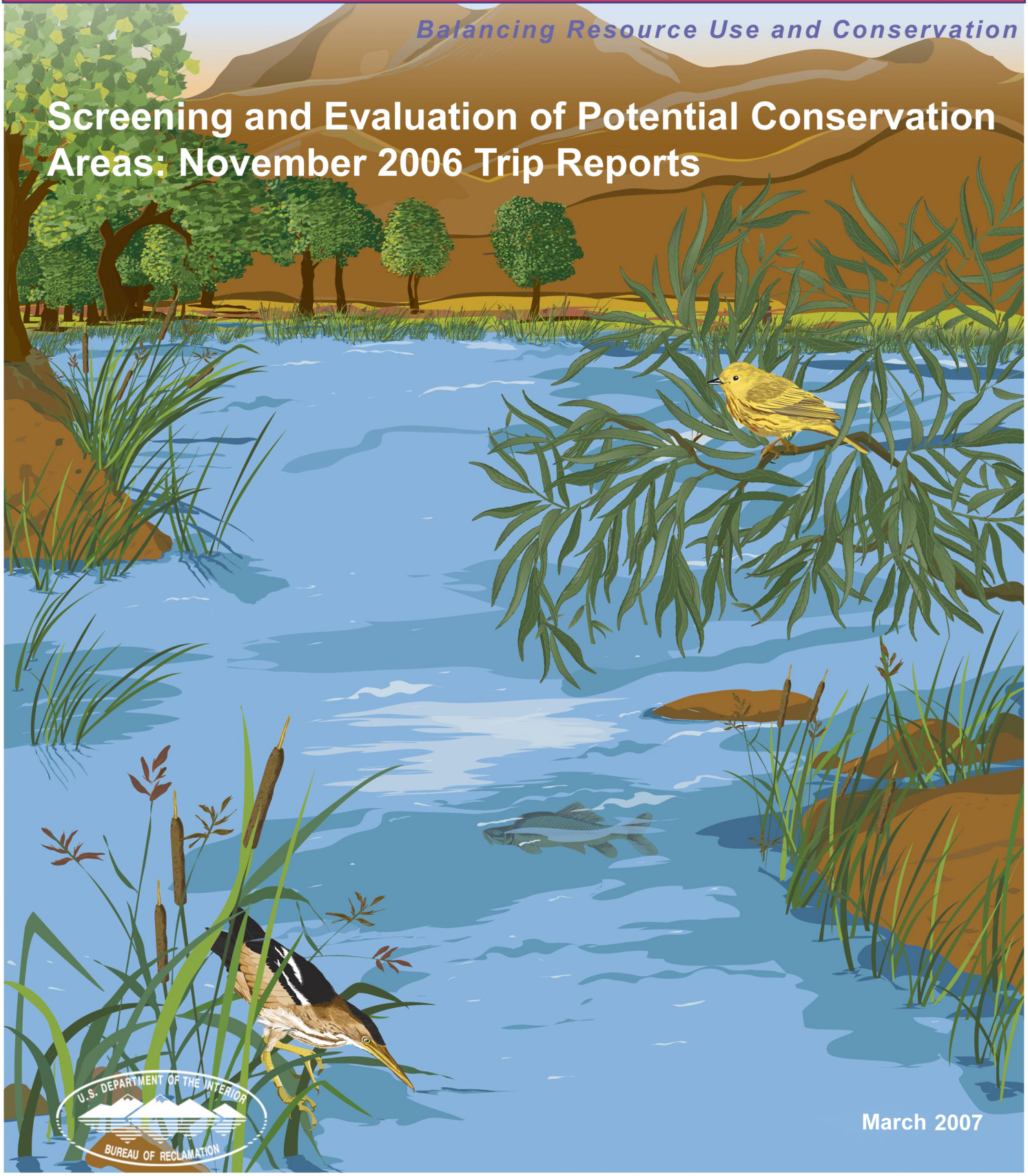
Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Screening and Evaluation of Potential Conservation Areas: November 2006 Trip Reports



March 2007

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
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: November 2006 Trip Reports

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

March 2007

March 7, 2007

To: Steering Committee Members

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a habitat-based program and 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 habitats (i.e., open water and marsh) and riparian habitats (i.e., cottonwood-willow, honey mesquite, and marsh).

The process used to screen backwaters was applied to six backwaters previously stocked with native fish, and a review of the process was completed. The review, *Colorado River Backwaters Restoration Final Model Evaluation Report, February 2007* is posted on the LCR MSCP Web site at http://www.lcrmscp.gov.

In November of 2006, the riparian screening criteria were applied to four locations along the Lower Colorado River. The first location was identified in response to a recent fire on the Cibola National Wildlife Refuge (NWR), and targeted honey mesquite land cover type. The second location was also on the Cibola NWR and targeted cottonwood-willow land cover type as an expansion of activities already funded by the LCR MSCP. The third area was an existing backwater and adjacent lands near Laughlin, Nevada. The final area included active agricultural lands being assessed by Metropolitan Water District in the Palo Verde Irrigation District (PVID), and if secured, would target cottonwood-willow, honey mesquite, and marsh land cover types. Site-specific information can be found in the attached trip reports.

In general, the riparian screening criteria performed adequately. Included below is a cursory discussion of the areas screened and any recommended changes to the review process.

Cibola NWR, Honey Mesquite: This project evaluated approximately 500 acres of land on the refuge, which burned in July of 2006. With the concurrence of the Refuge Manager, the recommendation was to not include the site in the LCR MSCP. In this instance, the screening process allowed for timely decision making without the expenditure of significant funds. The process performed as anticipated and therefore no changes to the site-selection process are recommended.

