Work Task E9: Hart Mine Marsh

FY10 Estimates	FY10 Actual	Cumulative Accomplishment Through FY10	FY11 Approved Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate	FY14 Proposed Estimate
$2,380,000	$2,129,989.54	$4,854,161.22	$500,000	$300,000	$750,000	$200,000

Contact: Gregg Garnett, (702) 293-8644, ggarnett@usbr.gov

Start Date: FY05

Expected Duration: FY55

Long-term Goal: Habitat creation.

Conservation Measures: CLRA1, LEBI1, and CRCR2.

Location: Reach 4, Cibola NWR, River Mile 92, Arizona.

Purpose: Create and manage marsh habitat for Yuma clapper rail, least bittern, and Colorado River cotton rat.

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

Project Description: Hart Mine Marsh is a decadent marsh located on Cibola NWR. Currently, drainage water from the refuge's agricultural fields enters Hart Mine Marsh through gated structures in the Arnett Ditch. Previous management practices have not allowed any outflow from the marsh; therefore, the drain water terminates in the marsh to evaporate and stagnate. The result is poor water quality, limited marsh habitat, and saline upland areas, some completely devoid of vegetation or dominated by saltcedar.

Habitat requirements for marsh-covered species include areas of permanent open water and larger areas of adjacent emergent marsh vegetation with water depths ranging from 1 to 12 inches. At least 80 acres adjacent to deep areas will be re-graded to provide more suitable marsh areas, adjacent permanent open water, and controllable water levels. This would provide permanent open water adjacent to emergent vegetation. By managing water levels and providing appropriate vegetation, suitable habitat for covered marsh species can be created. Water, diverted by gravity from the Arnett Ditch, would be used to flood-leveled fields and create marsh habitat conditions. Water levels would be managed by a series of small water control structures such as culverts or stop logs.

Previous Activities: Through FY08, NEPA compliance activities, cultural surveys, topographic surveys, and pre-development surveys for marsh birds and riparian obligate birds were conducted. Engineering designs were finalized, and all regulatory permitting

required for construction was completed including NEPA, ESA, sections 401 and 404 of the CWA, and Section 106 of the NHPA. In FY09 the first phase of construction was completed and resulted in 92 acres of marsh.

FY10 Accomplishments: The second phase of construction was completed in FY10 resulting in 163 acres of marsh. The project was completed within the specified time window and within the limits of the approved budget. This phase included removal of saltcedar, the dredging of channels and contouring of cell 1, and the installation of additional control structures for marsh water level management. Maintenance of the site, including water level management and nonnative vegetation control, was accomplished through a combination of resources from the USFWS staff and commercially procured sources.

After the completion of cell 1 construction, over 700,000 emergent and marsh transitional vegetation species were planted. When these cells were completed, native vegetation was planted as needed according to its particular requirements. Plants and planting services were obtained through commercial sources. Table 1 contains the species and number of individual containers that were planted in March 2010. The species were chosen based on their USDA native plant status, for their relatively high tolerance to saline conditions, for their diversity in structure, and for their adaptation to different water depths or environmental conditions. The remainder of the cell was not planted, however by managing water levels native plants are being established.

Table 1. Species, common name, and number of containers of plants ordered for cell 1 of HMM for planting in March, 2010.

Species	Common Name	Number of Plants
Schoenoplectus californicus	California bulrush	35,200
Scirpus tabernaemontani	Great bulrush	4,800
Scirpus olneyi	Three-square bulrush	65,000
Eleocharis palustris	Common spikerush	20,000
Distichlis spicata	Inland saltgrass	575,000
Atriplex lentiformis	Quail bush	1,500
Prosopis glandulosa	Honey mesquite	200
Total		701,700

The 40 cfs pump that supplies water to HMM, suffered irreparable damage to multiple mechanical components during FY10. Water was supplied to HMM using the refuge's smaller 20 cfs pump, however is not a viable long-term solution. Since the 40 cfs unit was primarily dedicated to HMM, funds were supplied to procure and replace this pump. Installation of the new pump is expected in FY11.

FY11 Activities: The third and final phase of construction at Hart Mine Marsh will be completed in FY11. This will include the construction of an additional fresh water inlet for the constructed marsh cells. An additional water control structure for this new inlet will also be installed. Additional refinement of the established infrastructure will be

accomplished during FY11. This will include the addition of stoplog structures between cells for greater ease and flexibility of water management on the site. Road construction and road surfacing activities will also be completed in FY11 to improve site access for planting and maintenance activities. Replacement (installation) of a new 40cfs pump to supply larger volume of water to HMM, dependent upon procurement and fabrication time, is expected in FY11.

As part of an effort to increase vegetation species diversity at HMM, supplemental planting is planned for Phase 3 in FY11. This will include additional three-square bulrush planting in shallow areas on the north side of cell 1. Saltgrass plugs will be planted along the north side of cell 1 at elevation 217' in an attempt to vegetate the margin of the marsh cell. Additionally, three-square bulrush, great bulrush, and California bulrush will be planted on the eastern side of cell 2 (table 2).

Table 2. Species, common name, and number of containers of plants ordered for cells 1 and 2 of HMM for planting in February, 2011.

Species	Common Name	Number of Plants
Schoenoplectus californicus	California bulrush	10,000
Scirpus tabernaemontani	Great bulrush	10,000
Scirpus olneyi	Three-square bulrush	30,000
Distichlis spicata	Inland saltgrass	70,000
Total		120,000

In addition, alkali sacaton (*Sporobolus airoides*) seed will be spread in some of the adjacent upland areas around the marsh for ground stabilization and to add to the native vegetation mosaic of the site. In subsequent years, additional marsh and upland plant species may be established within and adjacent to both cells 1 and 2 to fill in non-vegetated areas, stabilize ground, inhibit invasion of nonnative species, and to promote vegetation diversity, as necessary.

Abiotic monitoring will be conducted starting in spring 2011. This will include regular measurement and recording of water quality parameters, soil conditions and site hydrology. Marshbird surveys will begin in FY11.

Proposed FY12 Activities: The majority of the activities planned for FY12 deal with management, maintenance, and monitoring. Water management, including the maintenance of water levels and water delivery activities on the site will be performed by the USFWS. Invasive and nonnative vegetation control will continue to be performed by contracted services. Monitoring of abiotic and biotic parameters will be conducted by USFWS and the LCR MSCP.

Although no construction activities are planned for FY12, planning and procurement of materials for future infrastructure repair is projected. The water delivery infrastructure for the Unit 2 management area on Cibola NWR (that also supplies HMM) is aging and will

need to be replaced at some point; the 40 cfs pump at Unit 2 failed in FY10 and some similar water conveyance infrastructure of the same age and made of similar components on the island unit failed this past year. To avoid system failures during critical times for covered species breeding seasons and to maintain adequate water levels to keep vegetation at HMM alive, pro-active steps to upgrade the infrastructure components will be made to protect the investments made by the LCR MSCP. A revised estimated budget for FY13 reflects the replacement of the Unit 2 water supply lines for HMM.

Pertinent Reports: *Hart Mine Marsh, Existing Conditions Report*, the *Comprehensive Conceptual Restoration Plan*, and *Hart Mine Marsh Conservation Area Development Plan* are posted on the LCR MSCP website. *Hart Mine Marsh Annual Report 2010* will be posted when available.