



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Screening and Evaluation of Potential Conservation Areas: October 2008 Trip Reports



February 2009

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
City of Bullhead City
City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
Salt River Project Agricultural Improvement and Power District
Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
Yuma County Water Users' Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState County Government Coalition
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Game
City of Needles
Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
Southern California Public Power Authority
The Metropolitan Water District of Southern California

Nevada Participant Group

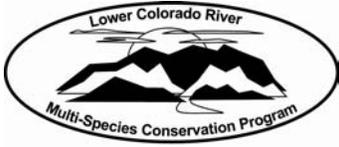
Colorado River Commission of Nevada
Nevada Department of Wildlife
Southern Nevada Water Authority
Colorado River Commission Power Users
Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
The Cocopah Indian Tribe

Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.



Lower Colorado River Multi-Species Conservation Program

Screening and Evaluation of Potential Conservation Areas: October 2008 Trip Reports

Lower Colorado River
Multi-Species Conservation Program
Bureau of Reclamation
Lower Colorado Region
Boulder City, Nevada
<http://www.lcrmscp.gov>

February 2009

February 3, 2009

To: Steering Committee Members

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a habitat-based program that includes measures for the creation of 8,132 acres of habitat, which would be developed and managed as Conservation Areas. The process to select Conservation areas was outlined in the *Draft Guidelines for the Screening and Evaluation of Potential Conservation Areas*. The guidelines define separate processes for screening and evaluating sites for the creation of backwater habitat (i.e., open water and marsh) and riparian habitat (i.e., cottonwood-willow, honey mesquite, and marsh).

In September 2008, the LCR MSCP solicited projects from its stakeholders through a Request for Proposals. Nine separate proposals were received and included: 'Ahakhav Tribal Preserve-Deer Island, 'Ahakhav Tribal Preserve-CRIT 8, 'Ahakhav Tribal Preserve-CRIT 11, Imperial National Wildlife Refuge-Farm Fields, Imperial National Wildlife Refuge-Bank Line Restoration, Laguna Fire Rehabilitation, Yuma East Wetlands-Phase II, Hunter's Hole, and Palo Verde Valley Honey Mesquite. Included below is a brief summary of the areas screened and evaluated.

'Ahakhav Tribal Preserve-Deer Island: Deer Island is approximately 640 acres of marsh, riparian, and upland habitat. Water control structures that regulate the flow of Colorado River water within the site were installed after a flooding event in the early 1990s. Potential marsh, cottonwood-willow, and mesquite development were discussed. However, after internal discussions it was determined that providing enhancements to the existing marsh would not constitute creation of new marsh habitat and therefore would not be eligible for credit. Restoration of Deer Island would focus on establishment of cottonwood-willow and honey mesquite land cover types. Prior re-vegetation attempts consisted of cottonwood-willow and mesquite stands fed via drip irrigation. Although small stands of cottonwood-willow are present, much of the site is overgrown with non-native species. No irrigation infrastructure exists on the site. Water for habitat development is available from the land owner.

'Ahakhav Tribal Preserve-CRIT 8: CRIT 8 is a 10-acre parcel adjacent to the Colorado River with low depressions that remain wet throughout the year. Re-vegetation at the site has occurred in prior years consisting of mainly willow and a few cottonwoods. Currently, a stand of willow exists throughout the site. No irrigation infrastructure exists at the site. Water for habitat development is available from the land owner.

'Ahakhav Tribal Preserve-CRIT 11: CRIT 11 is approximately 30 acres of land consisting of a small marsh and riparian area with a larger upland area. The site was initially identified under an LCR MSCP research and development grant with the Tribal Preserve, which expires in 2009. Although the site has been excluded from the grant due to time constraints, existing site conditions allow for a terraced land cover development of mesquite, cottonwood-willow, and marsh. Currently, no irrigation infrastructure exists;

however, two irrigation canals exist adjacent to the property and could be extended to service the site. Water for habitat development is available from the land owner.

Imperial National Wildlife Refuge-Farm Fields: Farm fields proposed for habitat restoration are part of the Refuge's intensive management area used to support wildlife. Fields 10, 15, 19, 20A, and 20C were proposed for development. Each field is approximately 10 acres, with all fields proposed totaling approximately 48 acres that are irrigated through concrete lined canals. Small remnant stands of cottonwood-willow and mesquite still remain throughout the fields from previous restoration efforts; however, the fields are dominated by non-native vegetation. Water for habitat development is available from the land owner.

Imperial National Wildlife Refuge-Bank Line Restoration: A portion of the Martinez Lake bank line is owned and managed by the Refuge. The bank line and adjacent open water are buoyed off to boaters for 3-4 wintering months in support of migratory bird populations. The site is approximately 260-375 acres and located to the south of the Refuge's intensive management units. Due to the remoteness of the site and lack of infrastructure available, additional equipment and labor costs are expected. Currently the site contains small amounts of cottonwood-willow and large amounts of non-native vegetation. No prior re-vegetation efforts have occurred at the site. Water for habitat development is available from the land owner.

Laguna Fire Rehabilitation: During summer 2008 a small fire covering 128 acres occurred at the base of Imperial Dam. Through a collaborative effort between the Bureau of Land Management (BLM) and Reclamation, the area was identified as a potential site for native land cover type development. The land is federally withdrawn, owned by Reclamation and managed by the BLM. Access is limited to low impact recreation (picnicking, bird watching, and walking trails) and is gated to restrict vehicle access. Water and power, although not on site, can be made available by accessing the adjacent federal facility's infrastructure. Water is available through the BLM's state of Arizona water right.

Yuma East Wetlands-Phase II: The Yuma Crossing National Heritage Area (YCNHA) is attempting to restore 430 acres of federal, tribal, and state lands located at the Gila River and Colorado River confluence. The site is currently overgrown with non-native vegetation and maintains a high rate of pedestrian and vehicle traffic. The YCNHA is currently completing a 350 acre restoration effort west of the confluence (Phase I) and will transfer restoration and management techniques to the new lands proposed. Water is available through land owner's water rights.

Hunter's Hole: Located three miles north of the southerly international border in the Limitrophe Division, Hunters Hole is a 437-acre marsh, riparian, and upland habitat. In 2007 the site experienced a fire, which degraded the existing wetlands and riparian habitat. The land is Reclamation withdrawn and managed by the BLM. The BLM, YCNHA, and Reclamation have been active in determining restoration potential at the site. A groundwater pump was installed at the site in 2008. Water and power

infrastructure are available at the site. Minimal maintenance activities are foreseen due to U.S. Customs and Border Protection activity throughout the area. Up to 4,000 ac-ft per year have been made available to the project.

Palo Verde Valley-Honey Mesquite: The Palo Verde Irrigation District (PVID) services 120,500 cultivated acres within the Palo Verde Valley. Approximately 148 acres of undeveloped land owned and managed by PVID have been identified for honey mesquite development. PVID is not asking to be reimbursed for use of the property although the LCR MSCP will have to pay for development and associated water delivery costs. Water is available through the PVID.

A meeting and conference call for interested parties to review and discuss the recommendations of the trip reports has been scheduled for February 18, 2009. If you have any questions, please feel free to contact either Jed Blake or myself at (702) 293-8165 or (702) 293-8555, respectively.

John Swett

October 20, 2008

‘Ahakhav Tribal Preserve-Deer Island

Conservation Area Site Selection: Step 2, Trip Report

Background: In 1995, the Colorado River Indian Tribes (CRIT) established the ‘Ahakhav Tribal Preserve (Preserve) to protect fish, wildlife, and plants along riparian areas that border the Colorado River. The Preserve, consisting of 1,300 acres, maintains nature trails, sport fishing opportunities, a native plant greenhouse, and native plant restoration projects. Since 1995, the Preserve has been actively restoring individual parcels on an annual basis.