Cibola NWR, Unit #1: This project expanded previous LCR MSCP-funded projects (E6: Cottonwood Genetics Study, E7: Mass Transplanting Demonstration, and E8: Seed Feasibility Study) to adjacent lands and targeted the development of cottonwood-willow land cover types. With the concurrence of the Refuge Manager, the recommendation was to continue the site-selection process at this site. The site-selection process does not allow for sites to be fast-tracked and immediately included in the LCR MSCP. However, the willingness of the Refuge Manager to commit substantial amounts of land and water at no cost to the program to establish additional

cottonwood-willow land cover types, combined with the investment already made by the LCR MSCP at this site, should be sufficient to include the project in the LCR MSCP. This would allow us to bypass the site-assessment process and proceed directly to the preparation of a Restoration Development Plan and long-term Land Use Agreement. It is recommended that a change to the site selection process be made to allow the Program Manager to select a site for inclusion in the program at any point in the site selection, in accordance with the annual workplan process.

Boy Scout Camp: This project allowed us to evaluate an existing backwater land cover type and adjacent land. The intent was to protect and ensure the viability of the existing backwater, evaluate the role of the backwater in the survival of the self-sustaining population of flannelmouth sucker in this reach of the river, and create additional cottonwood-willow, honey mesquite, or marsh on lands surrounding the backwater. The recommendation was to discuss habitat credit for protection of this backwater with the U.S. Fish and Wildlife Service. The site-selection process does not allow for the protection of existing land cover types. The site-selection process was designed for evaluating the creation of new land cover types and should not be revised to include protection of existing land cover types. Assuming protection and maintenance of this backwater make it eligible for habitat credit, then the next steps would be to include the project in the LCR MSCP, develop an agreement between all parties to ensure the protection of the existing backwater, initiate a study to evaluate the role of the backwater for native fish, and perform maintenance or make improvements as indicated through monitoring.

Active Agricultural Lands within PVID: This project allowed us to evaluate a property prior to securing it for inclusion in the LCR MSCP. The site was evaluated and a trip report was developed based on the creation of a mosaic of cottonwood-willow, honey mesquite, and marsh land cover types. The recommendation was that because the site showed good potential for development, it should be evaluated further. The site-selection process was adequate for the initial screening and therefore no changes to the screening process are recommended.

We will be arranging a conference call for all interested parties to review and discuss both the recommendations of the trip reports, and any changes being proposed for the site-selection process. If you have any questions or concerns, please feel free to contact me at (702) 293-8577.

Lorri Gray

November 27, 2006

Cibola NWR, Honey Mesquite

Conservation Area Site Selection: Step 2, Trip Report

Background: On July 17, 2006, lightning ignited a fire on Cibola NWR and burned acreage in both California and Arizona. Approximately 4,600 acres of primarily saltcedar with some intermixed mesquite was burned (Figure 1). On August 17, 2006, Reclamation met with the Refuge Manager to discuss a potential partnership to restore a portion of the burned area. In support of any restoration efforts, the Refuge has requested Wildland Fire Emergency Stabilization and Rehabilitation program funding to stabilize and confirm areas suitable for restoration.

Location: The LCR MSCP gives priority to establishment of honey mesquite land cover type in California. A preliminary review of the burn area indicated that two areas within California have the potential for establishment of honey mesquite, one on the east side and one on the west side of PVID's main outlet drain. The area being evaluated for the LCR MSCP is a triangular parcel that is bounded by farm fields to the north, a levee and the Colorado River on the east, Pretty Water to the south, and PVID's main outlet drain to the west. The area is approximately 500 acres in size (Figure 1, outlined in blue).

Water Right and Priority: Temporary use of Colorado River water to establish the mesquite is anticipated. The source of water and type of irrigation (either drip or flood irrigation) has not been determined. Due to the size of the project area, integrating this restoration project into the program may require phasing or development of the property over a number of years. Cibola NWR does not hold an entitlement for the use of Colorado River water for use in California. Water entitlements could be obtained for a limited period of time from the Lower Colorado River Water Supply Act.

Existing Site Conditions: Prior to the fire, the land cover included arroweed, saltcedar, and saltcedar-screwbean mesquite mix (see 2004 Land Cover Type). Large portions of the area were burned during the fire; however, saltcedar regrowth was evident (Figures 2 & 3). A small portion of the area was leveled and previously farmed (Figures 4 & 5).

Existing Infrastructure: A pipeline and unlined irrigation canal with turnouts still exists. The system is not operational, but when active, it diverted water from PVID's main outlet drain and flood-irrigated a small level section of the site. No other irrigation improvements were identified. A gravel-surfaced road bisects the property and allows public access to the Pretty Water portion of the Colorado River.

Habitat Creation Concept: The habitat creation concept consists of controlling the regrowth of saltcedar and establishing honey mesquite. The U.S. Fish and Wildlife Service is considering conducting a LIDAR survey of the burn area, which would result in a topographic map of the entire burn area. This information, as well as results of any soil sample analysis and groundwater data collection, would be made available to the LCR MSCP at no cost. For purposes of site selection, establishment of honey mesquite was discussed using both drip and flood irrigation.

The following items were identified and discussed to establish honey mesquite using drip irrigation:

- Control of saltcedar with herbicides
- Use of a portable irrigation system and emitters
- Improvements and expansion of the existing access road
- Engineering and surveying support
- Labor for irrigation and site management

The following items were identified and discussed to establish honey mesquite using flood irrigation:

- Control of saltcedar with herbicides
- Field preparation (laser leveling, discing)
- Use of a portable irrigation system
- Installation of piping
- Construction of unlined laterals and turnouts
- Improvements and expansion of the existing access road
- Engineering and surveying supports
- Labor for irrigation and management

Although both methods could establish honey mesquite, only flood irrigation would allow and promote the development of an understory and provide a mix of land cover types. Further discussions with the Refuge Manager indicated that although the site has the potential to be restored for honey mesquite, resources would be better utilized in areas closer to the refuge headquarters or within areas of existing infrastructure such as the farming units.

