Work Task E4: Palo Verde Ecological Reserve

FY06 Estimates	FY06 Actual	Cumulative Accomplishment Through FY06	FY07 Approved Estimate	FY08 Proposed Estimate	FY09 Proposed Estimate	FY10 Proposed Estimate
$310,000	*$590,486	$657,231	$976,000	$1,185,000	$1,460,000	$2,000,000

*FY06 actual reflects the advance purchase, propagation, and planting of trees and shrubs in FY07 as Phase 2. Future estimates reflect this advance purchase strategy.

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Start Date: FY05

Expected Duration: FY55

Long-term Goal: Habitat creation

Conservation Measures: CLRA1, WIFL1, WRBA2, WYBA3, CRCR2, YHCR2, LEBI1, YBCU1, ELOW1, GIFL1, GIWO1, VEFL1, BEVI1, YWAR1, SUTA1, and MNSW2

Location: Reach 4, CDFG, river miles 129-133, CA

Purpose: Create and manage a mosaic of native land cover types for LCR MSCP covered species.

Connections with Other Work Tasks (past and future): Vegetation and species monitoring are being addressed under F1-F4. Insect populations are being evaluated under C5 and C6.

Project Description: The Palo Verde Ecological Reserve (PVER) encompasses more than 1,300 acres. This property (formerly known as the Travis Ranch) has been made available to the LCR MSCP for habitat restoration activities by CDFG.

The eastern boundary of the property (more than four miles) is adjacent to the Colorado River; the western boundary is adjacent to active agricultural fields. The PVER has an extensive infrastructure consisting of miles of lined irrigation ditches, roads, and a pump. Currently, the acreage is leased to a contract farmer and is planted with crops of alfalfa and wheat. Each year a portion of the active crop acreage will be taken out of production to develop the next phase of native habitat. The intent is to create as much riparian habitat as practical. Generally, all phases at PVER are targeted for SWFL, YBCU, and other covered species.

To date, standard farming practices are an efficient and effective way to convert agricultural cropland to habitat. Costs for development and maintenance of the habitat include such farming methods as land leveling, disking, irrigation of crops, repair and maintenance of the irrigation system, fertilizer, and herbicide. Palo Verde Irrigation District provides water to PVER. The

costs associated with irrigation, electricity, and water are proportional to the amount of acreage that has been converted to habitat.

The mass transplanting demonstration (E7) has proven to be a cost-effective method for planting riparian trees and shrubs. This method includes the collection of plant material, propagation, and planting of native species.

It is essential to have a mosaic of habitats that contain areas of riparian species (including mesquite), and ground covers or open areas. Ground cover is an effective method of controlling nonnative species and provides another layer of vegetation for habitat. Ground covers are planted with transplants or by seed; costs vary by methods of planting used. Mesquite trees are generally planted by the use of a tree planter or auger. Typically, mesquite costs are based on a 1-gallon planted tree.

Agricultural areas have irrigation systems in place that are conducive for water management of riparian species. However, standing or saturated soil areas for covered species may need to be created or amended, and managed throughout the term of the program.

Previous Activities: N/A

FY06 Accomplishments: *The Palo Verde Ecological Reserve Development Plan: Overview, Phase 1 and Phase 2* documents were reviewed and approved by CDFG. A 50-year restoration agreement with CDFG describing each party's responsibilities was developed.

In the spring of 2006, a total of 31 acres were developed for the nursery as Phase 1 to provide native plant material for future phases at PVER and other restoration sites in the LCR floodplain. More than 2,200 trees and shrubs were planted in two fields; Field A encompasses 20 acres and Field B 11 acres. Each field was planted with native species according to water requirements. Field A is dedicated to plantings with higher water requirements: cottonwood, coyote willow, Goodding's willow, and mule's fat. Vegetation with lower water requirements such as *Atriplex*, saltgrass, and honey mesquite were planted in Field B.

Field A had an existing alfalfa crop, which was incorporated as a ground cover to limit invasive weeds and add nitrogen. The field was disked using a tractor with GPS capability. The GPS was set for every 20 feet in two-dimensional x-y coordinates, creating an exact grid pattern in the field. The trees were planted at the intersection of the disking, ensuring consistent space between the trees for future access for plant material collection.

Field B was an abandoned agricultural field that required root plowing, clearing, and burning prior to disking. The entire 11 acres was prepared and mass transplanted with saltgrass, which will provide soil stabilization and future seed stock. Approximately 1 acre of *Baccharis* and *Atriplex* species were planted over the salt grass base. Unfortunately, a week after planting, an aggressive wind storm passed through the area, damaging and burying most of the *Baccharis* and a portion of the saltgrass. Approximately 50% of the saltgrass and 100% of the *Baccharis* was lost. Saltgrass is a spreading crop, so there is a strong chance the remaining saltgrass will significantly increase in 2007.

