Cibola Valley Conservation Area Restoration Development and Monitoring Plan: Phase 7
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

**California Participant Group**

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Coachella Valley Water District
Colorado River Board of California
Bard Water District
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Los Angeles Department of Water and Power
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Arizona Game and Fish Department
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**Conservation Participant Group**

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

**Other Interested Parties Participant Group**

QuadState Local Governments Authority
Desert Wildlife Unlimited
Lower Colorado River Multi-Species Conservation Program

Cibola Valley Conservation Area Restoration Development and Monitoring Plan: Phase 7

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ACRONYMS AND ABBREVIATIONS

AGFD       Arizona Game and Fish Department
CVCA       Cibola Valley Conservation Area
LCR        lower Colorado River
LCR MSCP   Lower Colorado River Multi-Species Conservation Program
lidar      light detection and ranging
Reclamation Bureau of Reclamation

Symbols

%          percent
±           plus or minus
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1.0 INTRODUCTION

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a multi-stakeholder Federal and non-Federal partnership responding to the need to balance the use of lower Colorado River (LCR) water resources and the conservation of native species and their habitats in compliance with the Endangered Species Act.

The LCR MSCP is a long-term (50-year) plan consisting of conservation measures that provide protection along the LCR from Lake Mead to the Southerly International Boundary with Mexico for 27 species currently threatened or endangered and 5 species on the verge of becoming threatened or endangered. The LCR MSCP anticipates development and/or protection of a minimum of 8,132 acres of habitat consisting of a mosaic of Fremont cottonwood-Goodding’s willow (Populus fremontii-Salix gooddingii) (hereafter cottonwood-willow), honey mesquite (Prosopis glandulosa), marsh, and backwater components. The program uses adaptive management principles to research and monitor species and habitats as well as to enhance management actions and science applications over the life of the program.

This report outlines the preliminary concept, project parameters, and monitoring activities for the development of Cibola Valley Conservation Area (CVCA) Phase 7, which will result in an additional 72 acres of honey mesquite land cover type III. Development of this phase is in partial fulfillment of the requirements described in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004).

1.1 Purpose

The purpose of planting in Phase 7 (72 acres) is to create honey mesquite land cover type III. Honey mesquite will be planted in conjunction with pre-established cottonwood-willow parcels adjacent to the Colorado River. This habitat area is designed to replace the historical landscape patterns of plant communities along the LCR and to create an integrated mosaic of habitats. Additionally, this habitat will provide an abundance and diversity of insects used as food by covered bird species, migrants, and covered bat species.

Development of the CVCA will partially meet and/or support the following LCR MSCP Habitat Conservation Plan conservation measures:

- WIFL1 – Create 4,050 acres of southwestern willow flycatcher (Empidonax traillii extimus) habitat
- WRBA2 – Create 765 acres of western red bat (Lasiurus blossevillii) roosting habitat
• WYBA3 – Create 765 acres of western yellow bat (*Lasiurus xanthinus*) roosting habitat

• YBCU1 – Create 4,050 acres of yellow-billed cuckoo (*Coccyzus americanus occidentalis*) habitat

• ELOW1 – Create 1,784 acres of elf owl (*Micrathene whitneyi*) habitat

• GIFL1 – Create 4,050 acres of gilded flicker (*Colaptes chrysoides*) habitat

• GIWO1 – Create 1,702 acres of Gila woodpecker (*Melanerpes uropygialis*) habitat

• VEFL1 – Create 5,208 acres of vermilion flycatcher (*Pyrocephalus rubinus*) habitat

• YWAR1 – Create 4,050 acres of Sonoran yellow warbler (*Dendroica petechia sonorana = Setophaga petechia sonorana*) habitat

• SUTA1 – Create 602 acres of summer tanager (*Piranga rubra*) habitat

• CRCR2 – Create 125 acres of Colorado River cotton rat (*Sigmodon arizonae plenus*) habitat

• BEVI1 – Create 2,983 acres of Arizona Bell’s vireo (*Vireo bellii arizonae*) habitat

### 1.2 Location and Description

The CVCA is located in Arizona in Reach 4, within the Cibola Valley Irrigation District, approximately 15 miles south of Blythe, California. It is within the historic flood plain of the LCR and adjacent to River Miles 99 to 105 on the Arizona side (figure 1).