Potential Issues: The project is located on a remote portion of the refuge frequently used by the public for recreation. If any created land cover was lost in the future, the lack of infrastructure and long-term water entitlements would make replacement of that habitat difficult.

Recommendation: In concurrence with the Refuge Manager, it is recommended that no further land cover creation actions be taken on the site at this time.

Interdisciplinary Team Members:

Gregg Garnett	Biologist	LC-8455
Gail Iglitz	Landscape Architect	LC-8459
Terry Murphy	Restoration Group Manager	LC-8400
Andy Pernick	Regional Photographer	LC-5330
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Engineer	YAO-2220

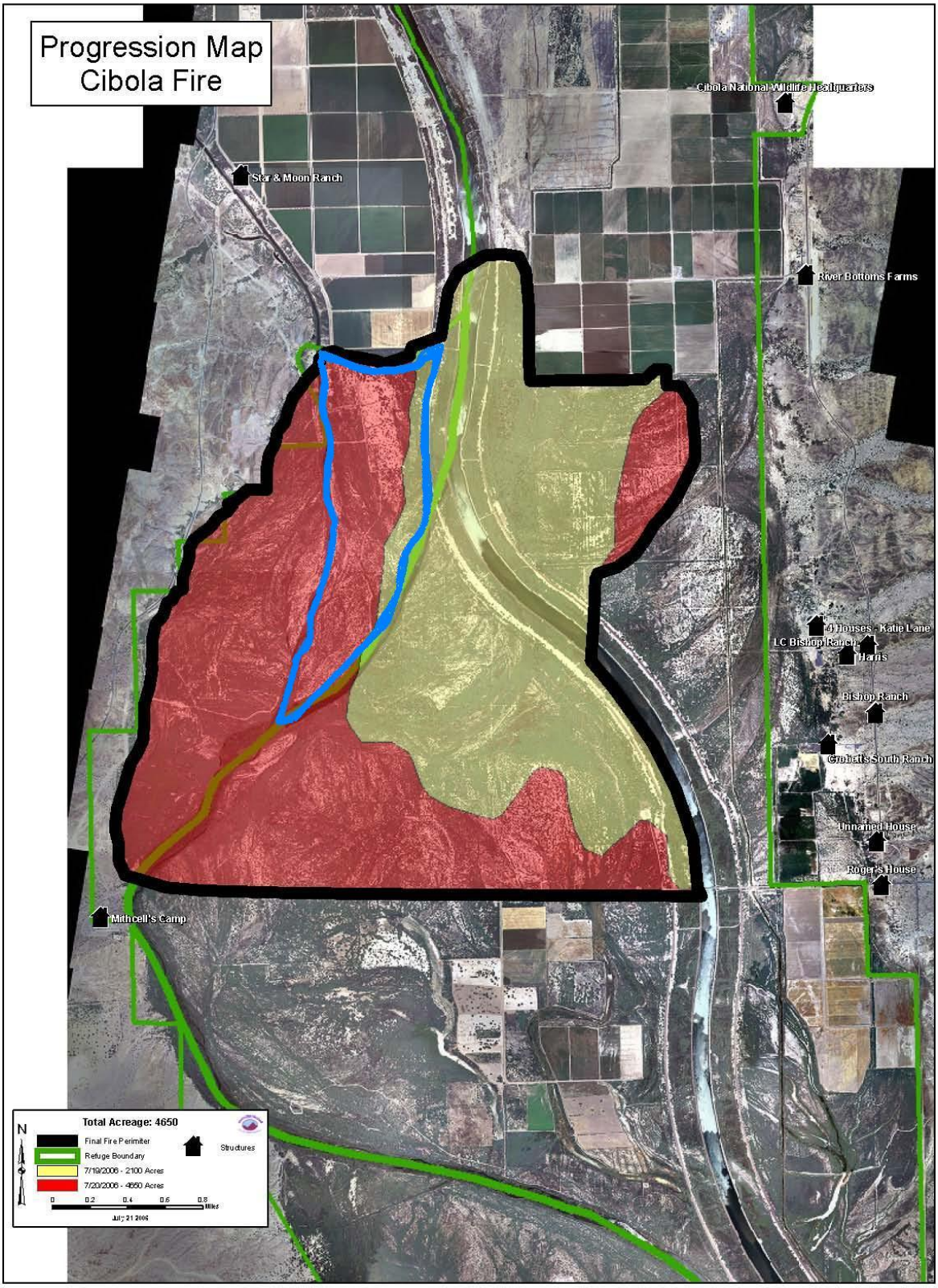


Figure 1. Progression Map, Cibola Fire

Figure 2. Typical burned area with saltcedar regrowth. Photograph No. B1878-300-20350.

Figure 3. Access road to Pretty Water. Photograph No. B1878-300-20359.

Figure 4. Abandoned irrigation system. Photograph No. B1878-300-20351.

Figure 5. Abandoned farm ground. Photograph No. B1878-300-20355.

November 27, 2006

Cibola NWR Unit #1

Conservation Area Site Selection: Step 2, Trip Report

Background: In 1999, the U.S. Fish and Wildlife Service and Reclamation planted the Cibola Nature Trail and established 34 acres of cottonwood-willow and mesquite land cover type within Unit #1. Since that time, several work tasks have been implemented adjacent to the Nature Trail with funding from the LCR MSCP: E6—Cottonwood Genetics Study, E7—Mass Transplanting Demonstration, and E8—Seed Feasibility Study. Cibola NWR is interested in expanding the partnership with the LCR MSCP to encompass additional lands within Unit #1.

Location: Cibola NWR Unit #1 is located in the State of Arizona, one-half mile East of River Mile 97.