The honey mesquite trees were planted in October through existing grasses. Two treatments were installed to discourage rabbits from damaging the trees. Chicken wire and garlic clips were placed around and on the trees.

The opportunity to pre-purchase the collection, propagation, and planting of trees for Phase 2 arose and was completed in FY06; therefore, expenditures in FY06 were more than anticipated.

At the end of the year, cottonwood and willow species were noted to be greater than 6 feet tall and in some cases greater than 9 feet with significant branching. A small amount of morning glory was found in the cottonwood-willow trees. Initiation of an invasive weed management program will begin in the spring.

Pre-development monitoring was conducted for targeted covered species, including neotropical migratory birds, small mammals, and bats. Monitoring for small mammals and bats was conducted on Phase 2. Neotropical migratory bird monitoring was conducted on the entire reserve utilizing a point-count protocol. The Arizona Bell's vireo was the only targeted covered species observed. Two observations were made during separate survey dates in different areas.

Implementation monitoring of the vegetation was conducted for the native plant nursery (Phase 1). Year-1 survivorship was measured at 95%. Additional information can be found in the *Palo Verde Ecological Reserve Annual Report, 2006.*

FY07 Activities: The development of Phase 2 (80 acres) is the focus in FY07. The ground will be prepped for Phase 2 planting, which includes disking, laser leveling, and plowing as needed to mass transplant the trees and shrubs. Because a small amount of morning glory was found in 2006 (less than 10 plants) in the nursery, a heavy application of ground cover seed will be applied prior to planting of Phase 2 to help reduce any infestation of morning glory. A matting of vegetative ground cover has proven effective on other restoration sites for reducing invasive weeds. Mass transplanting of approximately 60 acres of riparian species (approximately 128,000 of cottonwood, willow, saltgrass, and *Baccharis*) will take place in March. Spacing will be increased to 6-foot inline with 40 inches between rows to reduce cost and still provide the structural density required by the species. A 1-acre area has been dedicated as an open area and will be mass transplanted with saltgrass on 1-foot inline spacing. *Atriplex* will be planted using the same technique in the spring. Mesquite trees typically need one growing season prior to planting; as a result, mesquite trees will be planted in October. More than 17,000 coyote willow, Goodding's willow, and cottonwood will be hand planted to complete the development of the remaining lands.

Vegetation plantings will take advantage of proximity to irrigation gates and be planted in areas between borders where irrigation schedules can be controlled. Irrigation will be monitored to keep the root balls moist during the first crucial few weeks. A diligent approach will be taken to monitor and eliminate morning glory. Hand picking, along with the use of herbicides, will be used to manage the weed.

The plan and design for Phase 3 development of approximately 87 acres will be drafted. In Phase 3, cottonwood-willow land cover type will be established to provide habitat for SWFL, in accordance with the SIA BO obligation being accomplished by the LCR MSCP.

The planting will integrate a random mixing of Goodding's willow and coyote willow with edges of cottonwood. Open areas will be incorporated along the borders, allowing the flexibility to rework the borders if needed, without disturbing the trees and shrubs.

Pre-development monitoring for targeted covered small mammals and bats will continue for Phase 2 and begin for Phase 3. Pre-development neotropical migratory bird monitoring will continue reserve-wide, utilizing the point-count protocol. Implementation monitoring of vegetation for Phase 2 will commence in the spring after the trees are planted. Monitoring for bats and neotropical migratory bird use will begin for Phase 2. Additional information can be found in the Phase 2 development plan posted on the LCR MSCP Web site.

Proposed FY08 Activities: Field preparation and planting of Phase 3 will be conducted to create as much riparian habitat as practical with the intent to target habitat for SWFL, YBCU, and other covered species. Previous phases will be monitored and adaptively managed for the targeted species. Site preparation for mass transplanting of riparian trees and shrubs on approximately 87 acres will be conducted. The plan and design for continued development of riparian habitat will be included in Phase 4.

Pre-development monitoring for targeted covered small mammals and bats will continue for Phase 3 and begin for Phase 4. Pre-development neotropical migratory bird monitoring will continue reserve-wide, utilizing point counts. Monitoring of vegetation will continue for Phase 2 and begin for Phase 3. Monitoring for bats and neo-tropical migratory birds will continue for Phase 2. Monitoring for small mammals will begin for Phase 3.

Pertinent Reports: The *Palo Verde Ecological Reserve Restoration Development Plan: Overview*, which outlines the general development of the property, the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 1*, which described the restoration activities planned for FY06, and the *Palo Verde Ecological Reserve Restoration Development Plan: Phase 2*, which described the restoration activities planned for FY07 are posted on the LCR MSCP Web site. *Acoustic Bat Surveys Lower Colorado River Pilot Study*: *April 2006*, and *Palo Verde Ecological Reserve Annual Report, 2006* will be posted when available.