

# RECLAMATION

*Managing Water in the West*

## Lower Colorado River Multi-Species Conservation Program

Work Tasks and Obligations  
Fiscal Year 2004



U.S. Department of the Interior  
Bureau of Reclamation  
Lower Colorado Region  
Boulder City, Nevada

April 2005

**LOWER COLORADO RIVER MULTI-SPECIES CONSERVATION  
PROGRAM WORK TASKS AND BUDGET FOR FEDERAL FISCAL YEAR  
2004**

The following report documents the Bureau of Reclamation's (Reclamation) activities that were intended to begin implementation of the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) during Federal Fiscal Year (FY) 2004. While the majority of Reclamation's activities during FY04 were conducted to fulfill the requirements of two Biological Opinions (1997, 2002), the following is a description of activities that were determined to be needed to begin implementation of the LCR MSCP. Reclamation took this step in order to begin the experimental phase of the habitat restoration component of the LCR MSCP and thus provide information to accelerate the on-the-ground development of habitat for the covered species. Other projects included in this list relate directly to specific monitoring, species research, or equipment needs that are clearly part of the LCR MSCP program.

The final documents and agreements for implementing the LCR MSCP were signed on April 4, 2005. This event culminated the planning process for a conservation program that was envisioned in 1995, and signaled the start of the implementation process for the 50-year program.

Attached is a summary of the total obligations for LCR MSCP activities accrued by Reclamation through FY04. Also included are individual narratives describing each specific work task. Reclamation obligated and is seeking financial credit for \$3,381,440 for these projects specifically related to the advance implementation of the LCR MSCP conservation activities. The majority of these funds were spent on research needed to develop techniques for Conservation Area Development and Management. All work tasks listed in this document have a specific and direct tie to implementation of the LCR MSCP. General staff and administrative costs were not included unless specifically directed towards conservation area development as described in the narrative. LCR MSCP plan development costs were not included.

<b>LCR MULTI-SPECIES CONSERVATION PROGRAM WORK TASKS &amp; OBLIGATIONS FOR FISCAL YEAR 2004</b>	
<b>WORK TASKS</b>	<b>FY 04</b>
<b>Program Elements</b>	
Sub-Elements	
<b>A. Fish Augmentation</b>	<b>\$163,585</b>
1. Achii Hanyo National Fish Hatchery	\$50,000
2. PIT Tags	\$54,762
3. Electro-fishing Boat Procurement	\$58,823
<b>B. Species Research</b>	<b>\$96,032</b>
<b>GENERAL</b>	
1. Bat Surveys and Monitoring Protocol	\$55,000
<b>RIPARIAN/NEOTROPIC BIRDS</b>	
2. SWFL- Prey Base Study	\$41,032
<b>C. System Monitoring</b>	<b>\$635,000</b>
<b>GENERAL</b>	
1. Vegetation Type Mapping & Backwater Evaluation	\$400,000
<b>NATIVE FISHES</b>	
2. Lower Colorado River Fishes Database Management	\$235,000
<b>D. Conservation Area Development &amp; Management</b>	<b>\$2,486,823</b>
<b>REACH 3</b>	
1. Beal Lake, Havasu National Wildlife Refuge	\$1,232,267
2. Pintail Slough, Havasu National Wildlife Refuge	\$95,000
<b>REACH 4</b>	
3. Farm Unit #1 (Cottonwood Genetics), Cibola National Wildlife Refuge	\$110,004
4. Ahakhav Tribal Preserve, Colorado River Indian Tribes	\$1,037,791
<b>REACH 5</b>	
5. Butler Lake, Imperial National Wildlife Refuge	\$6,673
<b>REACH 6</b>	
6. Pratt Agricultural Lease	\$5,088
<b>TOTAL</b>	<b>\$3,381,440</b>

# Table of Contents

## A. Fish Augmentation

Work Task A1:	Achii Hanyo National Fish Hatchery .....	4
Work Task A2:	PIT Tag Procurement .....	6
Work Task A3:	Electro-Fishing Boat Procurement .....	7