Location: The Preserve is located south of Parker, Arizona, on the Colorado River Indian Tribes Reservation. The Preserve is bounded by the Colorado River to the west and by Mohave Road to the east. Deer Island is located on the southeastern portion of the Preserve and is bounded by the Colorado River to the west. Farm fields, operated by a private lease farmer, are located on the eastern edge.

Water Right and Priority: The CRIT maintain a Present Perfected Water Right #2 in the State of Arizona of 662,402 acre feet. Water is available from the land owner.

Existing Site Conditions: Small quantities of all four LCR MSCP land cover types (cottonwood-willow, honey mesquite, marsh, and backwater) currently exist. Large amounts of invasive saltcedar, arrowweed, and *Phragmites* are present throughout the site. The site supports recreational fishing managed by CRIT Fish and Game. Photos included are from Reclamation’s 2004 aerial photography database.

Existing Infrastructure: Existing infrastructure includes two water control structures (stop logs) installed after a flooding event in the early 1990s. One water control structure is located at the northeast Colorado River bank line and the other is located at the road to the southeast, which feeds Lower Deer Island. Lower Deer Island was not proposed for habitat restoration. The site is not serviced by electricity or irrigation canals or pumps. Two boat launches are located on the southeast corner of Deer Island and are accessed by local fisherman. A private lease farmer maintains the fields to the south of Deer Island. With approval of the Bureau of Indian Affairs, which manages the irrigation system, engineering improvements to existing canals could extend to service Deer Island. Depending on the land cover type to be established, both drip and flood irrigation would be viable options.

Habitat Creation Concepts: The developments of cottonwood-willow and mesquite land cover types were discussed. Past restoration efforts indicate that cottonwood-willow is suitable in the riparian areas. Use of irrigation canals and pumping systems would be necessary to flood irrigate the managed land cover types. Although the site is approximately 640 acres, ultimate acreage will be defined by the honey mesquite and cottonwood-willow land cover type design for the site.

The following items were identified and discussed to establish cottonwood-willow and mesquite using flood irrigation:

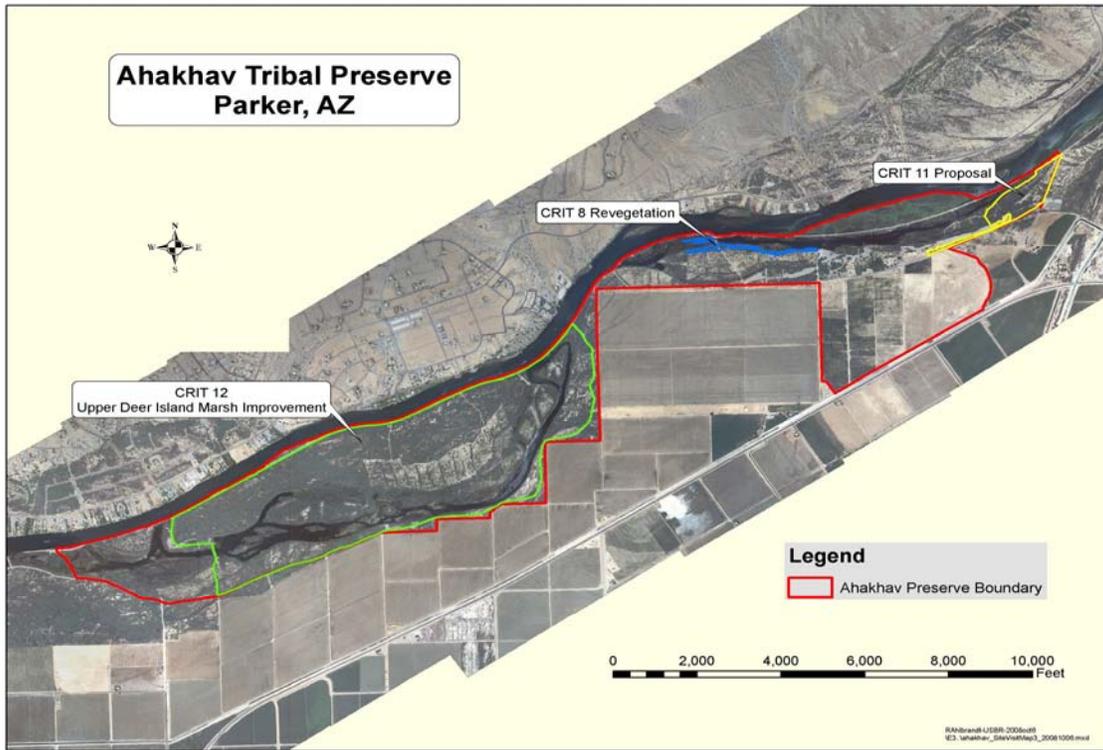
- Removal and replacement of existing water control structures to help manage adjacent marsh and allow for heavy equipment to access the site for contouring.
- Mechanized removal of non-native plant species. Laser leveling of fields and continued management until restoration activities are implemented.
- Disposal of vegetation either through burning or at local landfill.
- Engineered analysis extending existing irrigation canals that support adjacent farm fields.
- Installation of a concrete lined canal and irrigation system. Due to elevation constraints, pumping and maintenance costs may be necessary.
- Improvements to perimeter access road to support heavy equipment.
- LIDAR or equivalent survey of the site to allow for engineering design options.
- Restoration development schedule created to include Preserve on-site managers and the scheduling and budgeting of Reclamation heavy equipment.

Potential Issues: The site currently maintains an existing marsh, and enhancements would not be eligible for marsh habitat credit. Due to the complexity of the non-native removal and irrigation system requirements, additional data collection is necessary to prepare a restoration concept for cottonwood-willow and honey mesquite land cover types. Irrigation water and canal infrastructure would be coordinated with CRIT Farms and the Bureau of Indian Affairs. Prior to any restoration activities, signing of a land use agreement would be required.

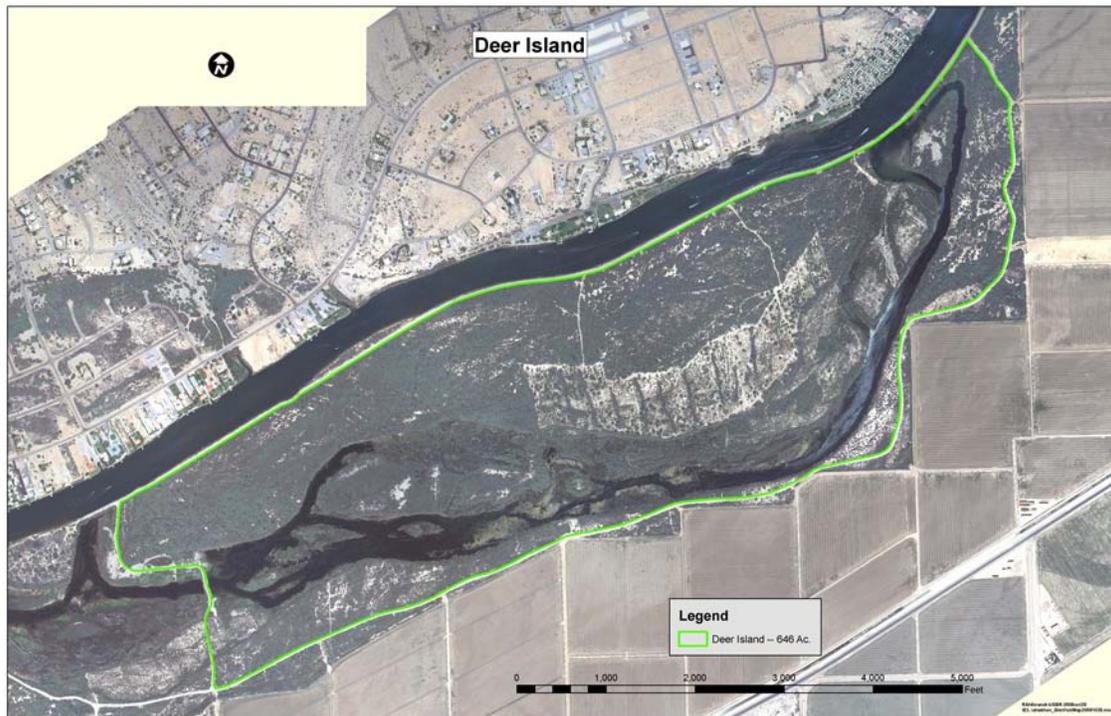
Recommendation: Continue the evaluation of Deer Island project, Step 3 of the site selection process. Because Deer Island is adjacent to similar land cover types already established at CRIT 9 and is within the 'Ahakhav Tribal Preserve, with the concurrence of the 'Ahakhav Tribal Preserve Management, it is recommended that funding for the site selection process be budgeted within the existing Work Task E3: 'Ahakhav Tribal Preserve, commencing during Federal Fiscal Year 2010. Engineering and design analysis would include survey work, soil analysis, water analysis, and development of several potential restoration scenarios. Development, if feasible and cost effective, would follow the normal annual work plan process.

