

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

FY09 Estimates	FY09 Actual	Cumulative Accomplishment Through FY09	FY10 Approved Estimate	FY11 Proposed Estimate	FY12 Proposed Estimate	FY13 Proposed Estimate
\$0	\$0	\$0	\$200,000	\$100,000	\$200,000	\$200,000

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**Start Date:** FY10

**Expected Duration:** FY15

**Long-term Goal:** To determine and demonstrate the feasibility of soil amendments to improve habitat quality and management options at habitat creation sites.

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

**Location:** Controlled experiments will be conducted at Reclamation's Denver Technical Service Center and field experiments will be conducted at various conservation areas where appropriate.

**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):** Initial literature search and laboratory studies were conducted under G3.

**Project Description:** After a review of soil amendments and their associated costs, availability, and water retention capabilities, Lassenite Pozzolan was identified as the most feasible and appropriate product for improving water retention and irrigation practices for sandy soils. Although this material has been tested for use on golf courses in desert environments, further examination into its ability to create moist soil conditions in riparian areas is required. Depending on results from these controlled experiments, application demonstrations may be conducted on sites where sandy soil conditions exist.

The study will explore the following in a laboratory setting: 1) movement of product through the soil profile under flood irrigation, 2) application rates and soil moisture effects at the surface and upper root zones of targeted riparian plants, and 3) facilitation of surface water movement from irrigation source to distant areas compared to untreated soils. Small-scale models will be constructed to conduct simulation experiments under controlled conditions.

**Previous Activities:** In FY07 under G3, a preliminary literature and product search was conducted to gather information on soil amendments for use in habitat restoration projects. In FY08-09, additional information was gathered on Lassenite Pozzolan, and a study proposal was written.

**FY09 Activities:** None; see G3 for FY09 activities.

**FY10 Activities:** Soil amendment experiments were initiated to determine the feasibility of Lassenite Pozzolan for restoration purposes. Results from these controlled experiments are expected by May 2010.

**Proposed FY11 Activities:** Field trials of the amendment may be conducted, depending on the results of laboratory experiments completed in FY10.

**Pertinent Reports:** *Feasibility of Using Soil Amendments to Increase Water Retention at Restoration Sites on the LCR* is available on the LCR MSCP Web site. The study design is available upon request.