## B. Species Research

Work Task B1:	Bat Surveys and Monitoring Protocol .....	9
Work Task B2:	Southwestern Willow Flycatcher (SWFL) Prey Base Study .....	10

## C. System Monitoring

Work Task C1:	Vegetation Type Mapping & Backwater Evaluation.....	11
Work Task C2:	Lower Colorado River Native Fishes Database Management .....	13

## D. Conservation Area Development and Management

Work Task D1:	Beal Lake, Havasu National Wildlife Refuge .....	14
Work Task D2:	Pintail Slough, Havasu National Wildlife Refuge .....	16
Work Task D3:	Farm Unit #1, Cibola National Wildlife Refuge .....	18
Work Task D4:	Ahakhav Tribal Preserve, Colorado River Indian Tribes.....	20
Work Task D5:	Butler Lake, Imperial National Wildlife Refuge .....	22
Work Task D6:	Pratt Agricultural Lease.....	24

<b>Work Task A1:</b>	<b>Achii Hanyo National Fish Hatchery</b>
<b>Partners:</b>	Colorado River Indian Tribes U.S. Fish and Wildlife Service, Arizona Fishery Resource Office Bureau of Reclamation
<b>Point of Contact:</b>	Tom Burke, LC-2300 (702) 293-8711
<b>Purpose:</b>	Contribute to the development of a functional and effective native fish rearing facility at Achii Hanyo to provide fish for the LCR MSCP Fish Augmentation Program. This facility will be used initially for bonytail production.
<b>Conservation Measures:</b>	BONY3 and BONY4
<b>Long-term Goal:</b>	Increase native fish production capabilities to meet the needs of the LCR MSCP. The two principal fishes to be reared are the razorback sucker and the bonytail. The goal is to rear and stock some 1.28 million native fish. This facility is expected to play a major role in the Fish Augmentation Program.
<b>Location:</b>	Achii Hanyo, Colorado River Indian Tribal land near Poston, AZ.
<b>FY04 Obligation:</b>	\$50,000 for hatchery improvement .
<b>FY04 Accomplishment:</b>	In August 2004 an agreement was established to provide \$200,000 for facility improvement over a four-year period. The FY04 obligation was \$50,000. An additional \$50,000 will be obligated in each of the following three years for a total of \$200,000. Those funds will be included in the FY05-FY07 work plans.
<b>Project Description:</b>	Achii Hanyo is a satellite facility of Willow Beach National Fish Hatchery. As such the FWS is bringing substantial resources to develop, operate and maintain this facility. The goal is to use this site for raising bonytail. USBR funds support all aspects of bonytail rearing (feed, supplies, materials, etc) and are not restricted to any single action. However, in 2004 the funds were used to work on earthen berms around the ponds and to install a kettle or collection station at the deep end of the ponds. There is no "success goal" for this action. These funds support and expedite rearing of bonytail chub at Achii Hanyo. Bonytail have a suite of problems with their production cycle, and Achii Hanyo has a suite of problems with the facility's infrastructure.

We estimate that there will be successes and failures annually, but we do expect progress. Efficacy of the facility will be reviewed periodically to determine further use. We expect that there will be need for some financial support for at least ten more years. The FWS is currently renewing its agreement with the CRIT for use of the facility.