Interdisciplinary Team Members:

Barbara Raulston	Wildlife Biologist	LC-8224
Jed Blake	Site Development Coordinator	LC-8415
Jim Tate	Facilities Maintenance Supervisor	YAO-4310
Julian DeSantiago	Environmental Specialist	YAO-7210
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400



Above & Below: 2004 Aerial Imagery



October 20, 2008

‘Ahakhav Tribal Preserve-CRIT 8

Conservation Area Site Selection: Step 2, Trip Report

Background: In 1995, the Colorado River Indian Tribes (CRIT) established the ‘Ahakhav Tribal Preserve (Preserve) to protect fish, wildlife, and plants along riparian areas that border the Colorado River. The Preserve, consisting of 1,300 acres, maintains nature trails, sport fishing opportunities, a native plant greenhouse, and native plant restoration projects. Since 1995, the Preserve has been actively restoring individual parcels on an annual basis.

Location: The Preserve is located south of Parker, Arizona on the Colorado River Indian Tribes Reservation. The Preserve is bounded by the Colorado River to the west and by Mohave Road to the east. Deer Island is located on the southeastern portion of the Preserve and is bounded by the Colorado River to the west. Farm fields, operated by a private lease farmer, are located on the eastern edge.

Water Right and Priority: The CRIT maintain a Present Perfected Water Right #2 in the State of Arizona of 662,402 acre feet. Water is available from the land owner.

Existing Site Conditions: The site is made up of sandy soils supporting willow, mesquite, and bulrush. Past re-vegetation efforts using drip irrigation, potted plants, and pole plantings have produced a stand of willow. A fringe of cottonwoods borders the site to the north and south. Several bare spots exist among the willow trees and are becoming encroached by non-native plants. The site maintains a low depression throughout running east and west. The depression contains moist soils throughout the year. Depending on river stage, standing water can be found in the site. Photos included are from Reclamation’s 2004 aerial photography database.

Existing Infrastructure: There is currently no electricity or irrigation infrastructure on the site. Past re-vegetation efforts utilized drip irrigation supported by gasoline or diesel pumps. An access road was installed for prior activities and provides vehicular access to the site.

Habitat Creation Concepts: To preserve the existing native plants, manual removal of non-natives would be required. Hand planting of willow poles or potted plants could fill in the bare spots. The fringe of cottonwood can be added to by cottonwood poles or potted plants. Irrigation can be via drip irrigation until plants are established.

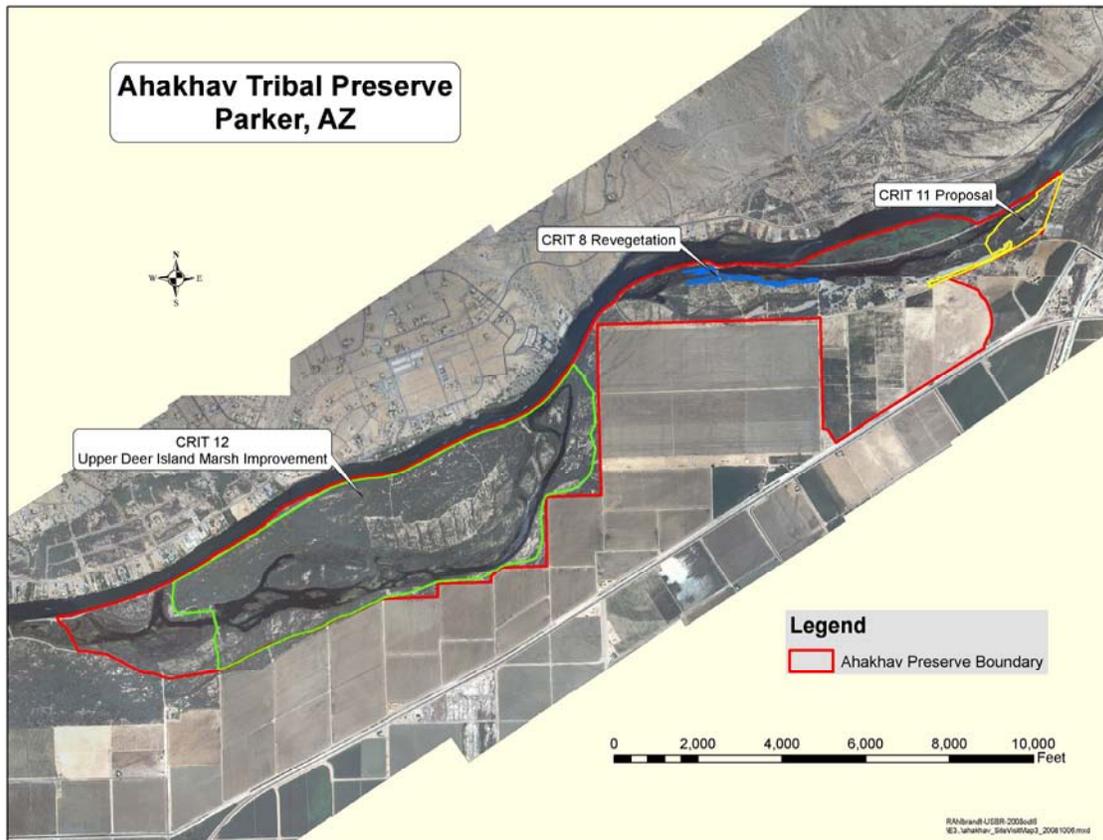
Potential Issues: The LCR MSCP maintains minimum acreage amounts per targeted land cover type. Although the site currently supports native plants, clearing, excavation and additional planting would be necessary to meet LCR MSCP habitat requirements.

Recommendation: With the concurrence of the ‘Ahakhav Tribal Preserve Management, it is recommended that CRIT 8 not be included for additional site selection analysis. However, it is recommended that the LCR MSCP be actively involved with the Preserve to support the restoration efforts involved with CRIT 8. Technical expertise, planting design, irrigation methods, and propagation techniques are a few lessons learned that can be shared between the Preserve and the LCR MSCP.

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Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400

Below: 2004 Aerial Imagery



October 20, 2008

‘Ahakhav Tribal Preserve-CRIT 11

Conservation Area Site Selection: Step 2, Trip Report

Background: In 1995, the Colorado River Indian Tribes (CRIT) established the ‘Ahakhav Tribal Preserve (Preserve) to protect fish, wildlife, and plants along riparian areas that border the Colorado River. The Preserve, consisting of 1,300 acres, maintains nature trails, sport fishing opportunities, a native plant green house, and native plant restoration projects. Since 1995, the Preserve has been actively restoring individual parcels on an annual basis. In 2004, the LCR MSCP awarded the Preserve a research and development grant. The intent of the grant was to develop alternative techniques for planting cottonwood in sandy environments. Propagation, planting design, and irrigation frequency were tracked on approximately 150 acres at CRIT 9. CRIT 11 was originally planned to be part of the grant. However, due to labor and time constraints, CRIT 11 has been excluded from the scope of the federal grant.

