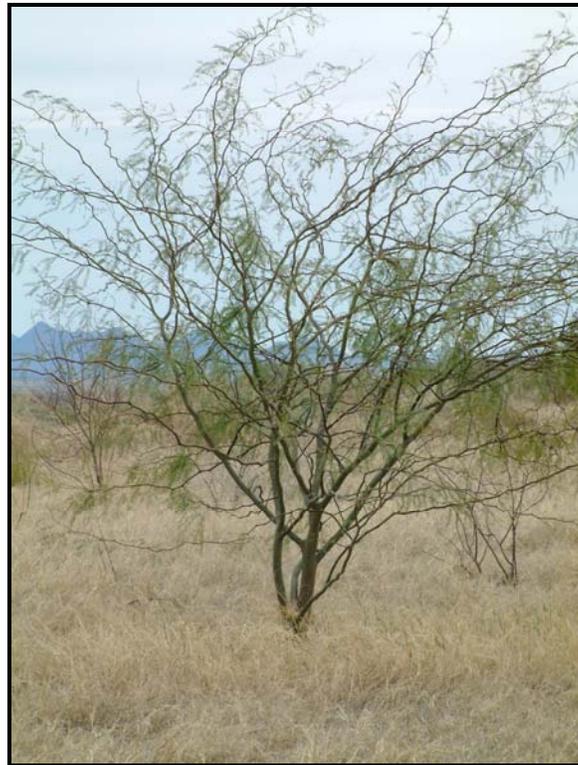


Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

Cibola Valley Conservation and Wildlife Area Restoration Development and Monitoring Plan: Phase 6



August 2011

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
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City of Lake Havasu City
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Golden Shores Water Conservation District
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Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
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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

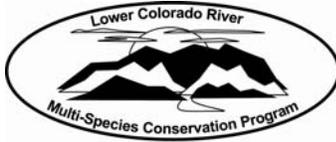
Colorado River Commission of Nevada
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Southern Nevada Water Authority
Colorado River Commission Power Users
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Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes

Conservation Participant Group

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



Lower Colorado River Multi-Species Conservation Program

Cibola Valley Conservation and Wildlife Area Restoration Development and Monitoring Plan: Phase 6

Prepared by Bill Singleton, Restoration Group

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

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Background

In 2002, the Bureau of Reclamation (Reclamation) secured 1,309 acres of land within the Cibola Valley Irrigation and Drainage District (CVIDD) in southwestern Arizona and established the Cibola Valley Conservation Area (CVCA). In September 2007, the property was conveyed to the Arizona Game and Fish Department (AGFD) through an agreement among AGFD, Reclamation, the Mohave County Water Authority (MCWA), and The Conservation Fund. Under the agreement, AGFD retains title to the property and leases the land and water rights to Reclamation until April 5, 2055 as part of the Lower Colorado River Multi-Species Conservation Program.

In September, 2008 a Memorandum of Understanding (MOU) was signed between Reclamation and AGFD that assures availability of land and water resources for the 50-year term of the LCR MSCP. This MOU changed the name to the Cibola Valley Conservation and Wildlife Area (CVCWA).

The proposed development plan for the property is shown in Figure 1. Additional site information can be found on the LCR MSCP website (www.lcrmscp.gov) in the report, *Cibola Valley Conservation Area Restoration Development Plan: Overview*.

In April 2006, Reclamation planted 91 acres in Phase 1 consisting of a native plant nursery and cottonwood-willow land cover type (CW). The nursery was established initially as an on-site native plant nursery for future plant stock collection and may be managed for habitat after other nurseries have been developed for the LCR MSCP. Phase 3, consisting of 103 acres, were planted in March 2007, in accordance with the *CVCA Restoration Development Plan: Phase 3*. Phase 2, originally scheduled for early spring of Fiscal Year 2007 (FY07) was delayed for one year. It was planted in March 2008, in accordance with the *CVCA Restoration Development Plan: Phase 2*. Phase 4, consisting of 245 acres of honey mesquite (*Prosopis glandulosa* var. *torreyana*) and quail bush (*Atriplex lentiformis*) land cover type, was planted in March 2009. Phase 5, consisting of 71 acres was planted in March 2010, in accordance with the *CVCA Restoration Development Plan: Phase 5*.