Water Right and Priority: Cibola NWR has a diversion entitlement of 27,000 acre-feet plus a diversion entitlement of 7,500 acre-feet for circulation of Cibola Lake. In addition, Cibola NWR has a consumptive use cap of 16,793 acre-feet. In calendar years 2004 and 2005, water accounting records indicate diversions of 11,263 and 10,987 acre-feet, respectively. The calculated consumptive use values were 6,982 and 6,812 acre-feet, respectively.

Existing Site Conditions: Unit #1 contains a mixture of active agricultural lands, lands which have been cleared and are awaiting development, and undeveloped lands. In coordination with the Refuge Manager, five areas of cottonwood-willow land cover development have been identified within Unit #1 for site-selection review and are depicted in Figure 1.

Existing Infrastructure: Colorado River water is delivered to Unit #1 by two 20-cubic feet per second pumps and delivered through lined irrigation canals (Figures 2 & 3). Active agricultural lands are flood irrigated.

Habitat Creation Concept: Five distinct areas were identified by the Refuge Manager for site-selection review and are discussed below. All five areas would target establishment of cottonwood-willow land cover types, although mesquite, seasonal wetlands, and other native species will be incorporated into the mosaic. It is anticipated that major portions of the cottonwood-willow would be managed for southwestern willow flycatcher.

Area #1 (180 acres) Northwest portion of Unit #1: All fields within Area #1 are actively flood irrigated for crop production (Figure 4), waterfowl, or riparian land cover types. Projects either completed or underway within Area #1 include the Cornfield Nature Trail, E6—Cottonwood Genetics Study, E7—Mass Transplanting Demonstration, E8—Seed Feasibility Study, existing cottonwood-willow land cover type, and a loafing pond used for waterfowl (Figure 5). The remaining two active agricultural fields would be re-leveled and converted to a mix of cottonwood-willow land cover.

Area #2 (313 acres) Hippy Fire: A portion of the undeveloped land that was destroyed during the Hippy Fire was stabilized by the U.S. Fish and Wildlife Service and is available to the LCR MSCP. All fields within Area #2 have been laser leveled, had new water delivery turnouts installed, and are currently planted with grasses (Figures 6 & 7). It is anticipated that the fields would be replanted with grass seed as necessary and irrigated for 2-3 years prior to the development of any cottonwood-willow land cover types. Prior to conversion, the elevation, slope, and irrigation efficiency would be evaluated. Conversion of the recently cleared and leveled lands would target cottonwood-willow land cover for the southwestern willow flycatcher.

Area #3 (100 acres) Baseline 90**:** Area #3 has been cleared, but not developed (Figures 8 & 9). Development would include the clearing of minor amounts of regrowth, installation of irrigation turnouts, laser leveling, establishing a grass groundcover, irrigation for 2-3 years to reduce salinity, and ultimately, conversion to cottonwood-willow land cover targeting southwestern willow flycatcher.

Area #4 (146 acres) North 160**:** Area #4 has been cleared, but has minor amounts of resprouting saltcedar (Figure 10). Development will include clearing and disposal of regrowth, installation of irrigation turnouts, laser leveling, providing drainage, establishing a grass groundcover, and irrigation for 2-3 years. The area would ultimately be converted to cottonwood-willow land cover targeting southwestern willow flycatcher.

Area #5 (147 acres) Crane Roost**:** Area #5 has been cleared and leveled, and new irrigation turnouts have been installed (Figure 11). Thirty-four acres of cottonwood-willow land cover has been established on the northern edge. Development would include brush clearing and disposal, re-leveling the field, providing drainage, establishing a grass groundcover, and irrigation for 2-3 years. The area would ultimately be converted to cottonwood-willow land cover targeting southwestern willow flycatcher.

To efficiently irrigate land cover types and assure adequate drainage, Reclamation will survey elevations along the irrigation delivery canals and drainage system, which will allow the verification of capacities and identify improvements. Because the area serviced by the existing infrastructure will be significantly increased, it is likely that expansion of the existing irrigation system will also be necessary to increase capacity. In addition, reconnection/cleaning of the drainage system to the Arnett Ditch will be necessary in the future.

Discussion: Currently, Unit #1 is closed to hunting and portions are closed to the public. This protection, in conjunction with the potential for development of a large block of cottonwood-willow land cover type, available land and water, and willingness of the Refuge Manager to work in partnership with the LCR MSCP, makes this project an ideal candidate for consideration by the LCR MSCP.

Potential Issues: Portions of Area #2, #3, and #4 have elevated soil salinity and will likely require leaching prior to land cover development. Expansion of the existing irrigation system and drainage system may be required at some point in the future.

Recommendation: With the concurrence of the Refuge Manager, it is recommended that the LCR MSCP draft a Land Use Agreement for all five areas identified within Unit #1. Operational costs for the majority of fields within Area #1 are already assumed by the LCR MSCP under work tasks E6-E8. In addition, Reclamation should assume operation and maintenance costs for Area #2, #3, #4, and #5 to ensure progress made to date is not lost. Operation and maintenance of Area #2, #3, #4, and #5 would include general farming services such as irrigation, seeding, discing, and herbicide application. This would provide time to complete the assessment (which would identify the true restoration potential of the site), develop a Restoration Development Plan (including a schedule of implementation), and draft a long-term Land Use Agreement. Funding and development of the property would follow the guidelines of the site selection and workplan processes.