**Work Task A2:****PIT Tag Procurement**

<b>Point of Contact:</b>	Tom Burke, LC-2300	(702) 293-8788
<b>Purpose:</b>	Acquire fish tagging materials for native fishes to be released into the lower Colorado River. A percentage of the introduced fish under the HCP will be tagged in order to evaluate their movements and habitat preferences.	
<b>Conservation Measures:</b>	RASU3, RASU6, BONY 3 and BONY5	
<b>Long-term Goal:</b>	The two principal fishes to be reared and stocked are the razorback sucker and the bonytail. During the first 10 years of the program, most of the native fish will be tagged with PIT tags to allow for maximum information gathering upon recapture. This survival and distribution data will be used for future decision making. Alternative methods of tagging will be evaluated for effectiveness over the long-term.	
<b>FY04 Obligation:</b>	\$54,762 was obligated for the procurement of PIT tags.	
<b>FY04 Accomplishment:</b>	10,000 tags of 400 kilohertz frequency and 5,000 tags of 125 kilohertz frequency were purchased to tag native fish currently being reared.	
<b>Project Description:</b>	<p>The Fish Augmentation Program requires all fishes to be marked in some way to facilitate identification upon recapture. To assist with survival studies, the PIT tags (passive integrated transponder tags), are inserted into the fish's body cavity. Each tag contains a coil of wire and a computer chip. A magnetic field will generate enough electricity to download the tag number. Theoretically the tags should last indefinitely. Reclamation and the U.S. Fish and Wildlife Service have been using these tags successfully for more than ten years on the lower Colorado River. In FY04 the tag order included both 400 khz and 125 khz tags to continue the existing tagging protocol. Additional tags will be acquired as needed in future years. The tags that will be purchased in FY05 will be 138 khz. The tag reader manufactured for this frequency is expected to also read 125 and 400 khz tags.</p>	

<b>Work Task A3:</b>	<b>Electro-Fishing Boat Procurement</b>
<b>Point of Contact:</b>	Tom Burke, LC-2300 (702) 293-8788
<b>Purpose:</b>	Acquire an electro-fishing boat for monitoring of native fishes released into the lower Colorado River. Electro-fishing is one of many tools used in fishery management. The electro-fishing equipment can be used to either drive fish and/or directly capture fish.
<b>Conservation Measure:</b>	MRM1
<b>Long-term Goal:</b>	The two principal fishes to be reared and stocked are the razorback sucker and bonytail. This electro-fishing boat will facilitate activities related to assessing survival of these fishes and recording their distribution. Such survival and distribution data will be used for future decision making.
<b>FY04 Obligation:</b>	\$58,823 was obligated for procurement of the electro-fishing boat.
<b>FY04 Accomplishment:</b>	The electro-shocking fishing boat was delivered to Reclamation and put into service.
<b>Project Description:</b>	The Fish Augmentation Program requires the rearing and stocking of over 1.2 million native fish into the lower Colorado River. The purchase of an electro-fishing boat will provide another cost effective method for the collection of data on the status of extant fish populations as well as the survival of reared and repatriated fishes. The vessel is a state of the art electro-shocking system built by Smith Root of Seattle, Washington. The firm is currently the only supplier of such equipment. Electrofishing had been limited in recent years was due to the need for wild larvae. The Lake Mohave Native Fish Work Group decided that electrofishing would not be used during the March Razorback Roundup, because it may cause the spawning fish to expel their gametes and we needed these fish to spawn and produce young. Genetic analyses of the captured fish show that we have now captured adequate genetic representation of the old stock. We now feel that the quantity of young fish in the lake are being miscalculated or underestimated because the young fish are net shy and have good eyesight. We have decided to again use electrofishing as a monitoring tool. We reinstated electrofishing in Lake Havasu last spring, in Lake Mohave this last fall and again in April. Also, this newly purchased boat is a primary collection tool for the razorback sucker survival study being



conducted in the lower Colorado River. Next year we expect to conduct electrofishing surveys along the river below Davis Dam and in Topock Gorge.