Cibola Valley is an area of approximately 7,000 acres located in southwestern La Paz County, Arizona, about 15 miles south of Blythe, California. The valley encompasses the land inside an engineered bend of the LCR and a remnant oxbow on the west side of the river (Palo Verde Oxbow). The valley is farmed primarily for cotton (*Gossypium* spp.) and alfalfa (*Medicago* spp.) and is bordered to the south by the Cibola National Wildlife Refuge and on the east by unimproved land under the jurisdiction of the Bureau of Land Management.
Figure 1.—CVCA location within the LCR MSCP planning area.
Cottonwood, willow, and honey mesquite are planted to create an integrated mosaic of habitats resembling riparian communities that were historically present in the Colorado River flood plain. When feasible, open areas with ground cover and low shrubs with standing water or moist soils are incorporated into the design.

To date, 265 acres in Phases 1, 2, and 3 have been mass planted with riparian habitat in varying densities and tree species to help determine the most suitable planting methodology. Additionally, 405 acres of honey mesquite, atriplex/quailbush (*Atriplex lentiformis*), and a native seed mixture were planted and established in Phases 4, 5, and 6 (figure 2).

1.3 **Landownership**

The Arizona Game and Fish Department (AGFD) acquired CVCA land and water rights in 2007 and 2008 through multiple agreements involving the AGFD, the Bureau of Reclamation (Reclamation), the Mohave County Water Authority, The Conservation Fund, and the Hopi Tribe. Through these agreements, the AGFD acquired CVCA fee title and water entitlements and agreed to manage the site. The entitlements are subject to an existing long-term lease of the land and water rights to Reclamation through April 5, 2055, as part of the LCR MSCP. Short-term leases of the land to farmers for crop production also exist on portions of the acquired land.

2.0 **RESTORATION AND DEVELOPMENT PLAN**

Implementation of Phase 7 within the CVCA will serve as partial fulfillment of the LCR MSCP’s habitat creation goals. Development of Phase 7 (72 acres) will create honey mesquite land cover type III.

2.1 **Conceptual Planting Design**

Development of Phase 7 will convert 72 acres of active agricultural fields to honey mesquite and cottonwood-willow land cover that, in coordination with earlier planting phases, is designed to create a native vegetation mosaic. This phase consists of two fields, 35± acres, subdivided into seven checks each (figure 3). The design will include 3,000 honey mesquite trees and 1,728 cottonwood trees planted in east-west rows with moderate sinuosity. The trees will be planted in alternating checks, with the cottonwood approximately in 25% of the 72 acres, whereas the mesquite trees will be occupying 100%.
Figure 2.—CVCA development map.
Additionally, the cottonwood trees will be placed on the eastern portion of the field projecting west no greater than one-third of the overall width, or approximately 400 feet, to complement the established habitat.

### 2.1.1 Planting Techniques

In Phase 7, native trees will be planted in deep furrows with a plant in-line spacing of 20 to 30 feet. Each furrow row will be spaced approximately 30 to 40 feet apart and 50 feet from the field edge. Invasive plants may be controlled by mechanically disking between the furrows during the first several years of growth. Disking will keep the open areas weed free until the trees mature. Once the fields are prepared, potted honey mesquite trees will be hand planted (figure 4) along with cottonwood seedlings.

### 2.1.2 Grading

Water use (irrigation) for establishment is necessary to ensure that recently planted trees are maintained and promote vigorous growth. After tilling the wheat, the fields will be sloped to approximately 3% and prepared with furrows to facilitate flood irrigation using existing water conveyance canals during early 2015. The need of greater than normal slope is to ensure the water will be
conveyed through the entire furrow based on the soil type. The soil is a sandy soil with a high transmissivity. The slope is set such as to overcome this and allow for complete furrow irrigation.