Interdisciplinary Team Members:

Gregg Garnett	Biologist	LC-8455
Gail Iglitz	Landscape Architect	LC-8459
Terry Murphy	Restoration Group Manager	LC-8400
Andy Pernick	Regional Photographer	LC-5330
Russ Phelps	Groundwater Group Manager	YAO-4500
Scott Tincher	Engineer	YAO-2220

Cibola NWR, Farm Unit #1

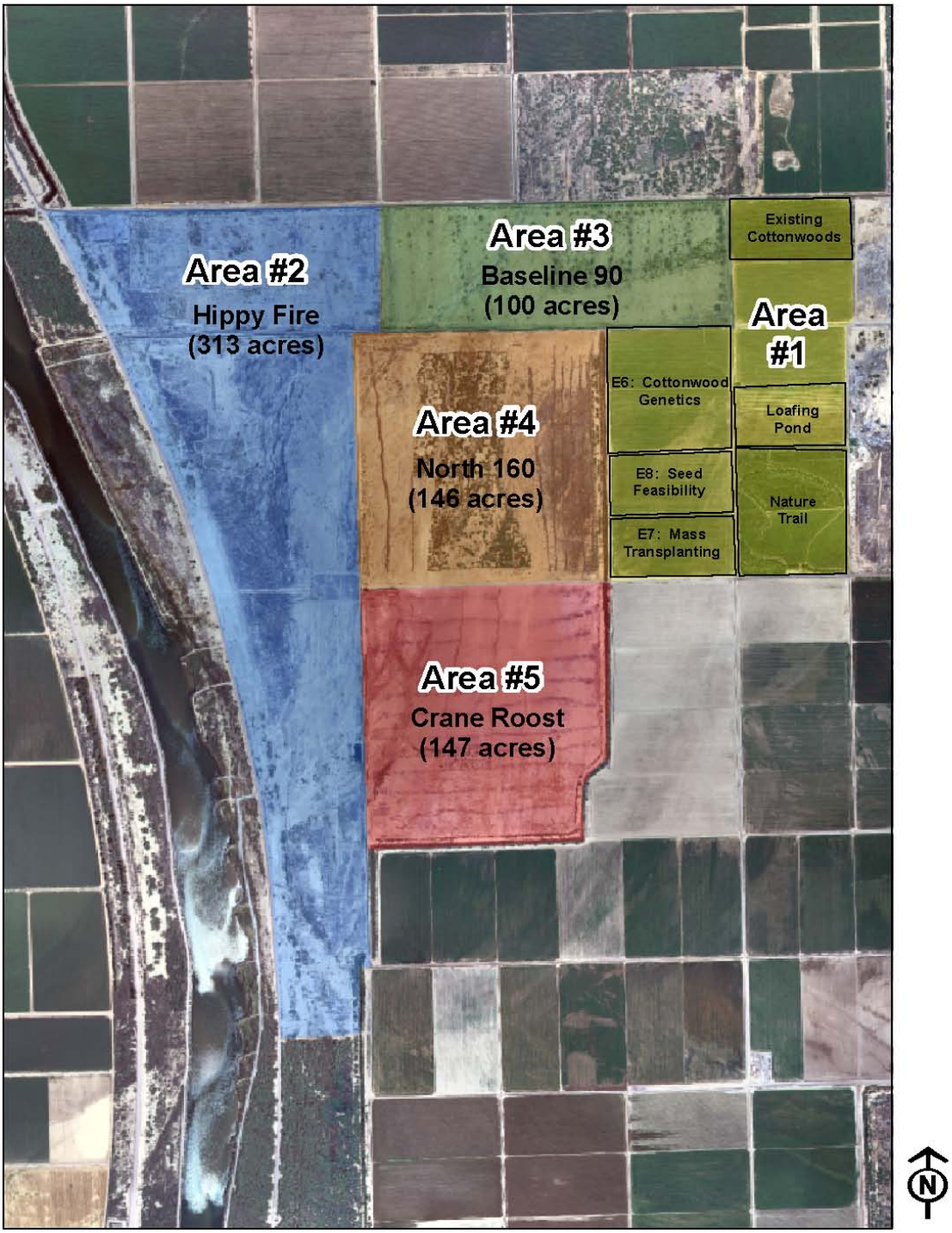


Figure 6. Unit #1.

Figure 7. Existing irrigation pumps for Unit #1.

Figure 8. Existing water delivery system.

Figure 9. Area #1, active agricultural field. Photograph No. B1878-300-20371

Figure 10. Area #1, Loafing Pond. Photograph No. B1878-300-20375.

Figure 11. Area #2, Hippy Fire. Grass cover crop. Photograph No. B1878-300-20338

Figure 12. Area #2, Hippy Fire. Grass cover crop. Photograph No. B1878-300-20341.

Figure 13. Area #3, Baseline 90. Photograph No. B1878-300-20333.

Figure 14. Area #3, Baseline 90. Photograph No. B1878-300-20335.

Figure 15. Area #4, North 160. Grass cover crop. Photograph No. B1878-300-20346.

Figure 16. Area #5, Crane Roost. Photograph No. B1878-300-20348.

November 30, 2006

BOY SCOUT CAMP

Conservation Area Site Selection: Step 2, Trip Report

Background: The Southern Nevada Water Authority (SNWA) has purchased the Boy Scout Camp and has requested that it be included in the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The Boy Scout Camp and adjacent backwater managed by the State of Nevada have collectively been identified as a Conservation Area (Figures 1 & 2).

Location: The SNWA property is a 15-acre, wedge-shaped site located in Laughlin Bay on the Nevada side of the Colorado River between river miles 266 and 267. The site is bounded on the north and southwest by property owned by the State of Nevada Division of Lands, on the west by the Needles Highway, on the southeast by approximately 15 acres of backwater, and on the east by a control structure along the Colorado River.

Water Right and Priority: SNWA has a diversion entitlement of 10 acre-feet.

Existing Site Conditions: A portion of the SNWA property is densely vegetated and dominated by two land cover types: saltcedar/honey mesquite and saltcedar/screwbean mesquite. The 15-acre existing backwater is the most prominent feature and is accessed through the SNWA property, through lands managed by the State of Nevada, or via the Colorado River. Photographs 3-5 show different views of the area during the low river stage.