Purpose

The purpose of planting in Phase 6 is to create 89 acres of honey mesquite land cover type III that provides habitat for the elf owl, vermilion flycatcher, Arizona Bell's vireo, and other neotropical migrants covered under the LCR MSCP Habitat Conservation Plan (HCP). Honey mesquite will be planted in conjunction with already created cottonwood-willow adjacent to the Colorado River. This habitat area is designed to mimic 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 by replacing existing monotypic stands of saltcedar.

Implementation of Phase 6 will begin in March 2011 and will expand upon the methodologies used in previous phases. Winter wheat (*Triticum aestivum*) was planted in January 2010 to act as a ground cover and help deter the growth of invasive volunteer morning-glory (*Ipomoea violacea*) and cotton (*Gossypium hirsutum*). The current field preparation for Phase 6 includes

following the acreage prior to planting. Following germination, the winter wheat will be cut and disked. Winter wheat will double as a cover crop to keep the site weed free and as a wildlife forage crop. Winter wheat will also be planted in Phase 7 in January 2011 at the request of AGFD.

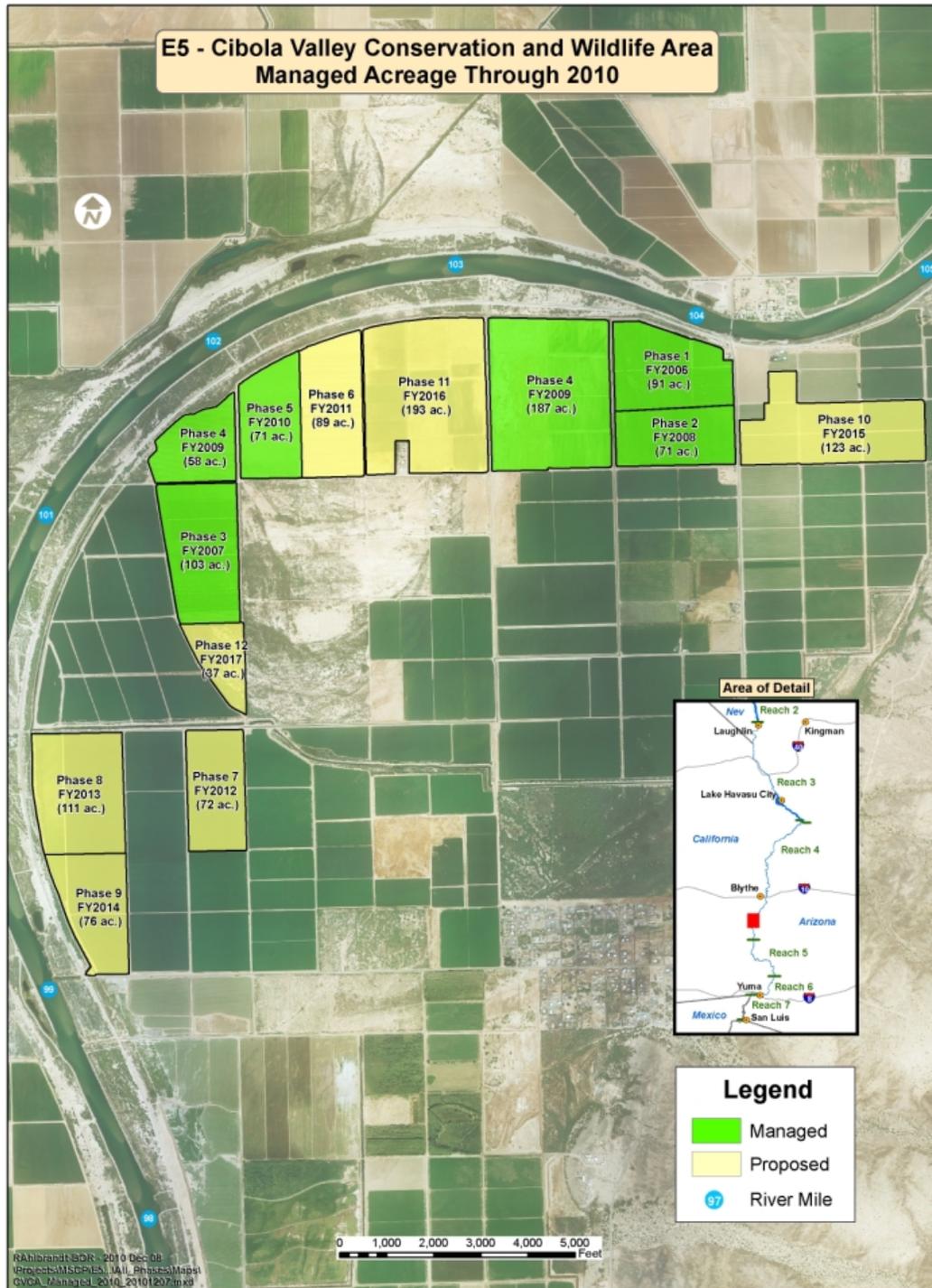


Figure 1: Proposed Managed Acreage Phase Map

Planting Design

Phase 6 converts 89 acres of active agricultural fields to honey mesquite land cover that, in coordination with earlier and later planting phases, is designed to create a native vegetation mosaic. This phase consists of three fields or checks, arranged in size from 25 to 30 acres (Figure 2) with 14,000 honey mesquite trees planted in east-west rows.