2.1.3 Irrigation
Irrigation gates are located along the eastern boundary of Phase 7. Figure 5 shows the application of irrigation water in the furrows. This system of furrows is designed to save water instead of flooding the entire field. Generally, it is expected that establishment irrigation will be required for 1–3 years until the tree root systems are able to reach the groundwater table. It is estimated that the honey mesquite trees will need approximately 100 acre-feet of water for the first year, whereas the cottonwood trees will need approximately 200 acre-feet. Once the mesquite trees mature, they will receive monsoonal irrigation during August and February, which will be their primary source of water. Riparian areas will continue to be irrigated as needed.
3.0 MANAGEMENT OVERVIEW

3.1 Site Management

In 2002, Reclamation secured 1,309 acres of land within the Cibola Valley Irrigation and Drainage District in southwestern Arizona and established the CVCA. In September 2007, the property was conveyed to the AGFD through an agreement among the AGFD, Reclamation, the Mohave County Water Authority, the Hopi Tribe, and The Conservation Fund. Under the agreement, the AGFD retains title to the property and leases the land and water rights to Reclamation until April 5, 2055, as part of the LCR MSCP. In September 2008, a Memorandum of Understanding was signed between Reclamation and the AGFD that assures availability of land and water resources for the 50-year term of the program.

3.2 Public Use

The AGFD has the authority and is the lead agency that regulates hunting and recreation uses pursuant to AGFD statutes, regulations, and policies at the CVCA.
In cooperation with Reclamation, the AGFD coordinates its public use and related activities so they are compatible with management of the site for the LCR MSCP. Low-impact public uses such as wildlife watching, sport fishing, and education/outreach are expected at the CVCA; however, these uses may be regulated depending on future occupation of the habitat by listed species.

### 3.3 Law Enforcement

The AGFD is responsible for law enforcement at the CVCA. A LCR MSCP Conservation Area Specific Fire Management & Law Enforcement Strategy has been finalized for the CVCA (LCR MSCP 2010).

### 3.4 Wildfire Management

A LCR MSCP Conservation Area Specific Fire Management & Law Enforcement Strategy has been finalized for the CVCA (LCR MSCP 2010). The LCR MSCP will continue to work with local State and Federal fire agencies to reduce the risk of wildland fires and to maintain clear lines of communication among agencies.

### 3.5 Site Maintenance

Reclamation is responsible for maintaining the infrastructure, access roads, and habitat created throughout development of the CVCA. Reclamation executes contracts or agreements with private companies to complete services or construction activities needed at the conservation area.

### 3.6 Weed Management

Invasive species management and control of undesired vegetation threatening infrastructure integrity are treated mechanically or with the use of herbicides. Invasive weeds and plant material adjacent to irrigation canals are removed to protect the integrity of the concrete lining. Disking is completed quarterly along the levee road and may be extended into the fields up to 50 feet to create fire breaks. Disking may also be needed between the furrows for weed management.

### 4.0 Monitoring

CVCA Phase 7 will provide habitat for Arizona Bell’s vireos, vermilion flycatchers, and other covered species. This phase will be added to
conservation area monitoring of neotropical birds, bats, and small mammals once habitat develops. Monitoring will be conducted to document presence and may not be required annually.

**4.1 Post-Development Monitoring**

Post-development monitoring will be implemented to assess the effectiveness of the conservation area and management activities in achieving the goals of the Habitat Conservation Plan. Post-development monitoring includes conducting presence surveys for targeted species such as yellow-billed cuckoos.

Habitat monitoring was designed to determine whether conservation areas are providing the habitat requirements needed by targeted covered species. Habitat characteristics will be determined primarily through vegetation structure derived from light detection and ranging (lidar) data. Species monitoring will document targeted covered species’ use of the created habitat. Monitoring protocols have been developed for documenting species’ responses to created land cover types. The following monitoring may occur:

- The honey mesquite land cover types may be surveyed for neotropical birds during the breeding season (April – June).

- Yellow-billed cuckoo surveys may be conducted in adjacent areas of suitable habitat (cottonwood-willow) during the breeding season (June – September). Surveys will be conducted according to a standardized protocol (Halterman et al. 2015).