Location: The Preserve is located south of Parker, Arizona, on the Colorado River Indian Tribes Reservation. The Preserve is bounded by the Colorado River to the west and by Mohave Road to the east. Deer Island is located on the southeastern portion of the Preserve and is bounded by the Colorado River to the west. Farm fields, operated by CRIT Farms, are located on the eastern edge.

Water Right and Priority: The CRIT maintain a Present Perfected Water Right #2 in the State of Arizona of 662,402 acre feet. Water is available from the land owner.

Existing Site Conditions: The site is terraced downward from the Preserve access road to the river. Dry upland areas exist along the highest terrace running adjacent to a hiking trail. The middle terrace has been cleared in the past; sandy soils exist with small non-native growth. The lower terrace is partly marsh and leads to backwater containing sport fish. In early 2007, an irrigation canal located adjacent to CRIT 11 malfunctioned and flooded the CRIT 11 site. A large washout resulted, with material being washed away from the center of the site. Photos included are from Reclamation’s 2004 aerial photography database.

Existing Infrastructure: There is no electrical or irrigation infrastructure servicing CRIT 11. However, the site is located adjacent to two farm field canals serviced by the CRIT main canal. The two adjacent canals are known as the Rodeo Fairgrounds Canal and the CRIT 10 Canal. The group discussed the possibility of extending the Rodeo Fairground’s Canal or extension of the CRIT 10 Canal. Additional elevation surveys would be required to determine the feasibility of using either canal for irrigation purposes.

Habitat Creation Concepts: Utilizing the existing terraced landscape, a combination of marsh, riparian, and upland habitat can be developed. Separate management cells can be created that could irrigate specific cells of cottonwood-willow, mesquite, and bulrush.

The following items were discussed for the development of marsh, riparian, and upland species using flood irrigation:

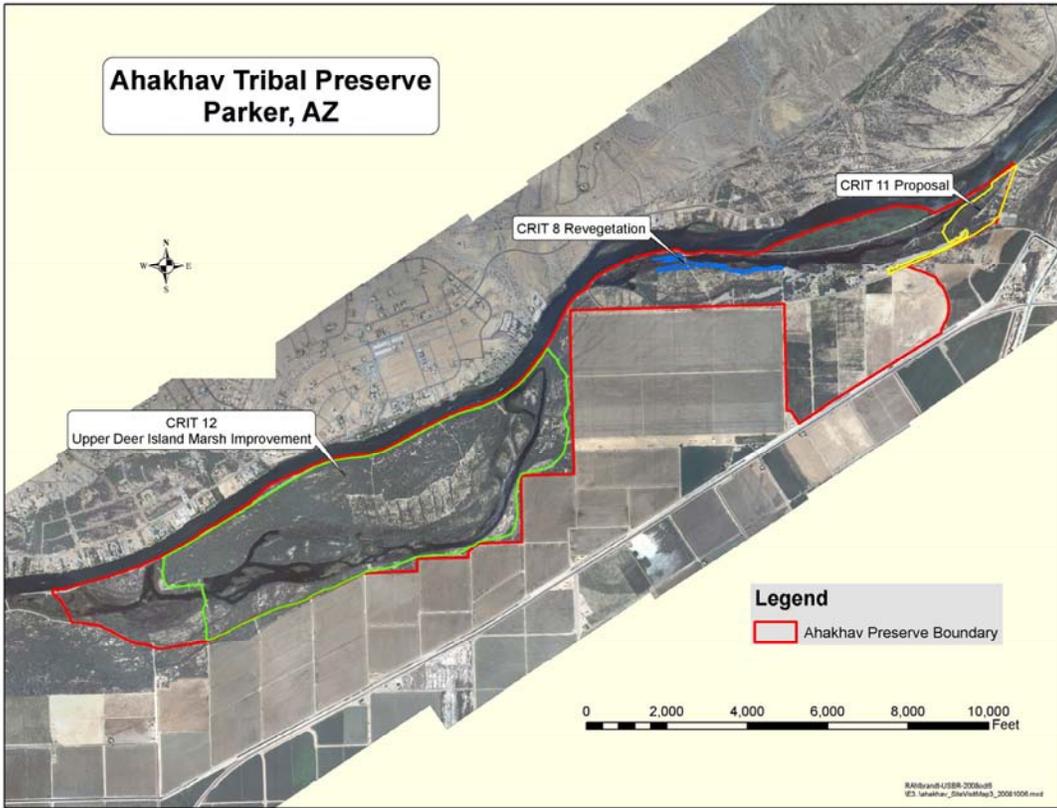
- Conduct an engineered analysis of the two adjacent irrigation canals and determine whether they are suitable to deliver water to the site.
- Due to the large cost associated with concrete lined canals, the group discussed expanding the site larger than the proposed 30 acres. A larger site will allow for a more cost-effective habitat management cell design and reduced irrigation system cost.
- Use of natural barriers such as rocks, earthen berms, or manmade barriers to help reduce non-Preserve foot traffic in the area.
- Improvements to site access roads to accommodate heavy equipment.

Potential Issues: The site is accessible to the public both through the main Preserve entrance and the federally maintained levee adjacent to the river. Although the site has potential to maintain three of the four LCR MSCP land cover types, costs associated with irrigation infrastructure may be too great for only 30 acres of habitat. Therefore, expansion of the project is being discussed. Prior to any restoration activities, signing of a land use agreement would be required.

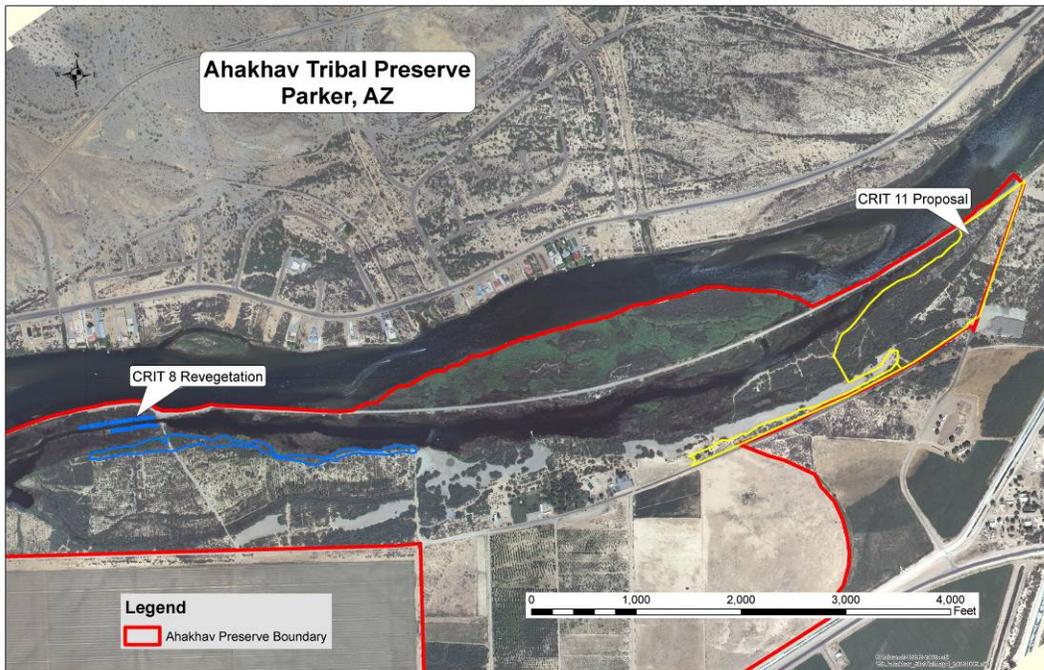
Recommendation: Continue the evaluation of the CRIT 11 project, Step 3 of the site selection process. Because CRIT 11 is adjacent to similar land cover types already established at CRIT 9 and is within the 'Ahakhav Tribal Preserve, with the concurrence of the 'Ahakhav Tribal Preserve Management, it is recommended that funding for the site selection process be budgeted within the existing Work Task E3: 'Ahakhav Tribal Preserve, commencing during Federal Fiscal Year 2010. Engineering and design analysis would include survey work, soil analysis, water analysis, and development of a restoration scenario. Development, if feasible and cost effective, would follow the normal annual work plan process.

