

Work Task C42: Experiments and Demonstration of Soil Amendments for Use in Restoration Sites

FY08 Estimates	FY08 Actual	Cumulative Accomplishment Through FY08	FY09 Approved Estimate	FY10 Proposed Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate
\$0	\$0	\$0	\$0	\$200,000	\$200,000	\$200,000

Contact: Barbara Raulston, (702) 293-88396, braulston@usbr.gov

Start Date: FY10

Expected Duration: FY15

Long-term Goal: To determine and demonstrate the feasibility of soil amendments to improve restored habitat and management options for irrigation of habitat restoration sites.

Conservation Measures: MRM1 (WIFL, YBCU, ELOW, SUTA, GIWO, GIFL, VEFL, YWAR, BEVI)

Location: Reclamation's Denver TSC laboratory, the Colorado River Indian Tribe's 'Ahakhav Preserve, Parker, Arizona, and possibly other restoration sites on the LCR.

Purpose: The purpose of this study is to explore the use of soil amendments, alternative site preparation, and irrigation methods to maintain moist soils and/or standing water within habitats created for the southwestern willow flycatcher. Habitat conditions for other covered species will also be improved by maintenance of moist soil conditions. Improving low quality soils will also improve water conservation and lower irrigation costs. This work will parallel species habitat and hydrology studies. This information will be used by project managers during site preparation and by land managers to create and maintain habitat with enough standing water and/or moist soils to replicate the structural characteristics of vegetation and microclimate found at occupied flycatcher habitat.

Connections with Other Work Tasks (past and future): Breeding habitat for willow flycatchers is being determined through studies completed under D2 and breeding habitat for yellow-billed cuckoos is being determined through studies completed under D7. Habitat parameters for other obligate riparian species, such as summer tanagers, yellow warblers, and Bell's vireos that may benefit from these type of studies are being addressed under Work Task D6. In 2007, a Service Agreement with Reclamation's Denver Technical Service Center produced a preliminary literature and product search to gather information on soil amendments for use in habitat restoration projects. In 2008-2009, a second Service Agreement was started under work task G3 to provide additional information on Lassenite Pozzolan and to write a complete study proposal. In 2009, laboratory work for soil amendment experiments will begin to determine the feasibility of Lassenite Pozzolan for restoration purposes.

Project Description: After a review of soil amendments and their associated costs, availability, water retention capabilities, etc., a product called Lassenite Pozzolan was identified as the most feasible and appropriate product for improving water retention and irrigation practices of sandy soils. Although the production company has tested the material for use on golf courses in desert environments, there are several differences in the use proposed by Reclamation that require further examination. Depending on results from these controlled experiments, application demonstrations may be conducted on site at the Colorado River Indian Tribe's 'Ahakhav Preserve, where sandy soil conditions exist. Other demonstration areas may be identified in the future.

Previous Activities: None, this is a new start in 2010.

FY09 Activities: None, See G3 for FY09 activities.

Proposed FY10 Activities: Areas that require further study prior to field testing include 1) the effective influence from application of the product, 2) movement of product under flood irrigation conditions, 3) application rates and soil moisture effects at the surface and upper root zones of targeted riparian plants, 4) facilitation of surface water movement from irrigation source to distant areas compared to untreated soils, and 5) the wicking capability of the product. These will be explored through several laboratory tests performed by soil scientists at Reclamation's Denver Technical Service Center's modeling facility. This facility allows for the construction of small-scale models for simulation experiments under controlled conditions.

Pertinent Reports: *Feasibility of Using Soil Amendments to Increase Water Retention at Restoration Sites on the LCR* is available from the LCR MSCP.