts with the potential for significance. Implementation of these projects would not conflict with implementation of the Proposed Action in terms of construction and operation. Potential impacts associated with these projects would be, or have been, addressed on a project-specific basis via the preparation of NEPA documentation. These effects would not contribute to significant cumulative impacts associated with other planned projects in the vicinity of the Proposed Action.

## 5.0 Other NEPA Considerations

### 5.1 Irreversible or Irretrievable Commitment of Resources

NEPA requires an analysis of significant irreversible effects. Resources that are irreversibly or irretrievably committed to a Proposed Action are those that are utilized on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, and other natural or cultural resources. These resources are considered irretrievable in that they would be used for a Proposed Action when they could have been conserved or used for other purposes. Another impact that falls under the category of irreversible and irretrievable commitment of resources is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The construction of the Proposed Action would result in an irretrievable commitment rock and gravel and fuel for construction vehicles and equipment. In addition, the Proposed Action would commit workforce time for construction, engineering, environmental review, and compliance.

### 5.2 The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

CEQ requires that the relationship between short-term uses of the environment and the impact that such uses may have on the maintenance and enhancement of the long-term productivity of the environment be included in the NEPA analysis. Of particular concern are impacts that would narrow the range of beneficial uses of the environment. This refers to the possibility that choosing one development option would reduce future flexibility in pursuing other options or that committing a parcel of land or other resource to a certain use would eliminate the possibility of other uses being performed at that site.

The Proposed Action would be constructed and operated on the HNWR. The HNWR is a federally designated recreational area within the State of Arizona along the Arizona/California border on the LCR. The short-term effects of the construction and operation of the Proposed Action would include impacts to plants and animals. These impacts would not affect the long-term productivity of these resources at a regional level.

### 5.3 Possible Conflicts with Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

There are several local land use plans, policies, and controls that address and guide land use for and in the vicinity of the project location, the HNWR as a whole, and surrounding areas. These documents include the *Lower Colorado River National Wildlife Refuges Comprehensive Management Plan 1994-2014* (UFSWS 1994), *San Bernardino County General Plan* (County of

San Bernardino 2002), Mohave County General Plan (County of Mohave, AZ 2000), and the *City of Needles General Plan* (City of Needles 1986).

No potential conflicts are anticipated between the Proposed Action and any of the HNWR land use plans, policies, and controls that address and guide uses within the Proposed Action area. Since the site will continue to remain under federal ownership, it is not subject to the City of Needles nor the counties of San Bernardino or Mohave plans mentioned above. No land uses off HNWR would be affected by implementation of the Proposed Action.

## 6.0 Coordination and Consultation

As part of the NEPA process, Reclamation, coordinated and consulted with government agencies to ensure that all applicable laws, rules, regulations, and policies have been identified and the Proposed Action has been duly considered in light of these considerations. This EA has been prepared pursuant to applicable laws and regulations. The sections below provide summary information regarding some permits and regulations specific to the proposed project.

### 6.1 Clean Water Act

The Colorado River is classified as a water of the U.S and therefore any projects involving dredge and or fill activities are subject to review and or permitting under section 404 and 401 of the Clean Water Act (CWA). Reclamation has coordinated with the U.S. Army Corp of Engineers and the Arizona Department of Environmental Quality (ADEQ) regarding permitting requirements and the project is authorized under Nation Wide Permit # 13, Bankline Stabilization. All work below the Ordinary High Water (OHW) mark will be in accordance with permit requirements (Appendix D).

### 6.2 Clean Air Act

The Clean Air Act and Amendments (42 U.S.C. 7401) includes provisions that require Reclamation to comply with applicable standards and requirements. States are responsible for prevention of pollution and were required to submit State Implementation Plans (SIP) to the Environmental Protection Agency (EPA). Arizona has an approved SIP and the regulatory body in Arizona with authority to issue air permits and enforce requirements of the CAA and Arizona's SIP is ADEQ. Therefore, Reclamation will coordinate with ADEQ regarding any permitting requirements associated with the Proposed Action related to material processing and equipment operation. No activities will be implemented without the appropriate permits or authorizations from ADEQ.

### 6.3 Endangered Species Act

Consultation with the U.S. Fish and Wildlife Service is required under section 7 of the Endangered Species Act (ESA) of 1973 (P.L. 93-205) if the Proposed Action would occur at locations known to be inhabited by threatened or endangered plant and animal species. Consultation for this project is included in the MSCP, as the project is an action covered under that program. During the stakeholder meeting, the USFWS Ecological Services Branch indicated their concurrence that this project was a covered action under the Biological and Conference Opinion on the LCR-MSCP, AZ, CA, and NV, dated March 4, 2005 and a letter documenting this concurrence (02-21-04-F-0161) was received March 9, 2006 (Appendix C).

### 6.4 Fish and Wildlife Coordination Act

Section 1 and 2 of the Fish and Wildlife Coordination Act (FWCA) of 1958 (P.L. 85-624), mandates that fish and wildlife receive equal consideration with water resources development

programs. Reclamation is required to consult and coordinate with the USFWS and state fish and game agencies whenever it proposes a project that may alter or modify a stream, river or other water body (Reclamation NEPA Handbook). In accordance with this mandate, Reclamation corresponded with applicable fish and wildlife agencies to inform them of the proposed project and to identify potential issues and concerns related to wildlife conservation (See Appendix C). To further elicit input from resources agencies, Reclamation held a stakeholders meeting in March of 2005. Based on feedback provided during this meeting, Reclamation refined the project design and a follow-up meeting was held in December of 2005.

## **6.5 National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (P.L. 89-665), as amended (P.L. 95-515) requires federal agencies to consider the preservation of historic and prehistoric resources. Under the NHPA, the Secretary of the Interior is authorized to expand and maintain an National Registry of Historic Places (NRHP). Section 106 of the NHPA mandates that all federal agencies take into account the effects of their undertakings (actions) on historic/prehistoric resources and to afford the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on any action that may affect properties that are listed, or are eligible for listing, in the NRHP. Under Section 101 of the NHPA, a State Historic Preservation Officer was established in each state and designated the responsibility of reviewing and commenting on any action affecting NRHP properties, or properties eligible for listing in the NRHP. In accordance with these requirements, Reclamation coordinated with the Arizona SHPO (See Appendix C).

## 7.0 List of Preparers

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