Interdisciplinary Team Members:

Barbara Raulston	Wildlife Biologist	LC-8224
Jed Blake	Site Development Coordinator	LC-8415
Jim Tate	Facilities Maintenance Supervisor	YAO-4310
Julian DeSantiago	Environmental Specialist	YAO-7210
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400



Above & Below: 2004 Aerial Imagery



October 21, 2008

Imperial National Wildlife Refuge-Farm Fields

Conservation Area Site Selection: Step 2, Trip Report

Background: Imperial National Wildlife Refuge (INWR) was established in 1941 to support wildlife and migratory birds. The Refuge is approximately 25,768 acres and borders 30 miles of Colorado River. Since 2004, the LCR MSCP has been active in conducting restoration activities at the Refuge. In 2008, INWR worked with River Partners, a nonprofit restoration organization located in California, to draft several restoration concepts. Two of these concepts (Farm Fields and Bank Line Restoration) were analyzed during these site visits.

Location: INWR is located 25 miles northwest of Yuma, Arizona. The fields are located on the southerly portion of the Refuge, within the Refuge's intensive management units.

Water Right and Priority: INWR maintains a Consolidated Decree second priority consumptive use water right consisting of 23,000 acre feet. Water is available from the land owner.

Existing Site Conditions: The fields proposed are part of the INWR intensive management unit. The fields within the management unit are dedicated to supporting wildlife, which includes threatened and endangered species habitat. Marsh conditions exist at all three sites with visible bulrush growth in low depressions. Sandy soils exist throughout the site. All three fields were once planted with native rushes, cottonwood-willows, and mesquite, although they are currently unmanaged by the Refuge. Large amounts of saltcedar have infested the fields with small amounts of native species remaining. Photos included are from a 2007 aerial photography database.

Existing Infrastructure: Each field is serviced by existing concrete-lined canals delivering irrigation water. Two of the three fields are irrigated using a temporary irrigation pump located nearby. The other field is serviced by a newly installed permanent irrigation system servicing adjacent fields. Access roads located around the perimeter of the site can accommodate heavy equipment.

Habitat Creation Concepts: Adjacent fields are currently managed for marsh species. Standing water or moist soils exist throughout all three fields, making the site ideal for marsh development. In 2008, the LCR MSCP created Field 18, a 12-acre marsh adjacent to one of the proposed fields. Field contouring and non-native removal would be necessary to accommodate consistent water management conditions throughout all three fields.

The following items were discussed for the development of marsh species using flood irrigation:

- Non-native vegetation removal would be scheduled to avoid the marsh bird breeding season.
- Potential for additional labor and equipment costs identified due to dewatering the site during vegetation removal, excavation, and field contouring.
- Extension of the newly installed permanent irrigation system provides reliability and more efficient individual field management.
- Reference the Field 18 design and incorporate lessons learned into the new field's design layout.

Potential Issues: Currently an adjacent field, Field 18, is being surveyed for three years by a local university for marsh bird species. Debris removal and field contouring may have to be postponed until species surveys are complete. Prior to any restoration activities, modification of the existing land use agreement would be required.

Recommendation: Continue the evaluation of the farm fields, Step 3 of the site-selection process. In concurrence with the Refuge Manager, it is recommended that the fields proposed be incorporated into the existing Work Plan E14: Imperial Ponds Conservation Area. Budgeting and scheduling for site selection and field development would be included into the annual work plan process.

Interdisciplinary Team Members:

Barbara Raulston	Wildlife Biologist	LC-8224
Jed Blake	Site Development Coordinator	LC-8415
Jim Tate	Facilities Maintenance Supervisor	YAO-4310
Julian DeSantiago	Environmental Specialist	YAO-7210
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400



Above and Below: 2007 Aerial Photography



October 21, 2008

Imperial National Wildlife Refuge-Bank Line Restoration

Conservation Area Site Selection: Step 2, Trip Report

Background: Imperial National Wildlife Refuge (INWR) was established in 1941 to support wildlife and migratory birds. The Refuge is approximately 25,768 acres and borders 30 miles of Colorado River. Since 2004, the LCR MSCP has been active in conducting restoration activities at the Refuge. In 2008, INWR worked with River Partners, a nonprofit restoration organization located in California, to draft several restoration concepts. Two of these concepts (Farm Fields and Bank Line Restoration) were analyzed during the site visits.

Location: INWR is located 25 miles northwest of Yuma, Arizona. The bank line is located south of the Imperial Ponds and south of the intensive management units. The bank line forms approximately 30% of the Martinez Lake perimeter. The bank line proposal, depending on habitat creation concepts, is approximately 260-375 acres.

Water Right and Priority: INWR maintains a Consolidated Decree second priority consumptive use water right consisting of 23,000 acre feet. Water is available from the land owner.

Existing Site Conditions: The bank line is composed of marsh, riparian, and upland habitats. During winter months, the Refuge closes the bank line and adjacent open water for 3-4 months to support migratory bird populations. Non-native vegetation is apparent throughout the bank line and consists of large amounts of saltcedar and *Phragmites*. Small amounts of cottonwood-willow and mesquite are visible within the interior of the site. Adjacent fields contain sandy soils and it is believed that the entire bank line also contains sandy soils. The Refuge does not believe that any prior re-vegetation efforts have occurred at the site. Currently, a local university has a 10-acre species survey site located within the marsh area. Photos included are from a 2007 aerial photography database.

Existing Infrastructure: The site is not serviced by electricity or irrigation infrastructure. No access roads exist and entry to the site is difficult due to overgrown non-native plants.

Habitat Creation Concepts: Creation or expansion of existing marshes and riparian areas on the site were discussed. Development of the northernmost areas of the bank line would allow for existing infrastructure to be expanded. Heavy equipment would be utilized for non-native vegetation removal, field contouring, irrigation system installation, and access road creation.

The following items were discussed for the development of marsh and riparian species using flood irrigation:

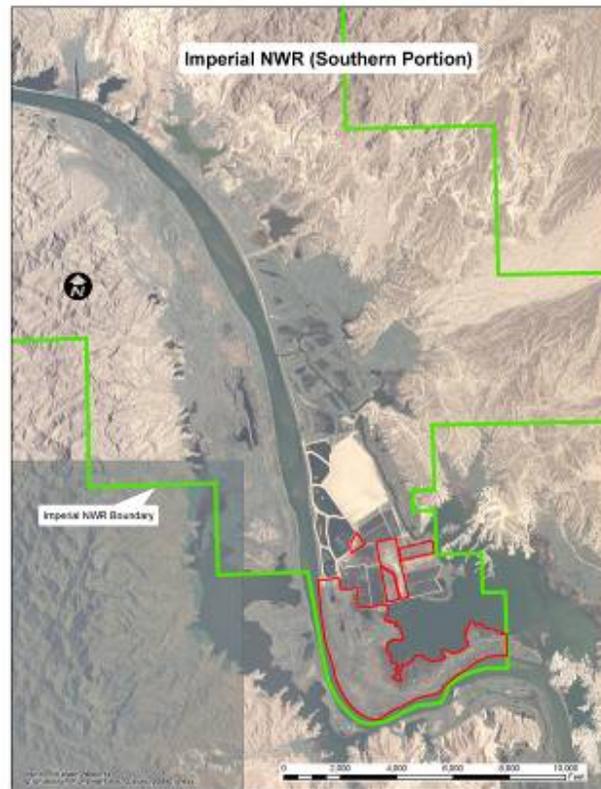
- Expansion of access roads that currently service the Imperial Ponds and intensive management areas.
- Analysis of existing irrigation system capabilities and/or design of a new stand-alone irrigation system for the bank line.
- Dewatering system used while heavy equipment removes non-native vegetation and contouring of fields.
- LIDAR or equivalent survey to allow for engineered drawings of landscape and irrigation system design.
- Preliminary cost analysis of the land cover type per acre.
- Currently the site receives minimal recreational use due to overgrowth of non-native species. The group discussed the potential for recreational users accessing the newly developed native habitat.