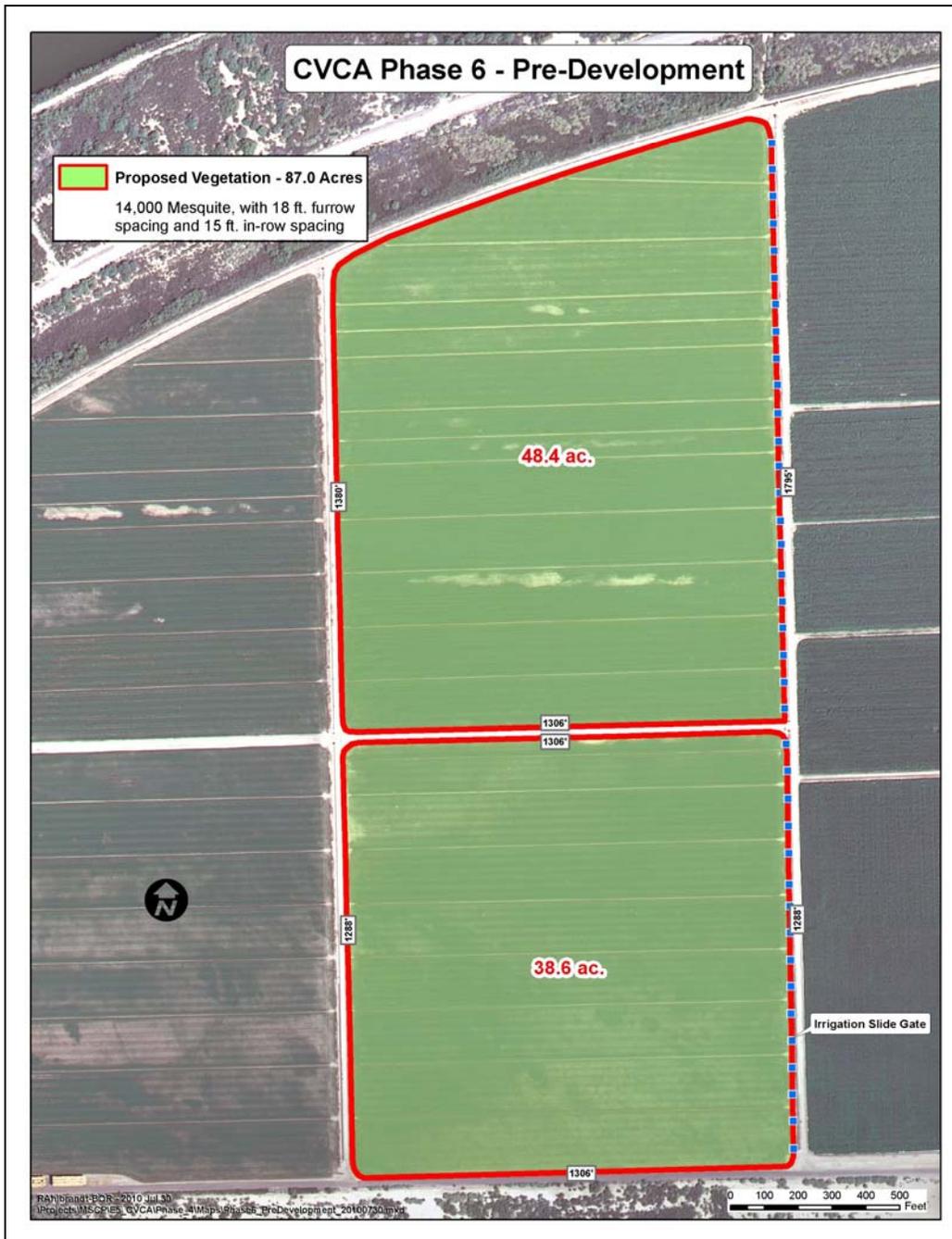


Figure 2: Phase 6 Habitat Creation Planting Design

Planting Techniques

In Phase 6, native honey mesquite will be planted in deep furrows with a plant in-line spacing of 15 feet. The furrow rows will have 18 feet of spacing between the rows. Invasive plants will be controlled by mechanically disking between the furrows and with the application of pre-emergent herbicide (Prowl by BASF) during the first year of growth. Disking will keep the open areas weed free until the trees mature. Once the fields are prepared (Figure 3), 1-gallon potted honey mesquite plants will be hand planted. Quail bush, which was previously planted in phases 4 and 5, will not be planted in this phase.



Figure 3: Preparation for Planting in Furrows

Grading

Water use for establishment irrigation is necessary to ensure that recently planted native honey mesquites are maintained and to promote vigorous growth. After clearing and root-ripping, the fields will be laser-leveled to facilitate flood irrigation using existing water conveyance canals.

Irrigation

Irrigation gates are located along the eastern boundary of Phase 6. A crop consultant may be utilized to recommend schedules for water and fertilizer applications. During the growing season, this consultant may sample and analyze plant tissue for nitrogen levels and other

nutrients as necessary. Figure 4 shows the application of irrigation water in the furrows. Utilizing this system of furrows has proven to save approximately two-thirds of the water normally applied during flood irrigation of the whole field. Generally, it is expected that establishment irrigation will be required for 1-3 years until the young tree root systems are able to reach the ground water table. These mature plants will eventually receive monsoonal irrigation during August and February, which will be their primary source of water.



Figure 4: Typical Furrow Irrigation

Monitoring

Conservation area monitoring plans are based on elements described in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004) and Final Science Strategy (LCR MSCP 2007).

