



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Palo Verde Ecological Reserve-South Restoration Development and Monitoring Plan



October 2018

Work conducted under LCR MSCP Work Task E37

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 Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Wildlife
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

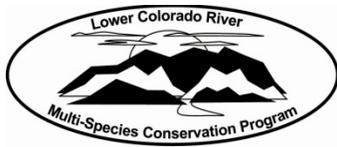
Colorado River Commission of Nevada
Nevada Department of Wildlife
Southern Nevada Water Authority
Colorado River Commission Power Users
Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

Conservation Participant Group

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



Lower Colorado River Multi-Species Conservation Program

Palo Verde Ecological Reserve-South Restoration Development and Monitoring Plan

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ACRONYMS AND ABBREVIATIONS

CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
HCP	Habitat Conservation Plan
LCR	lower Colorado River
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
lidar	light detection and ranging
PVID	Palo Verde Irrigation District
Reclamation	Bureau of Reclamation

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1.0 INTRODUCTION

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a 50-year multi-stakeholder Federal and non-Federal partnership created to balance the use of lower Colorado River (LCR) water resources with the conservation of native species and their habitats in compliance with the Endangered Species Act. The program is cooperatively funded by the Federal Government and the States of Arizona, California, and Nevada, and other permittees, within these States. This long-term effort works toward the recovery of listed species and protects and maintains wildlife habitat along the LCR from the full pool elevation of Lake Mead to the Southerly International Boundary with Mexico through implementation of a Habitat Conservation Plan (HCP).

A major component of the LCR MSCP is the creation and management of habitat to benefit 27 covered species. Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow), honey mesquite (*Prosopis glandulosa*), marsh, and backwater are the predominant land cover types to be created under the LCR MSCP. Habitat creation goals include the establishment of 8,132 acres of habitat, including 5,940 acres of cottonwood-willow, 1,320 acres of honey mesquite, 512 acres of marsh, and 360 acres of backwater.

This report outlines the preliminary concept, project parameters, and monitoring activities for the development of 224 acres of honey mesquite to satisfy both a portion of the LCR MSCP habitat requirements described in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004a) and a portion of California Endangered Species Act (CESA) Incidental Take Permit No. 2081-2005-008-06.

1.1 Purpose

The purpose of this project is to comply with the LCR MSCP and CESA mitigation requirements by creating and maintaining the honey mesquite land cover type for covered species in Reaches 3–6 of the LCR in California.

Development of Palo Verde Ecological Reserve-South will partially meet and/or support the following LCR MSCP Habitat Conservation Plan conservation measures (LCR MSCP 2004a):

- BEV11 – Create 2,983 acres of Arizona Bell's vireo (*Vireo bellii arizonae*) habitat
- ELOW1 – Create 1,784 acres of elf owl (*Micrathene whitneyi*) habitat

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

1.2 Location and Description

PVER-South is within the State of California, approximately 3.5 miles northeast of Blythe. It is within the historic flood plain of the LCR between River Miles 123 to 125 (figure 1).

1.3 Landownership

PVER-South is owned by the California Department of Fish and Wildlife (CDFW).

1.4 Water

The Palo Verde Irrigation District (PVID) has an entitlement to Colorado River water for use on up to 104,500 acres of land within the PVID pursuant to a contract between the United States and the PVID dated February 7, 1933. The CDFW, as a landowner within the PVID, has the right to order Colorado River water from the PVID for pumping through the PVID canal system to its fields. The CDFW has made Colorado River water available for irrigation of the native plants.

1.5 Agreements

The Bureau of Reclamation (Reclamation) will either modify the existing Agreement for Restoration Activities Consistent with the Lower Colorado River Multi-Species Conservation Program Palo Verde Ecological Reserve, Contract No. 06-07-30-LO633, or enter into a new, similar agreement for the development and long-term management of PVER-South.