Potential Issues: Although the project area has the potential to be a large restoration project, little site-specific information is known. Pre-development surveys would be required to evaluate the current wildlife usage on the site. Lack of access roads and existing dense vegetation will make it difficult to obtain site-specific data.

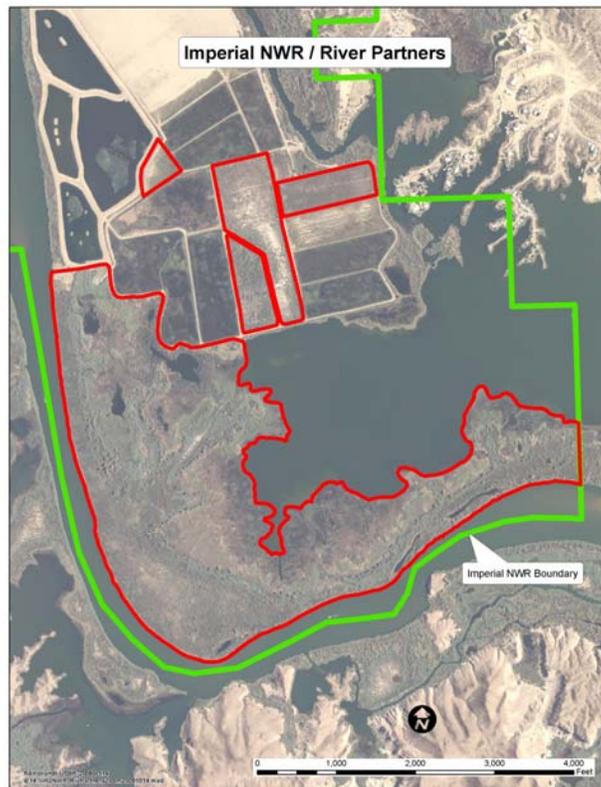
Recommendation: In concurrence with the Refuge Manager, it is recommended that due to the anticipated high costs to conduct pre-development monitoring, clearing of dense vegetation to conduct topographic surveys, and collection of soil and groundwater information, no further land cover creation analysis be conducted on this site at this time.

Interdisciplinary Team Members:

Barbara Raulston	Wildlife Biologist	LC-8224
Jed Blake	Site Development Coordinator	LC-8415
Jim Tate	Facilities Maintenance Supervisor	YAO-4310
Julian DeSantiago	Environmental Specialist	YAO-7210
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400



Above and Below: 2007 Aerial Photography



October 21, 2008

Laguna Fire Rehabilitation

Conservation Area Site Selection: Step 2, Trip Report

Background: In early July 2008, a wildland fire burned 128 acres immediately south of Imperial Dam. The lands are Reclamation-withdrawn for Imperial Dam operations and the BLM is the land manager. The fire caused power outages and evacuation of Hidden Shores, a nearby residential community. The predominant land cover burned was saltcedar. In December of 2008, BLM contacted Reclamation and expressed their interest in partnering on the restoration of the burned area.

Over the last two years, Reclamation and the LCR MSCP have worked in collaboration with other federal and state entities to determine restoration potential throughout the entire Laguna Division. The fire-specific trip report information will be forwarded to the interagency committee for their information.

Location: The burn site is located just south of Imperial Dam at River Mile 49. The site is bordered by Imperial Dam to the north and Imperial Dam Road to the south.

Water Right and Priority: The BLM maintains a fourth priority consumptive use federal water right in the state of Arizona of 4,010 acre feet. Water is available from the land manager.

Existing Site Conditions: Two small backwaters exist at the base of Imperial Dam. Marsh and open water exist throughout the site. Small riparian areas exist adjacent to the marsh, and additional marsh areas are overgrown with invasive *Phragmites*. Upland areas were overgrown with saltcedar; minimal cottonwood-willow and mesquite remain after the fire. A small picnic table area at the base of Imperial Dam is incorporated into a walking trail that runs along the perimeter of the site. Photos included are from Reclamation's 2004 aerial photography database and were taken during the 2008 site visit.

Existing Infrastructure: The site is not serviced by electricity or irrigation infrastructure. The site does maintain several access roads around the perimeter of the site, which support Imperial Dam operations. Imperial Dam Road, located to the south of the site, is a main traffic corridor servicing Highway 95 and the town of Winterhaven, California. Although no facilities exist at the site, Reclamation maintains the Laguna Dredge yard located just southwest of the burn.

Habitat Creation Concepts: The habitat creation concept consists of controlling the re-growth of saltcedar and *Phragmites*. Land surveying, soil sampling, and collection of groundwater information is anticipated to show a high water table acceptable for the establishment of cottonwood-willow and honey mesquite. Federal partners involved in the proposal are eligible to apply for Burned Area Emergency Rehabilitation (BAER)

funding. Joint funding of LCR MSCP and BAER would incorporate a mosaic of marsh, cottonwood-willow, and mesquite. Prior to any restoration activity the site must be maintained either through heavy equipment or herbicide to control the re-growth of saltcedar and *Phragmites*.

The following items were discussed for the development of marsh, cottonwood-willow, and mesquite using flood and drip irrigation:

- With the consent of Imperial Dam management, conduct an inventory of nearby water and electrical infrastructure available. Available infrastructure could be used to run pumps and monitoring equipment, and potentially provide irrigation water.
- LIDAR or equivalent survey used to develop restoration lay out for planting.
- Coordinate with the Laguna Planning Team and encourage collaboration and multiple funding sources for the fire restoration.
- Investigate exact state boundaries within the site to determine amount of potential habitat in California to be planted.
- Using engineered analysis, develop an individual cell management approach using flood irrigation for both cottonwood and willow.
- Determine whether the honey mesquite to be planted on the dry upland areas can be fed via drip irrigation or by flood irrigation.

Potential Issues: Depending on the priorities and objectives of the Laguna Planning Team, the site may remain undeveloped until funding and scheduling permit. If the site remains unmanaged, the re-growth of saltcedar and invasive *Phragmites* is expected to be the dominant land cover type. Prior to any restoration activities, signing of a land use agreement would be required.

Recommendation: Continue the site selection process, step 3, under an accelerated schedule due to the time-sensitive nature of this project, avoiding re-growth of non-native plant species. It is recommended that LCR MSCP remains actively involved in the development of a restoration concept and provides minimal funding to control the re-growth of saltcedar and invasive *Phragmites* on the site. Funding will provide a window of opportunity for additional discussion among agencies, and for future restoration efforts.