Existing Infrastructure: The SNWA property is fenced on three sides, has electrical power, graveled roads, and a slump stone garage, and is accessed via a locked gate. Access to the backwater is through either the SNWA property or through lands managed by the State of Nevada Division of Parks.

Habitat Creation Concept: To protect and ensure the viability of the existing backwater, the role of the backwater in the survival of the self-sustaining population of flannelmouth sucker (*Catostomus latipinnis*) in this reach of the river will be evaluated, and additional cottonwood-willow, honey mesquite, or marsh on lands surrounding the backwater will be created.

Discussion: This portion of the lower Colorado River is home to the only remaining self-sustaining population of flannelmouth sucker. Under the LCR MSCP, backwaters that target flannelmouth sucker should have a direct connection to the main river channel. The backwater is currently unprotected. The backwater and adjacent river is currently used by native fish, although the relative importance of the backwater to native fish is unclear. The intent of future research would be to identify the role of the backwater and ensure its continued function throughout the life of the program. In addition, due to urban development, options for creation or management of backwaters for flannelmouth sucker in this reach are limited.

Potential Issues: Discussions with the U.S. Fish and Wildlife Service are necessary to clarify and verify the amount of habitat credit protection the project would receive.

Recommendations: Begin discussions with the U.S. Fish and Wildlife Service to verify habitat credit for protection of this backwater. Assuming that protection and maintenance of this backwater make it eligible for habitat credit, then the next step would be to include the project in the LCR MSCP. This would include developing an agreement between all parties to ensure the protection of the existing backwater and initiating a study to evaluate the role of the backwater for native fish. Based on the recommendations of the study and additional native fish monitoring, backwater maintenance or improvements to the backwater would be implemented A Restoration Development Plan would be prepared to address the creation of additional land cover types adjacent to the backwater.

Written by: Terry Murphy, Restoration Group Manager (LC-8400)