Monitoring results will be used as part of the adaptive management process as discussed in Section 4.0. Monitoring at CVCWA is structured into two main categories:

- Pre-development Monitoring
- Post-development Monitoring
 - Implementation Monitoring
 - Habitat/Species Monitoring
 - Vegetation Classification

Pre-development Monitoring

Pre-development surveys and monitoring at former agricultural sites including CVCWA Phase 6 will be limited to initiation of photo point monitoring. Photo point monitoring will be initiated at CVCWA Phase 6 beginning in 2011. The initial photos will be taken after the field has been plowed and before planting.

Post-development Monitoring

Post-development monitoring will be implemented to assess the effectiveness of each habitat creation site and management activities in achieving the goals of the HCP.

Implementation Monitoring

Implementation monitoring includes evaluating habitat characteristics and documenting success of habitat creation techniques. Implementation monitoring includes biotic and abiotic components. Plant community composition, structure, and condition are important components that will be evaluated at CVCWA Phase 6 throughout the LCR MSCP.

Habitat Monitoring

Habitat monitoring was designed to determine whether Phase 6 is providing the habitat requirements (as defined by performance standards) needed for the targeted covered species. Monitoring protocols have been developed or are in development for documenting vegetation and microclimate characteristics as described below. A three-tiered approach to habitat monitoring will be implemented at all developed phases. The first two tiers will be implemented in 2010 and the third tier will be designed and implemented as needed. The three tiers are:

1. *Status Monitoring* – Assess the current conditions of each phase.
2. *Trend Monitoring and Causal Analysis* – Determine change over time and potential causes of change by evaluating specific habitat parameters.
3. *Effectiveness Monitoring* – Determine whether management actions are having the intended impact to LCR MSCP covered species, and test the effectiveness of various experiments designed to assist the LCR MSCP in achieving conservation goals.