Interdisciplinary Team Members:

Barbara Raulston	Wildlife Biologist	LC-8224
Jed Blake	Site Development Coordinator	LC-8415
Jim Tate	Facilities Maintenance Supervisor	YAO-4310
Julian DeSantiago	Environmental Specialist	YAO-7210
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Supervisory Engineer	YAO-2000
Sean Torpey	Environmental Manager	YAO-7200
Terry Murphy	Restoration Group Manager	LC-8400



Above: 2004 Aerial Photography
Below: October 2008



October 22, 2008

Yuma East Wetlands-Phase II

Conservation Area Site Selection: Step 2, Trip Report

Background: In 2000, the City of Yuma and the Quechan Tribe collaborated to analyze the potential of restoring the wetland through removal of non-native plant species, trash dumps, and makeshift camps that supported a large homeless population. A thorough wildlife and wetlands survey was conducted prior to clearing and planting. Currently, restoration of 350 acres (Phase I) is being completed and an additional 432 acres of new restoration (Phase II) is being proposed. The Yuma Crossing National Heritage Area (YCNHA) is the lead agency involved in completing the restoration of the 350 acres.

Location: Yuma East Wetlands Phase II is located within two federally maintained levees, beginning at the Gila River and Colorado River confluence and moving east toward the Ocean-to Ocean Bridge. Land owners include the Quechan Tribe, the BLM, Reclamation, and the State of Arizona.

Water Right and Priority: Several federally maintained water rights would be utilized for native habitat establishment. The City of Yuma maintains a Federal second and third consumptive use water right in the State of Arizona of 48,522 acre feet. Water is available from the land owner. The City of Yuma maintains a Federal Present Perfected water right #21 consumptive use of 1,478 acre feet. Water is available from the land owner. The Quechan Tribe maintains a Present Perfected water right #3a in the State of Arizona for diversion of 6,350 acre feet. Water is available from the land owner. The BLM maintains a fourth priority consumptive use Federal water right in the State of Arizona of 4,010 acre feet. Water is available from the land owner.

Existing Site Conditions: The site is currently made up of sandy soils throughout and saltcedar and other invasive plants have overgrown the area. Heavy recreational use occurs within the area on a daily basis. Several makeshift homeless camps are located throughout the site. The aerial photograph included was submitted with the YCNHA's proposal.

Existing Infrastructure: There is no electrical or irrigation infrastructure on the site. However, several Reclamation-maintained groundwater pumps, levee roads, and canals border the site on both sides of the river.

Habitat Creation Concepts: Habitat creation concepts require extensive removal of non-native vegetation and the creation of marsh, cottonwood-willow, and honey mesquite land cover types.

The following items were discussed for the development of marsh, cottonwood-willow, and mesquite using flood irrigation:

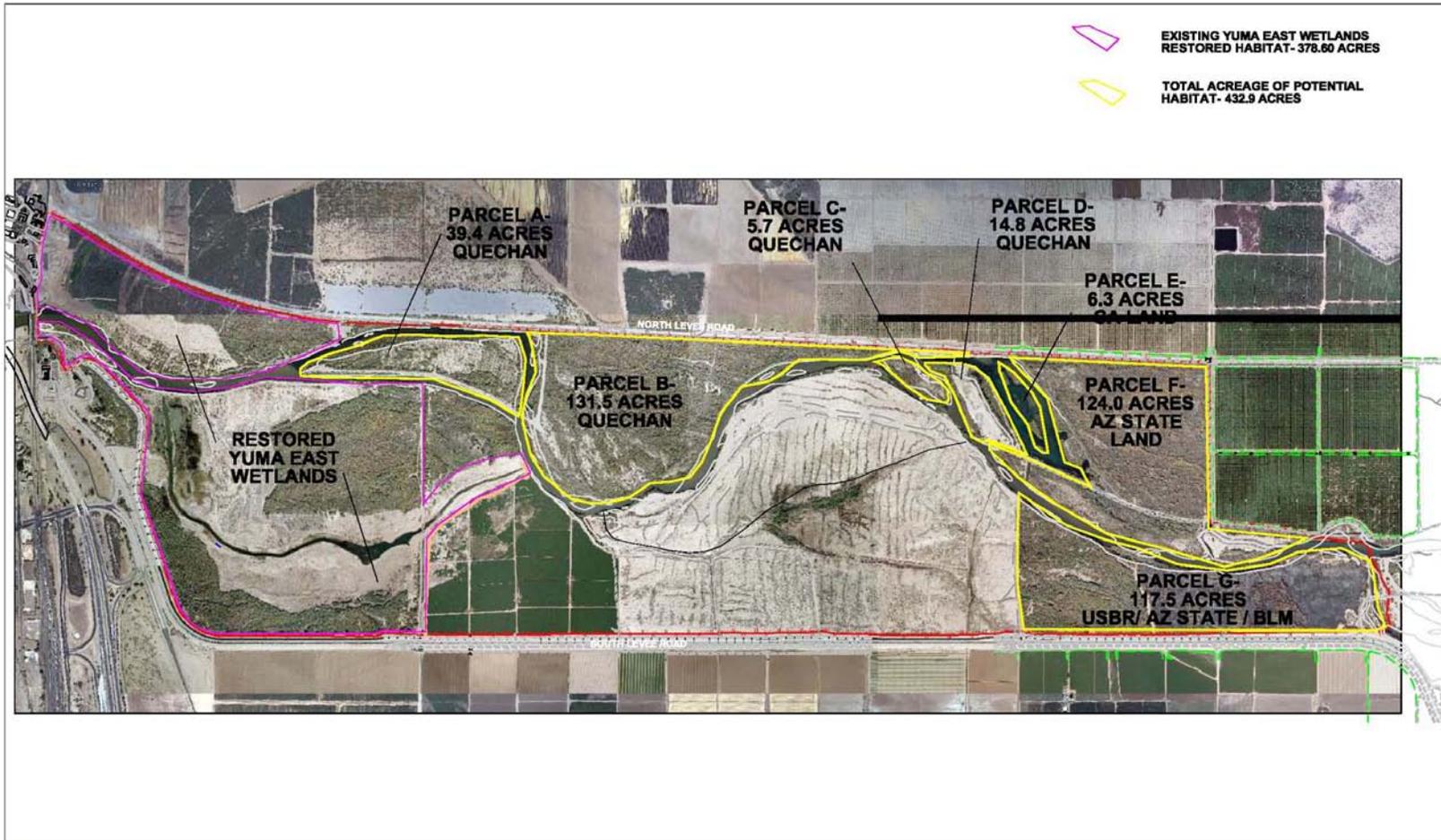
- Consult with BLM to develop a security management plan for site security.
- Investigate nearby groundwater pump capacity; pump could serve as main irrigation water feed.
- LIDAR survey of the area or equivalent to allow the use of engineered analysis.
- Based on irrigation capacity, draft a preliminary irrigation plan that will lead to water availability per flooded habitat cell.
- Estimate cost of concrete-lined canal systems servicing habitat cells on both sides of the river.
- Analyze the water accounting necessary to implement the flood irrigation at the site and determine which entitled holder's water rights will be reduced.
- Prioritize specific acreage parcels throughout the site to be developed individually.
- Determine which areas of the site receive the highest rate of recreational use and determine buffer area opportunities.

Potential Issues: The area is prone to flooding events from either the Gila or Colorado rivers and additional flood flow modeling is anticipated. State, Federal, and private land boundaries are not well defined. Land ownership throughout the site must be made transparent for proper water accounting. The site includes a mix of planted cottonwood-willow and dense non-native land cover types, and often has squatters or homeless people. Local law enforcement has recommended that the public use caution when in the area.

Recommendation: It is recommended that further investigation be made into land ownership, available water rights, site management, and overall project design. The LCR MSCP should continue to work in cooperation with the stakeholders involved to determine the possibility of LCR MSCP involvement. No additional expenditures for site investigations are necessary at this time.