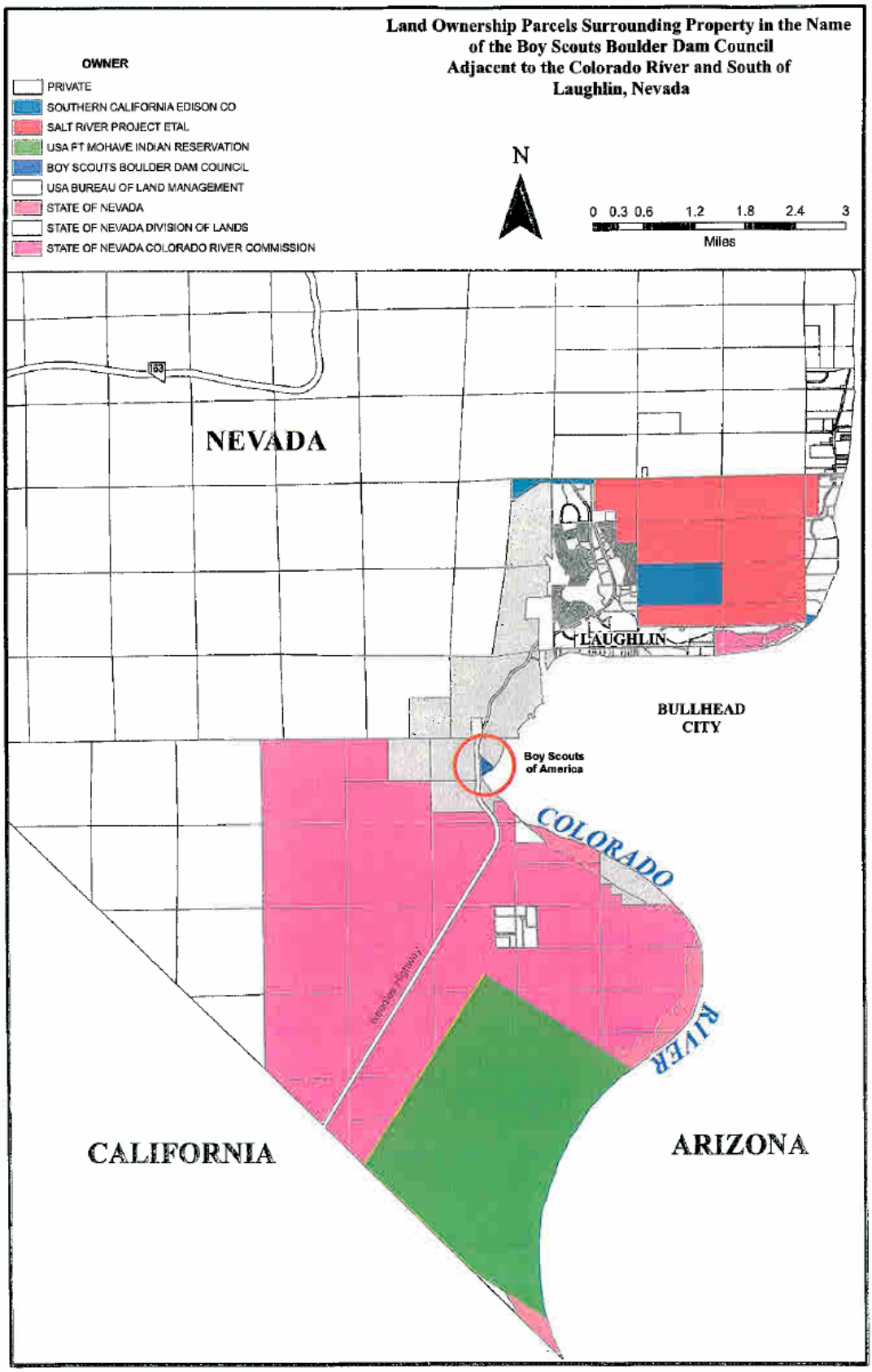


Figure 17. Landowner Parcels

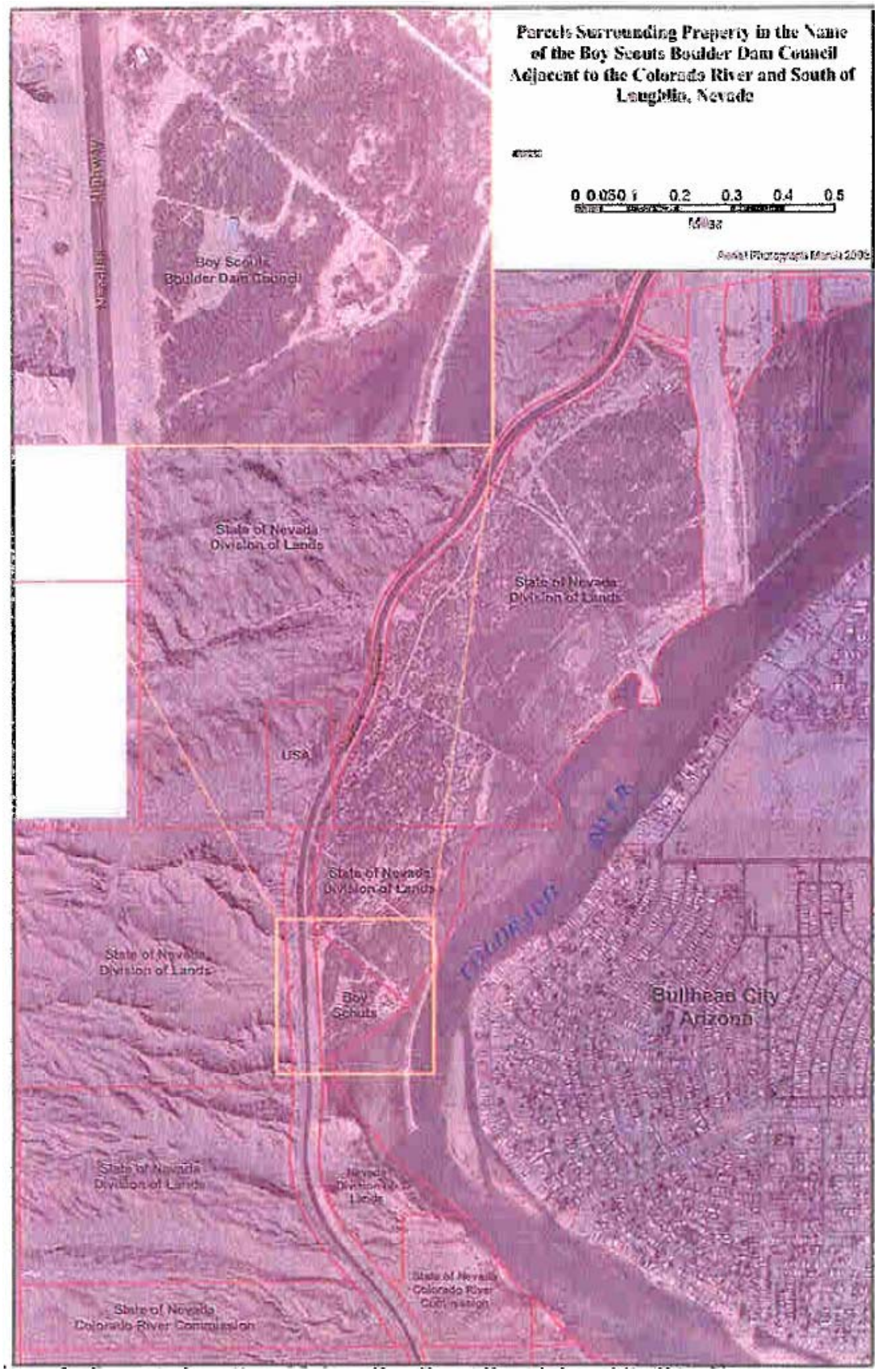


Figure 18. Aerial View

Figure 19. Connection to the main river channel. View to the southeast. Photo No. B1878-300-20391

Figure 20. View to the northeast. Photograph No. B1878-300-20392

Figure 21. View to the southwest. Photograph No. B1878-300-20395.

November 27, 2006

Active Agricultural Lands within Palo Verde Irrigation District

Conservation Area Site Selection: Step 2, Trip Report

Background: The Metropolitan Water District (MWD) is evaluating the securing of active agricultural lands with the Palo Verde Irrigation District (PVID) for a fallowing program and possible inclusion into the LCR MSCP.

Location: The active agricultural lands are located at the southeastern portion of PVID (see Figure 1). The site is located across the river from the Cibola Valley Conservation Area (shown in green), which is currently being developed under the LCR MSCP.

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

Existing Site Conditions: The property is being actively farmed with alfalfa and cotton.

Existing Infrastructure: All portions of the property area are serviced by PVID and are currently flood irrigated. An extensive irrigation and drainage system is in place. All properties are accessible by paved or graveled roads.

Habitat Creation Concept: For site-selection purposes the project area, approximately 2,000 acres in size, was separated into three distinct areas. The acreage of each area is approximate and could be scaled up or down depending on how the property is secured. The center area (Figures 2 & 3), approximately 1,000 acres in size and shown in blue, would be used by MWD for the fallowing program. The easternmost area (Figures 4 & 5), approximately 500 acres in size and shown in red, would be developed as a mosaic of cottonwood-willow and honey mesquite land cover types. The westernmost area (Figures 6 & 7), approximately 500 acres in size and shown in yellow, would be developed as a mosaic of cottonwood-willow, honey mesquite, and marsh land cover types. Both the western and eastern area would likely be developed as cottonwood-willow along the rivers edge and transition into honey mesquite in the interior sections. In addition, the western area, which contains an undeveloped portion, includes return flows from PVID and a developed marsh (Figures 8 & 9). Acres converted to cottonwood-willow would require irrigation throughout the life of the program. The amount of irrigation would depend on the covered species targeted. Acres converted to honey mesquite would require only irrigation for establishment and recruitment.