Objectives for tiers 1 and 2 at CVCWA Phase 6 include:

- Biotic Monitoring
 - 1) Determine the current density of mesquite trees (*Prosopis glandulosa*) at CVCWA Phase 6.
 - 2) Assess change in density, species richness, vegetation structure, and frequency of native and non-native plant species that occur at CVCWA Phase 6.
- Abiotic Monitoring
 - 1) Assess the abiotic factors, including temperature, relative humidity, rainfall, distance to nearest irrigation inlet, distance to nearest open space ≥ 6 meters, original planting, soil chemistry, and soil moisture, that may influence the density of target tree species and community composition/structure at CVCWA Phase 6.

2) Water deliveries will be recorded by the entity conducting the deliveries.

Data collection will begin in September and continue through November. Phase 6 will be monitored annually for three years and then every other year in subsequent years.

Vegetation Sampling: Rapid Plots

To assess the goal of establishing cottonwood-willow land cover type (planting density per acre differs by phase), permanent (rapid) plots will be placed along transects laid (virtually, using GIS) across a gradient within each phase included in the monitoring program. Transects will be “placed” using a stratified random approach by dividing each phase into equal segments and then randomly placing one transect within each segment. Along each transect, the first rapid point will be placed 20 meters from the edge of the phase followed by points every 40 meters. The random points will translate to the center point of the 10 by 10 m rapid plots. Compass bearings will be determined for each transect and each rapid plot will be aligned with the same bearing. The rapid plots will be used for quick assessments of density of *Prosopis glandulosa* (and additional target tree species *Populus fremontii*, *Salix gooddingii*, *Salix exigua*, and *Prosopis pubescens* should they show recruitment in Phase 6 in consecutive years) and will include tallies by species within each 10 by 10 m plot. The rapid plots are intended to be very quick assessments of density that can be compared with density data from the intensive plots (a double-sampling approach). GPS coordinates will be recorded but not marked at the center of each rapid plot location and will be navigated to each year using sub-meter accurate GPS units.

Vegetation Sampling: Intensive Plots

To address trends in density, species richness, vegetation structure, microclimate characteristics, and frequency of native and non-native plant species, permanent (intensive) plot locations will be randomly selected from the rapid point locations described above. The number of intensive plots per phase will depend on the size of the phase. The random points will translate to the center point of the intensive plots. The intensive plots will be nested plots of three sizes, including one primary plot of 10 by 40 m (divided into four 10 by 10 m quadrats), one secondary plot (5 by 15 m), and four tertiary plots (0.5 by 2 m), plus four transects radiating from the center of the primary plot in each cardinal direction (Figure 2).

The transect start and end points will be permanently marked, as will two corners and the center of each primary plot. The secondary plots will be nested in the center within the primary plots. The tertiary plots will be placed within the 10 by 40 m plot along the long edges but outside of the 5 by 12 m plot. Compass bearings will be determined for each transect and plot borders (long edge) will be aligned with the same bearing. GPS coordinates will be recorded at each marker using sub-meter accurate GPS units.

The number of plots per phase is dependent on the size of the phase being monitored. Intensive plots (10 by 40 m, 5 by 15 m, or 0.5 by 2 m) will be evaluated for overstory trees, intermediate story trees and shrubs, crown closure, foliage height diversity, and ground cover/herbaceous layer.

Sampling Overstory Trees Phase 6 will be planted with honey mesquite but all target tree species are addressed below in the event that the additional species show natural recruitment in Phase 6 in consecutive years.

Within the primary plot (10 by 40 m), overstory target trees (*Populus fremontii*, *Salix gooddingii*, and *S. exigua*) with a diameter breast height (DBH) equal to or greater than 12 cm will be

evaluated. The DBH (cm) will be recorded for all trees in this category that meet the criteria. Estimates of all tree heights will be recorded based on a selection of trees with true measurements. A tally of all dead snags (not by species) shall be recorded in the following size categories (using estimates, not true measurements): 12-20 cm, 20-40 cm, and >40 cm DBH.