Interdisciplinary Team Members:

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REV.	COMMENT	DATE

YUMA EAST WETLANDS
 LCR-MSCP RESTORATION PROJECTS MAP
 POTENTIAL HABITAT PROJECT SITES
 CITY OF YUMA YUMA, ARIZONA

SHEET TITLE :
PROJECT BOUNDARIES

0 163 325 650ft NORTH

DATE: SEPTEMBER 18, 2008
 JOB NO.:
 DRAWN BY: AH
 DESIGNED BY: AH
 CHECKED BY: FDP/CF

FIGURE 1

October 22, 2008

Hunter's Hole

Conservation Area Site Selection: Step 2, Trip Report

Background: The Yuma Crossing National Heritage Area (YCNHA) has helped establish a coalition of 26 stakeholders, including multiple Federal, state, local, city, private, and nonprofit groups, with the primary goals of restoring native habitats, creating safe environments for the public, and providing alternate forms of border security. The YCNHA is looking for restoration opportunities within the 23-mile stretch of the Limitrophe division. With the help of the stakeholders, licenses, permits, water rights, floodplain analysis, and a collaboration plan among federal agencies have been completed. The entire Hunter's Hole restoration plan encompasses 435 acres and has a component to be completed within Mexico. This proposal is specific to Phase I of Hunter's Hole restoration, consisting of 37 acres in the United States.

Location: The site is located approximately 15 miles south of Yuma, Arizona. County 20th Street in Gadsen, Arizona, is the exit road to access the site. A Reclamation-maintained levee borders the site to the east. The site is located on Reclamation-withdrawn lands and the BLM is the land manager.

Water Right and Priority: The site is located in an area along the river that does not require an entitlement or contract. However, it is located within the Five-Mile Zone, which limits the quantity of water to be pumped. The International Boundary and Water Commission has granted the YCNHA permission to pump up to 4,000 acre feet annually to help restoration efforts at Hunter's Hole.

Existing Site Conditions: The site experienced a fire in 2007. The fire burned off all riparian and non-native vegetation. Sandy soils appear to exist throughout the site; invasive *Phragmites* has begun to encroach around the open water areas. The site is bordered to the east by the newly constructed U.S. Customs and Border Protection security fence. Access to the site is coordinated with U.S. Customs and Border Protection. It is recommended that all site visits be conducted during daylight hours. Photos included are from Reclamation's 2004 aerial photography database and were taken during the site visit.

Existing Infrastructure: A 100-hp groundwater well was installed at the site during 2008. Irrigation of the marsh and open water would be gravity diversion from the groundwater well outlet. The site also has an electrical meter installed for billing purposes. Water can also be delivered, via a siphon, from the Bypass Canal.

Habitat Creation Concepts: The proposal submitted included all four LCR MSCP land cover types: 10 acres of backwater, 9 acres of marsh, 8 acres of cottonwood-willow, and 10 acres of mesquite.

The following items were discussed for the development of backwater, marsh, cottonwood-willow, and mesquite using flood irrigation:

- Until a restoration plan is finalized among the 26 stakeholders, the site needs to be continually managed to stop the overgrowth of non-native species.
- Potted plants, pole planting, and marsh plugs will be the most cost effective and efficient planting techniques.
- Heavy equipment to be used for excavation will run 24 hours a day, seven days a week, to expedite excavation and contouring. Floodlights can be used during night work.
- A grant with U.S. Customs and Border Protection to have on-site security during construction will be necessary.
- Less intensive monitoring of restoration activities is foreseen due to security restrictions.
- An efficient irrigation system can be installed to manage water levels throughout the site. The system can be operated remotely from the site.

Potential Issues: Accessibility by LCR MSCP staff, contractors, and agents to the site is limited due to U.S. Customs and Border Protection activities, which may restrict or direct restoration design, implementation, or management. The site is prone to fire and has burned multiple times over the last 25 years.

Recommendation: It is recommended that the LCR MSCP remains actively involved in the planning process, but provides minimal funding to support planning and restoration activities at Hunter’s Hole until the role of the LCR MSCP is further defined. Although the site is not currently being considered as a conservation area, the LCR MSCP has an interest in developing habitat within Reach 7 of the LCR MSCP planning area. The work at Hunter’s Hole will serve as a learning experience as the program continues to seek restoration opportunities within the Limitrophe Area.

Interdisciplinary Team Members:

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Above: 2004 Aerial Photography
Below: October 2008



October 22, 2008

Palo Verde Valley-Honey Mesquite

Conservation Area Site Selection: Step 2, Trip Report

Background: The Palo Verde Irrigation District (PVID) is a privately developed district located in Riverside and Imperial counties, California. During 2008, PVID approached the LCR MSCP to help identify potential restoration sites in California for the development of honey mesquite land cover type.

Location: The site is located south of the Palo Verde Diversion Dam within California, between river miles 133 and 134. U.S. Highway 95 borders the site to the west, the Colorado River borders the property to the east, and Palo Verde Ecological Reserve borders a portion of the property to the south.

Water Right and Priority: Water to the property is provided by PVID.

Existing Site Conditions: For site-selection purposes the project area of approximately 148 acres was separated into two distinct areas. The areas are known as Palo Verde Diversion Dam Mesquite and Highway 95 Mesquite, respectively.

Palo Verde Diversion Dam Mesquite is approximately 82 acres in size. Soil conditions appear sandy and portions may include sediment from previous river or canal dredging activities. Vegetation consists of saltcedar, arrowweed, and mesquite.

Highway 95 Mesquite is approximately 66 acres in size. Soil conditions appear sandy and may include sediment from previous river or canal dredging activities. Vegetation consists of saltcedar, arrowweed, and honey mesquite.

Existing Infrastructure:

Palo Verde Diversion Dam Mesquite: an access road providing for recreational fishing and maintenance activities allows vehicles to enter the site. No irrigation or electrical infrastructure exists on the site. However, due to the close vicinity of the Palo Verde Diversion Dam, electricity and water is accessible.

Highway 95 Mesquite: utility line service roads are in the vicinity of the site, although no existing roads provide vehicle access. No irrigation or electrical infrastructure exists on the site.

Habitat Creation Concepts: Both sites were analyzed for honey mesquite land cover type development utilizing a drip irrigation system.

Palo Verde Dam Mesquite: the following items were discussed for honey mesquite development:

- Analysis of topography and soil conditions used to design habitat layout.
- Installation of groundwater well, temporary pumping from existing irrigation canals, or extension of potable water lines servicing Palo Verde Dam.
- Extension of electrical infrastructure servicing Palo Verde Diversion Dam used to service irrigation system.

Highway 95 Mesquite: the following items were discussed for honey mesquite development:

- Analysis of topography and soil conditions used to design habitat layout.
- Installation of groundwater well or temporary pumping from existing irrigation canals capable of serving the entire site.
- Consult with local power company to determine whether a transformer and electrical meter can be installed in near vicinity of the site.
- If local electricity is unavailable, use of solar powered or diesel pump-driven irrigation system.
- Development of access roads that discourage high impact recreational use (e.g., off-highway vehicles, off-roading) and concentrate on low impact recreational use (e.g., educational and outreach opportunities, wildlife viewing).

Potential Issues:

Palo Verde Diversion Dam Mesquite: both the Palo Verde Ecological Reserve and the Cibola Valley Conservation Area are in the same reach of the river and are currently being developed under the LCR MSCP.

Highway 95 Mesquite: both the Palo Verde Ecological Reserve and the Cibola Valley Conservation Area are in the same reach of the river and are currently being developed under the LCR MSCP. This site may be prone to a higher rate of recreational use due to the lack of signage and maintained roads. Prior to any restoration activities, signing of a land use agreement would be required.

Recommendation: Continue the site selection process, Step 3, using funds under Work Task E16: Conservation Area Site Selection. It is recommended that the LCR MSCP provide funding to support the assessment and potential selection of this project for honey mesquite land cover type development for both the Palo Verde Diversion Dam Mesquite site and the Highway 95 Mesquite site.



Above & Below: 2004 Aerial Photography