Discussion: The trip report was intended to give MWD a sense of the relative importance of the property before conducting any further evaluation of the property. As such, the property would be a valuable asset to the program and has the potential for large-scale habitat development.

Potential Issues: Both the Palo Verde Ecological Reserve and the Cibola Valley Conservation Area are in the same reach of the river and are already being developed under the LCR MSCP.

Recommendations: MWD should continue to explore options to secure the property for use in their fallowing program and for habitat development under the LCR MSCP.

Interdisciplinary Team Members:

Gregg Garnett	Biologist	LC-8455
Gail Iglitz	Landscape Architect	LC-8459
Terry Murphy	Restoration Group Manager	LC-8400
Andy Pernick	Regional Photographer	LC-5330
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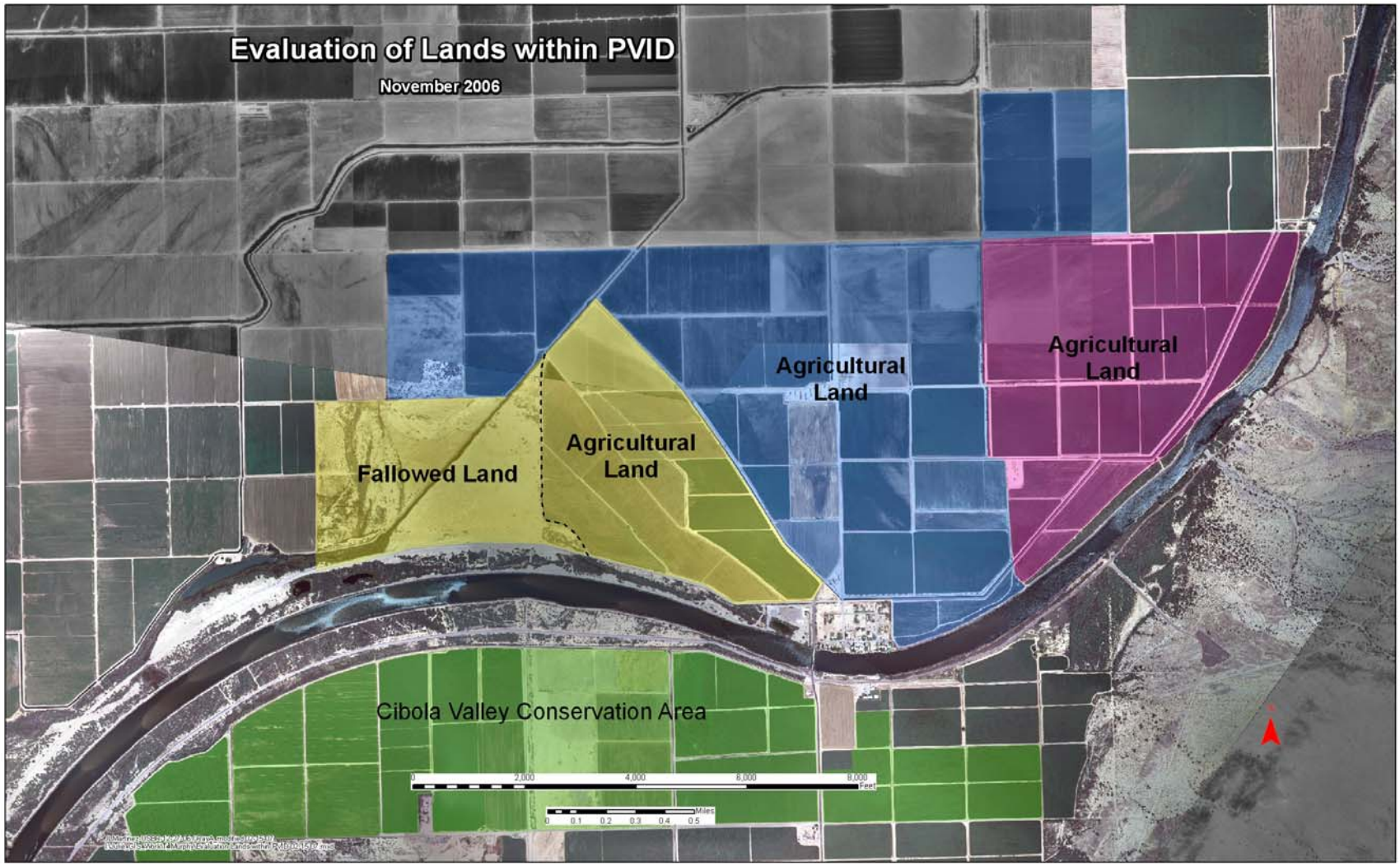

Figure 22. Aerial View

Figure 23. Center Area. (blue shading). Photograph No. B1878-300-20409.

Figure 24. Center Area (blue shading). Photograph No. B1878-300-20410.

Figure 25. East area (red shading). Photograph No. B1878-300-20403.

Figure 26. East area (red shading). Photograph No. B1878-300-20405.

Figure 27. West Area (yellow shading). Photograph No. B1878-300-20414.

Figure 28. West Area (yellow shading). Photograph No. B1878-300-20417.

Figure 29. West Area. Drainage from PVID. Photograph No. B1878-300-20332.

Figure 30. West Area. Marsh formed from PVID drain outfall. Photograph No. A1878-300-20333.