The target tree species, *Prosopis glandulosa* and *P. pubescens*, will be evaluated within the primary plot if they are greater than or equal to 1.4 m in height. Crown diameter (m² measurements perpendicular to each other) will be recorded for all trees in this category that meet the criteria. Estimates of all tree heights will be recorded based on a selection of trees with true measurements.

Sampling Shrub and Intermediate Layer Within the secondary plot (5 by 15 m), intermediate story target tree species (*Populus fremontii*, *Salix gooddingii*, and *S. exigua*) with a DBH of 8-12 cm will be evaluated. The DBH (cm) will be recorded for all trees in this category that meet the criteria. Estimates of all tree heights will be recorded based on a selection of trees with true measurements. Target tree species (*Populus fremontii*, *Salix gooddingii*, and *S. exigua*) with a diameter breast height (DBH) of less than 8 cm will be tallied by species and recorded in one of two DBH classes (≤ 2.5 cm and 2.51-7.99 cm). Dead snags will also be tallied in these categories, but not by species.

The target tree species, *Prosopis glandulosa* and *P. pubescens*, will be evaluated within the secondary plot if they are less than 1.4 m in height and beginning the second year after planting. Crown diameter (m² measurements perpendicular to each other) will be recorded for all trees in this category that meet the criteria. Estimates of all tree heights will be recorded based on a selection of trees with true measurements. For newly planted trees (first year of planting), all individuals of both species will be tallied, but no measurements will be taken.

Additional intermediate tree and shrub species, including *Baccharis* sp., *Atriplex* sp., *Pluchea sericea*, *Tamarix* sp., and any other intermediate tree and shrub species found within the plot with height ≥ 1.4 m will be evaluated. Crown diameter (m² measurements perpendicular to each other) will be recorded for all trees in this category that meet the criteria. Estimates of all tree heights will be recorded based on a selection of trees with true measurements. Individuals <1.4 m will be tallied by species.

Sampling Canopy Closure Canopy closure will be measured at five different locations (at 3-m mark and center) along transects laid in the four cardinal directions from the center point of the 10 by 40 m plot. Data will be collected using two methods: 1) spherical densitometer data collected by contractor, and 2) hemispherical photography data collected by Reclamation biologists. Hemispherical photos will be taken at a sub-set of the intensive plot locations.

Sampling Total-Vegetation Volume Total vegetation volume (TVV) will be measured at five different locations (at 3-m mark and center) along transects laid in the four cardinal directions from the center point of the 10 by 40 m plot.

Sampling Ground and Foliar Cover/Herbaceous Layer Ground and foliar cover data will be collected within four 0.5 by 2 m plots placed along the long edge of the intensive plots. Foliar cover of all annuals, perennials, and small shrubs (not included in intermediate tree and shrub

class) shall be recorded within the following cover classes: 1 = 0-1%, 2 = 1-2%, 3 = 2-5%, 4 = 5-10%, 5 = 10-25%, 6 = 25-50%, 7 = 50-75%, 8 = 75-95%, and 9 = >95%. Tree and large shrubs within the plot shall be indicated as present on the datasheet (no cover estimates). All dead annuals, perennials, and small shrubs shall be recorded in one dead category and a cover class assigned. Dead tree and large shrubs shall be recorded as present/dead. Leaf litter, rock/gravel layer, bare ground, and live vegetation touching the ground (all species lumped) shall be recorded in the following cover classes: 1 = 0-1%, 2 = 1-2%, 3 = 2-5%, 4 = 5-10%, 5 = 10-25%, 6 = 25-50%, 7 = 50-75%, 8 = 75-95%, and 9 = >95%. Foliar cover and ground cover will be separate categories and each will add up to 100%.

Additional Variables Measured Additional variables will be recorded, including distance to nearest standing water (excluding irrigation) and distance to nearest open space of size ≥ 6 m. Gap widths will be visually estimated (not measured) and placed in one of the following width categories: 6-9 m, 9-12 m, >12 m. Standing water and canopy gap distances greater than 30 m will be estimated using ArcMap.