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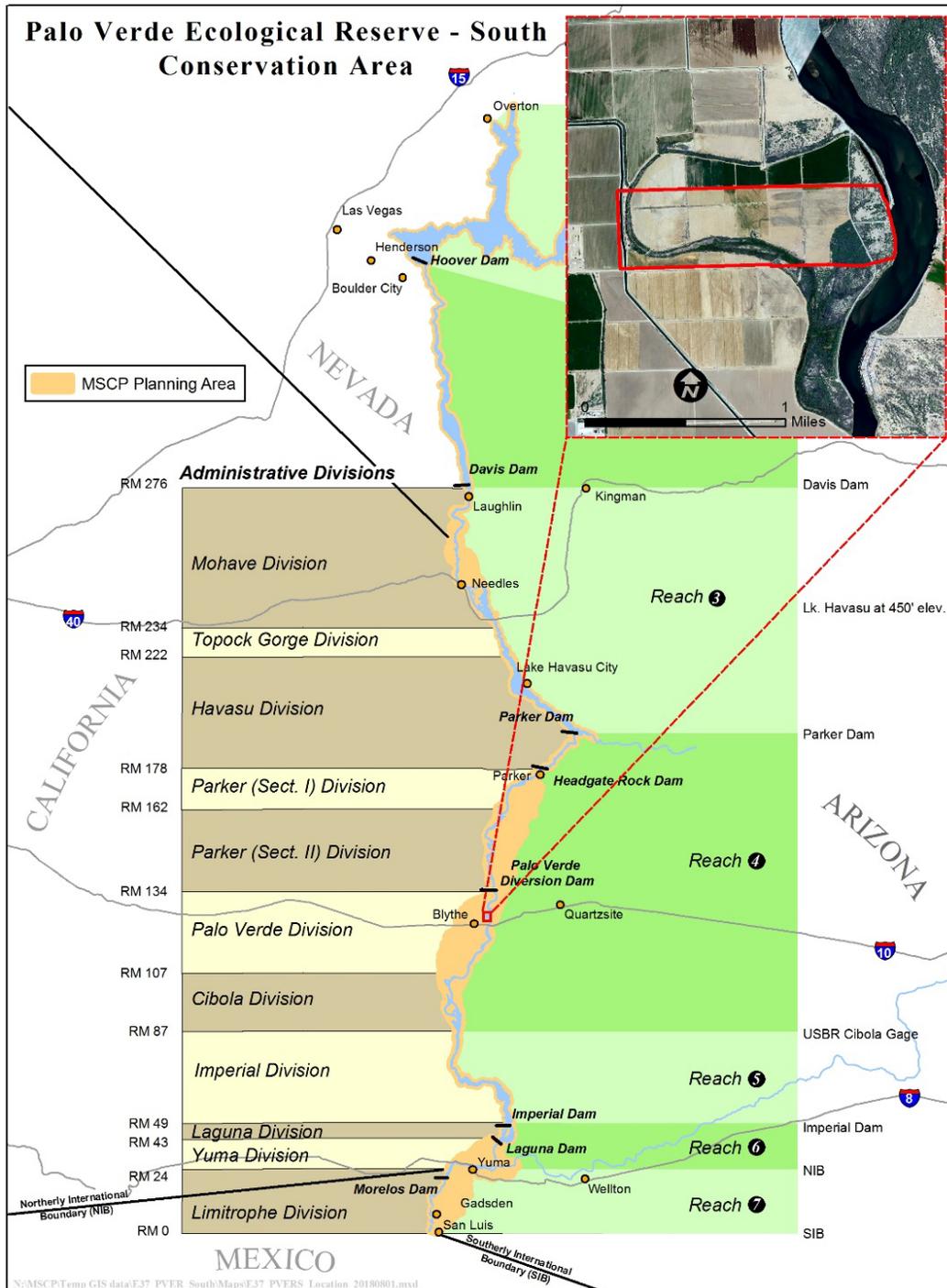


Figure 1.—LCR MSCP planning area map showing the location of PVER-South.

2.0 RESTORATION AND DEVELOPMENT PLAN

PVER-South is approximately 335 acres. Implementation of the area will serve as partial fulfillment to the LCR MSCP's 1,320 acre honey mesquite habitat. Reclamation would design, restore, create, operate, manage, maintain, and monitor approximately 224 acres of active agricultural land that will be converted to the honey mesquite land cover type within the conservation area (figure 2). An additional 111 acres will also be managed by the LCR MSCP but will not be developed at this time. The project will incorporate the general design and target criteria identified in the LCR MSCP Programmatic Environmental Impact Statement/Environmental Impact Report (LCR MSCP 2004b) and the HCP.