- Presence monitoring for western red bats, western yellow bats, California leaf-nosed bats (*Macrotus californicus*) and pale Townsend’s big-eared bats (*Corynorhinus townsendii pallescens* = *Plecotus townsendii pallescens* = *C. townsendii townsendii*1) may be monitored at the CVCA with acoustic monitors or capture techniques.

- Monitoring for Colorado River cotton rats may be conducted if appropriate habitat is found. Trapping will occur at night and will be concentrated in areas where grasses and/or low shrubs develop.

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1 Genetic analyses on the pale Townsend’s big-eared bat indicate that the LCR is likely in the range of the Pacific Townsend’s big-eared bat (*Corynorhinus townsendii townsendii*) rather than the pale Townsend’s big-eared bat (Piaggio and Perkins 2005). The bats recorded along the LCR will be referred to as pale Townsend’s big-eared bats in this report, as the nomenclature change has not yet been verified by U.S. Fish and Wildlife Service.
• Monitoring for MacNeill’s sootywing skippers (*Pholisora gracielae* = *Hesperopsis gracielae* [MacNeill]) may be conducted if sufficient quailbush develops in or near CVCA Phase 7.

## 5.0 Adaptive Management

Adaptive management relies on obtaining new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (LCR MSCP 2007). Adaptive management ensures conservation areas are biologically effective and fulfill the conservation measures outlined in the Habitat Conservation Plan. Post-development monitoring and species research results will be used to adaptively manage conservation areas after initial implementation. If it is determined through monitoring that additional information is needed to better define covered species habitat requirements, these data will be collected using the procedures outlined in the LCR MSCP Science Strategy (LCR MSCP 2007). Alterations or changes to conservation areas can be accomplished through management activities; these activities will be initiated through the adaptive management process. Conservation areas will be manipulated and/or maintained for covered species using the best available science throughout the term of the LCR MSCP.

### 5.1 Monitoring Analysis and Evaluation

Monitoring data (primarily vegetation structure derived from lidar data) will be assessed to determine whether a site meets species-specific habitat requirements, which are the limiting factors for habitat to be considered covered species habitat in accordance with the current knowledge. In order to more effectively and efficiently manage conservation areas, sites will be designed to ensure that they more than adequately fulfill these habitat requirements and will then be monitored over time to see whether habitat quality decreases as the sites change.

### 5.2 Recommendations

If it is determined that a site does not meet the species-specific habitat requirements, recommendations for site modifications may be made by the following means:

• Comparison of monitoring results with species-specific habitat requirements to identify the habitat characteristics not being met that can be remedied by site manipulations (plant removal, additional plantings, site contouring, etc.) or changes to the watering regime
Comparison of results with previous successful and unsuccessful conservation areas to look for differences in site characteristics (elevation, distance to river, climate, etc.), baseline conditions, planting design, plant and animal species composition, watering regimes, and abiotic conditions that may help explain why the site has not fulfilled the species-specific habitat requirements

Review of other studies that may provide insight into additional covered species habitat requirements or different restoration techniques to achieve the desired conditions

The recommendations of how to move toward fulfilling species-specific habitat requirements will be included in the annual report (as further described in the next section). They will also be used to improve future project designs where appropriate.

6.0 REPORTS

6.1 Annual Report

An annual report summarizing the following will be prepared by Reclamation and made available each calendar year:

- A general description of the status of the project and the effects on covered species
- A description of all restoration activities and monitoring actions conducted over the past year
- A summary of monitoring and research activities over the past year
- Results and analyses of monitoring and research data
- An assessment of the effectiveness of each mitigation measure in minimizing and compensating for project impacts
- The total number of acres planted
- The total number of acres that meets or exceeds the performance standards
- Any other applicable information
6.2 Final Report

A final report will be prepared by Reclamation and submitted no later than 180 days after the completion of all mitigation measures. The final report is anticipated in 2055 and will include the following:

- All available information regarding project-related incidental take of covered species

- Information regarding other project impacts on covered species in California Endangered Species Act Incidental Take Permit No. 2081-2005-008-06

- An assessment of the effectiveness of the permit’s conditions of approval for minimizing and compensating for project impacts

- Recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the covered species

- Any other pertinent information
LITERATURE CITED