Photo points will be established at each intensive plot. Two photos will be taken 15 m north of plot centers and at an additional distance that will vary depending on thickness of the habitat at each site. Plot numbers, photo numbers, camera settings, compass bearing, photographer, date, and time of day will be recorded.

A vegetation profile board will be used to measure vegetation density in each plot. Vegetation profile boards are 2.5 m by 30.48 cm with a thickness of 5 cm and are made out of foam board. Boards will be marked with alternating colors (black and white) every 50 cm. A photo will be taken of the vegetation board at the center point of each plot at 15 m north of the center point, facing south. This photo can then be evaluated for vegetation density with each 0.5-m section being assigned a value from 1 to 5 (1 = 0-20%, 2 = 21-41%, 3 = 41-60%, 4 = 61-80%, and 5 = 81-100%).

A telescoping stadia survey rod marked with bright colored tape at 3 m and 6 m will be placed at the center of each intensive plot and used as a guide to estimate vegetation cover in three canopy categories: 0-3 m (shrub canopy layer), 3-6 m (mid-canopy layer), and >6 m (upper canopy layer). A photo will be taken of each plot from 15 m and from an additional distance that will vary depending on the thickness of the habitat. An approximation of cover will be assigned based on the photos using the following cover categories: 0 = 0%, 1 = 1 to 10%, 2 = 11-25%, 3 = 26-50%, 4 = 51 to 75%, 5 = 76 to 90%, and 6 = >90% cover.

A representative plant specimen will be collected for all plant species found within intensive plots at each site. Only one specimen per species is necessary unless the species is represented by male and female forms, the hybrid status of the plant is in question, or the individual is an atypical representation of the species. All specimens shall be pressed in a standard plant press and shall have proper data associated with each specimen, including species (scientific and common name), date, location, plot #, collector's name, collection number (if applicable), at least two associated species (excluding annuals), and UTM coordinates (plot UTM coordinates are sufficient).

Species Monitoring

Species monitoring is designed to determine whether Phase 6 is providing the habitat requirements (as defined by performance standards) needed for the targeted covered species. Species monitoring will also document whether any other species are using the created habitat. Monitoring protocols have been developed or are in development for documenting habitat characteristics and species response to created land cover types.

Marshbirds

Monitoring will not be conducted because no marshbird habitat is being created at CVCWA.

Neotropical Birds

A standardized, double sampling, rapid intensive, area search survey will be utilized. Surveys will be conducted annually during the breeding season (April-June) beginning the second week of April after planting Phase 6. If covered species are observed, species-specific surveys, nest searches, and mist-netting/banding may be conducted.

Cavity Nesting Birds

Elf owl presence/absence surveys will be conducted after four to six years, depending on when the land cover type, structure, and density indicates that the habitat contains the characteristics known to be preferred by the species. Any installed nest boxes will be monitored during the breeding season. If elf owls are detected during the breeding season, nest searches and mist-netting/banding may be conducted.

Gilded flickers and Gila woodpeckers will be surveyed as part of the system-wide neotropical bird monitoring effort. Once suitable nesting habitat (snags with cavities) develops on the site, more directed presence/absence surveys may be conducted for gilded flickers or Gila woodpeckers. If gilded flickers or Gila woodpeckers are detected during breeding season, nest searches and mist-netting/banding may be conducted.

Southwestern Willow Flycatcher

Although Phase 6 does not contain nesting habitat for southwestern willow flycatchers, nearby and adjacent areas have been planted (phases 1, 2, and 3) or will be planted with cottonwood and willow. Phase 6 may provide foraging habitat for flycatchers that may nest in nearby cottonwood and willow and for migrating flycatchers. Cottonwood and willow habitat in CVCWA will be surveyed for flycatchers according to standardized presence-absence surveys (McLeod and Koronkiewicz 2009, Sogge et al. 1997) after three growing seasons (2011). Birds nesting adjacent to or utilizing Phase 6 during migration may be detected incidentally during standardized willow flycatcher surveys or during the system-wide neotropical bird monitoring effort.