The project would include the following overall design elements:

- Design and manage habitat to support honey mesquite type III
- Create patches of at least 50 acres of honey mesquite
- Create honey mesquite habitat type III

2.1 Planting

A cover crop will be established on the laser-leveled fields prior to planting with honey mesquite.

Honey mesquite will be hand planted in furrows (figure 3). The furrows will be cut into the fields to a depth of 2–3 feet and spaced 20–40 feet apart, with moderate sinuosity (figure 3). Honey mesquite are typically planted at the invert of the furrow. The density of honey mesquite will transition from high to low density in an east-to-west orientation (figure 4). The current concept includes three planting densities for honey mesquite:

- 20 feet on center; 109 trees per acre
- 30 feet on center; 48 trees per acre
- 40 feet on center; 27 trees per acre

Planting will require about 14,500 honey mesquite. The trees will be irrigated from February through October. The site will be irrigated at a minimum of once a month during this time and may be increased if the honey mesquite show any sign of stress.

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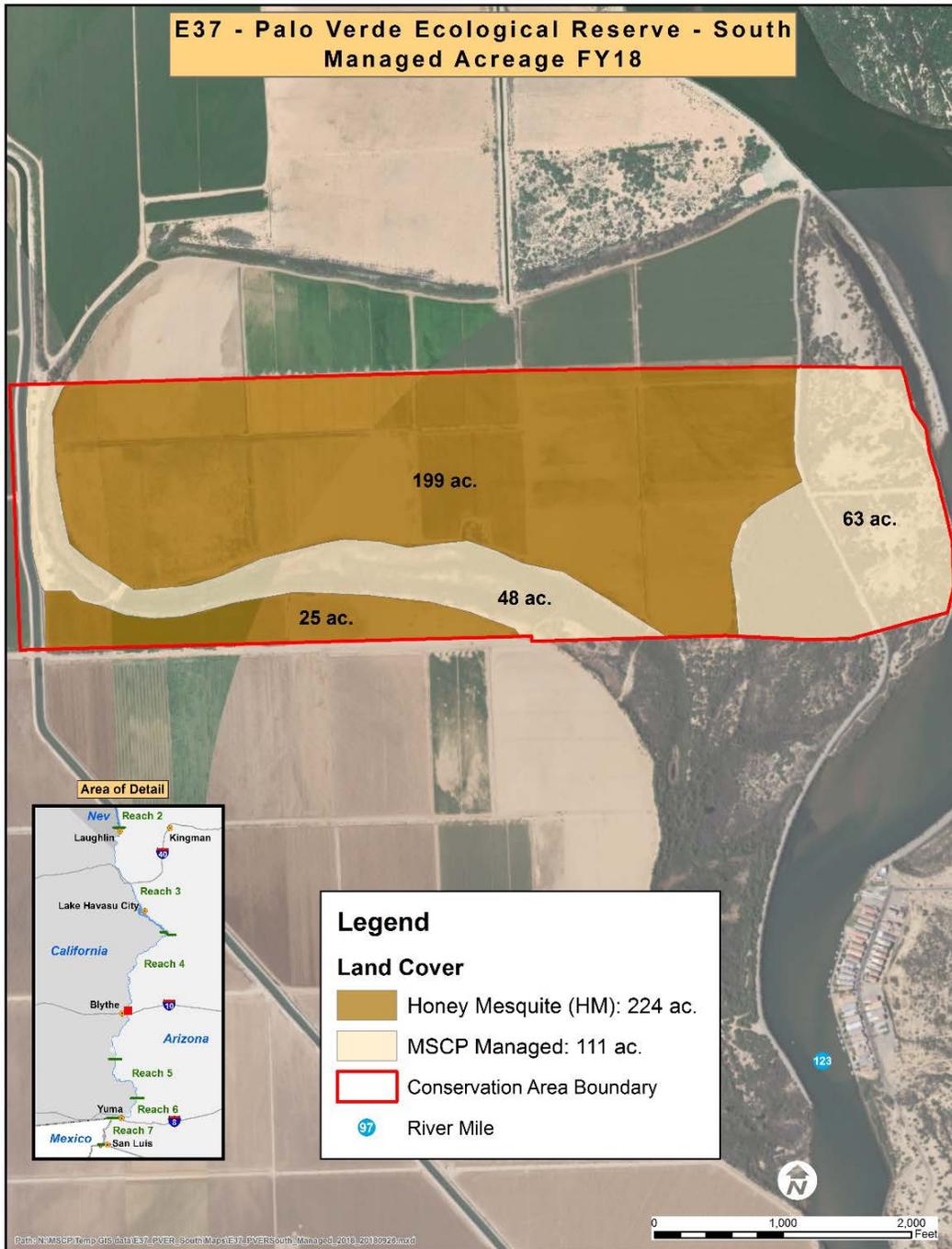


Figure 2.—PVER-South development map and managed acreage, FY18.

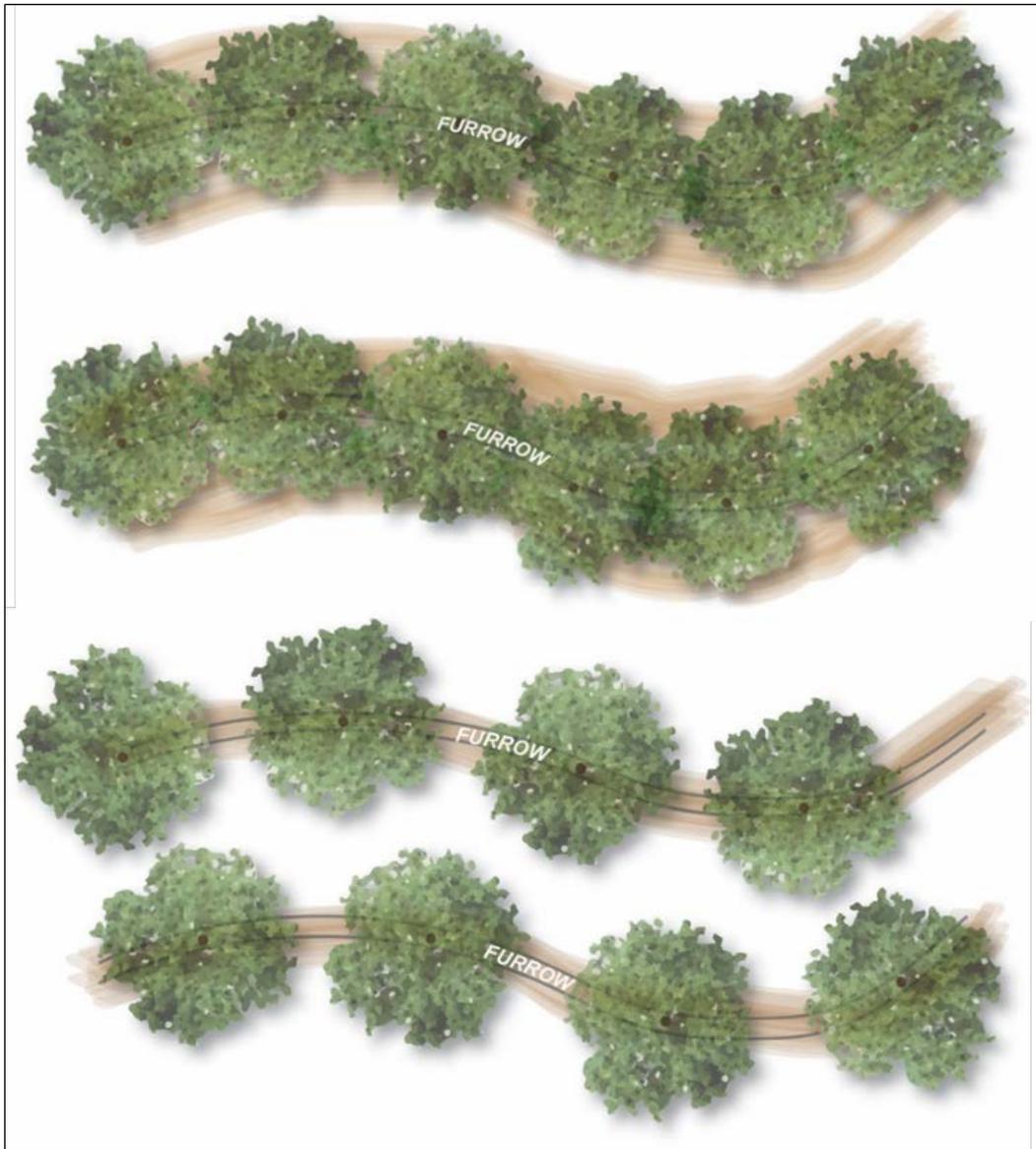


Figure 3.—Example of a furrow planting