Yellow-billed Cuckoo

Although Phase 6 does not contain ideal nesting habitat for cuckoos, nearby and adjacent areas have been planted (phases 1, 2, and 3) or will be planted with cottonwood and willow. Phase 6 may provide foraging habitat for cuckoos that may nest in nearby cottonwood and willow and for migrating cuckoos. Cottonwood and willow habitat in CVCWA will be surveyed for cuckoos according to standardized presence-absence surveys (Haltermann et al. 2008) after three growing seasons (2011). Birds nesting adjacent to or utilizing Phase 6 during migration may be detected

incidentally during standardized cuckoo surveys or during the system-wide neotropical bird monitoring effort.

Small Mammals

Because known populations of *Sigmodon arizonae* exist near this site, small mammal presence/absence surveys may be conducted between September-November and February-May if adequate ground cover exists. Trapping would be conducted overnight, and traps will be placed in parallel, linear transects approximately 250 m in length with a trap placed every 10 m. Transects would be approximately 10 m apart, with the actual number of traps and transects being determined by the size of the available habitat, but not to exceed 200 traps per night. If presence of *S. arizonae* is confirmed, individuals will be marked with a PIT tag and ear clipped for genetic evaluation to determine the source population.

Bats

Presence/absence surveys may be conducted utilizing active/passive Anabat bat detectors at least two days per season (spring, summer, winter, and fall) annually if additional replicates for the study design are needed at CVCWA.

MacNeill's Sootywing

MacNeills' sootywings will not be surveyed during this phase, because the butterfly's host plant, *Atriplex lentiformis*, will not be planted.

Vegetation Classification

The LCR MSCP Habitat Conservation Plan (LCR MSCP 2004) outlines the specific habitat acreage to be created. The Anderson and Ohmart vegetation classification system (Anderson and Ohmart 1976, 1984; Younker and Andersen 1986) will be used to track the total land cover types managed by the program annually. To map the vegetation at CVCWA, Reclamation will annually obtain aerial imagery of the site. Each phase will be classified using the Anderson and Ohmart system (see Phase 1 report).

Adaptive Management

Adaptive Management relies on the initial receipt of 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). The Adaptive Management Program's role is to ensure habitat creation sites are biologically effective and to fulfill the conservation measures outlined in the HCP for 26 covered species, and potentially benefit five evaluation species. Post-development monitoring and species research results will be used to adaptively manage habitat creation sites after initial implementation. If it is determined through the monitoring results that additional information is needed to better define covered species habitat requirements, data will be collected using the procedures outlined in the LCR MSCP Science Strategy (LCR MSCP 2007). The Science Strategy provides for an adaptive management process for improving the effectiveness of HCP implementation and identification of monitoring and research priorities. Alterations or changes to habitat creation sites can be accomplished through management activities; these activities will be initiated through the adaptive management process. Habitat

creation sites will be manipulated and/or maintained for covered species using the best available science throughout the term of the HCP.

Another role of the Adaptive Management Program is to determine habitat credit using vegetation classifications and the conservation measures for a given species as outlined in the HCP. This is accomplished through analysis of all monitoring data, and comparison with other relevant studies. Annual reports will summarize each created habitat land cover type and the acreage for that type.

Monitoring Analysis and Evaluation for Habitat Credit

The LCR MSCP is determining the process for covered species conservation measure accomplishment, including species-specific habitat performance standards. Once this process has been determined, monitoring data will be assessed to determine whether the site meets the performance standards.

If it is determined that the site meets the performance standards, the habitat credit acreage will be reported in CVCWA annual reports. If monitoring activities document the presence of target species before performance standards are met, the performance standards will be evaluated and updated as appropriate.

If it is determined that the site does not meet any of the performance standards, recommendations for site modifications may be made by the following means:

- Comparison of monitoring results with performance standards to identify those standards 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 Phase 6 results with previous successful and unsuccessful habitat restoration projects 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 met the performance standards.
- Review of other studies that may provide insight into additional covered species habitat requirements or different restoration techniques to achieve the desired conditions.

These recommendations of how to move towards achieving performance standards will be included in the annual report. These recommendations will also be used to improve future project designs, where appropriate.

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