at different densities of honey mesquite.

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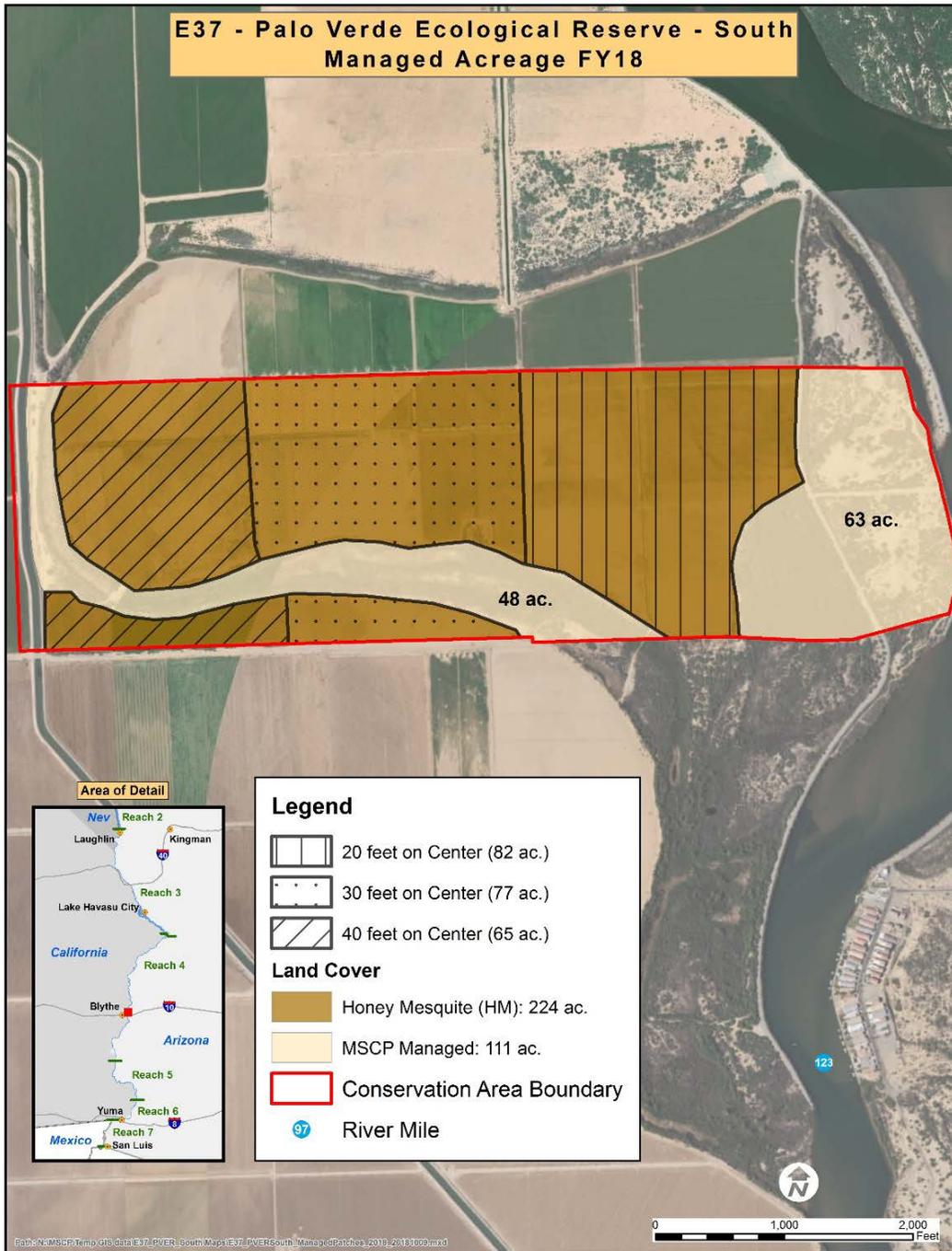


Figure 4.—Planting concept design.

3.0 MANAGEMENT OVERVIEW

3.1 Site Management

Reclamation will be responsible for ensuring long-term operations and maintenance of PVER-South. Following completion of the area, an area management plan will be developed, which may include habitat objectives for the conservation area, monitoring requirements, fire management, predator/competitor management, vegetation management, infrastructure maintenance, permitted uses, and water management.

3.2 Public Use

The CDFW has the authority, and is the lead, to regulate hunting and recreation uses pursuant to CDFW statutes, regulations, and policies at PVER-South. In cooperation with Reclamation, the CDFW 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 PVER-South; however, these uses may be regulated depending on future occupation of the habitat by listed species.

3.3 Law Enforcement

The CDFW is responsible for law enforcement at PVER-South. Reclamation will work with the Bureau of Land Management to provide additional assistance and to ensure project activities do not conflict with the LCR MSCP Habitat Conservation Plan.

3.4 Wildfire Management

The LCR MSCP is responsible for wildfire management at PVER-South. As guided by commitments in the LCR MSCP Habitat Conservation Plan, wildfire management practices on the conservation area will “Reduce the risk of loss of related habitat to wildfire by providing resources to suppress wildfires, e.g., contributing to and integrating with local, State, and Federal agency fire management plans, and implement land management and habitat creation measures to support the reestablishment of native vegetation that is lost to wildfire” (LCR MSCP 2010).

Federal, State, and local fire agencies, either by existing management agreements or mutual aid agreements, provide wildland fire suppression, incident dispatch,

fire investigation, fuels reduction, and potential fire restrictions. The full range of suppression strategies are available to managers provided that selected options do not compromise firefighter or public safety, are cost effective, consider the benefits of suppression and the values to be protected, and are consistent with resource objectives.

3.5 Site Maintenance

Reclamation will be responsible for maintaining all infrastructure, access roads, and habitat created throughout development of PVER-South.

4.0 MONITORING

4.1 Wildlife and Habitat Monitoring

As stated above, PVER-South will be managed for Arizona Bell's vireos, elf owls, vermilion flycatchers, western red bats, and western yellow bats. The site will be added to conservation area monitoring for these species once habitat develops. Monitoring will be conducted to document presence and may not be required annually.

4.1.1 Pre-Development Monitoring

Pre-development monitoring is designed to establish baseline data for evaluating post-development and to identify whether covered species inhabit a site prior to construction. Pre-development monitoring will not be conducted, as the portion of the site to be planted consists of agricultural fields that are regularly disturbed by plowing and harvesting of crops, and it does not contain covered species habitat.

Compliance monitoring will be conducted as needed during construction.

4.1.2 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 HCP. 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

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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 type may be surveyed for riparian birds during the breeding season (April – June). If covered species are observed, species-specific surveys, nest searches, and mist netting/banding may be conducted.
- The presence of bats may be monitored acoustically in conjunction with monitoring at the Palo Verde Ecological Reserve.
- When cavities become present in the riparian habitat, species-specific presence surveys for elf owls may be conducted.
- Presence surveys may be conducted for MacNeill's sootywing skippers (*Pholisora graciellae* = *Hesperopsis graciellae* [MacNeill]) if quailbush (*Atriplex lentiformis*) is present within the honey mesquite land cover type.

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 HCP. 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 50-year 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

These 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

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- A description of all restoration activities and monitoring actions conducted over the past year
- A summary of monitoring and research activities conducted 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 meet or exceed 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

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