<b>Work Task B1:</b>	<b>Bat Surveys and Monitoring Protocol</b>
<b>Partners:</b>	Maturango Museum of the Indian Wells Valley Bureau of Reclamation
<b>Point of Contact:</b>	John Swett, LC-2320                      (702) 293-8574
<b>Purpose:</b>	Determine existing bat occurrence along the lower Colorado River (LCR) and develop a survey protocol to monitor bat populations, focused on LCR MSCP covered and evaluation species.
<b>Conservation Measure:</b>	MRM1 and MRM2
<b>Long-term Goal:</b>	A final report is due in 2005 outlining current bat occurrence and providing a standardized monitoring protocol. Under the program, periodic surveys will be conducted for LCR MSCP covered and evaluation species, and monitoring for bat use will occur at riparian restoration sites using the protocol established by this grant agreement.
<b>Project Description:</b>	In 2002, the LCR MSCP funded initial surveys to evaluate bat occurrence within the proposed project area through Interim Conservation Measure funding. Funding limits did not allow for a complete picture of bat populations along the LCR. This work task provided the funding to complete the baseline surveys using the same principle investigator and standardized bat survey protocols.
<b>FY04 Obligation:</b>	\$55,000 was obligated to the Maturango Museum of Indian Wells Valley through a grant in FY04.
<b>FY04 Accomplishment:</b>	The grant was awarded, and surveys were conducted throughout the calendar year. Quarterly reports were submitted to Reclamation by the Museum.

**Work Task B2: Southwestern Willow Flycatcher (SWFL) Prey Base Study**

**Partners:** University of California-Davis (UCD)  
Bureau of Reclamation

**Point of Contact:** John Swett, LC-2320 (702) 293-8574

**Purpose:** Investigate southwestern willow flycatcher (SWFL) diet by acquiring fecal samples and sampling insects within occupied SWFL breeding sites along the lower Colorado River. Knowledge of the SWFL prey base utilized will be used in the development of habitat and the criteria by which habitat will be judged suitable for the species.

**Conservation Measure:** MRM1

**Long-term Goal:** A report on SWFL diet will be completed in FY05. Further studies will be implemented as needed, and in conjunction with other similar studies, to determine potential differences in prey species and abundance between occupied and unoccupied SWFL breeding sites. This information will be used in the development of habitats under the LCR MSCP for this species.

**FY04 Obligation:** \$41,032 was obligated for the agreement.

**FY04 Accomplishment:** Insect and fecal samples were obtained and delivered to UCD during the 2004 field season. UCD provided Reclamation with the analysis of insect and fecal samples.

**Project description:** Reclamation obtained insect samples from four sites used as demography study sites by SWCA Environmental Consultants (SWCA) under the contract initiated in 2003. In addition, fecal samples were obtained from SWFLs captured by SWCA during banding at these demography study sites. Insects and fecal samples were sent for identification. While this is similar to other research carried out at higher elevations in Arizona, this research is more specific to the LCR MSCP planning area.

<b>Work Task C1:</b>	<b>Vegetation Type Mapping &amp; Backwater Evaluation</b>
<b>Point of Contact:</b>	John Swett, LC-2320 (702) 293-8574
<b>Purpose:</b>	Document the system status of riparian and marsh communities at LCR MSCP initiation. Develop criteria for classifying backwaters for fish and wildlife habitat values. Periodic vegetation type mapping is a crucial tool which is used to monitor and evaluate the condition of the lower Colorado River (LCR) habitats.
<b>Conservation Measure:</b>	MRM2
<b>Long-term Goal:</b>	In FY05, BIO-WEST will complete the aerial image processing, type map the vegetation within the LCR MSCP project boundaries, and develop criteria to rate backwaters for fish and wildlife habitat value. Periodic updates of the vegetation type maps will be conducted under the system monitoring requirement of the LCR MSCP Habitat Conservation Plan.
<b>FY04 Obligation:</b>	\$400,000 was obligated to BIO-WEST, Inc. in FY04.
<b>FY04 Accomplishment:</b>	Reclamation entered into a contract with BIO-WEST to acquire digital aerial photography and initiate triangulation/orthorectification, and color balancing/image mosaicing of the lower Colorado River.
<b>Project Description:</b>	<p>Riparian and marsh vegetation has been characterized using a classification scheme initially designed by Anderson and Ohmart in 1976. Periodic updates have been conducted along the LCR to help monitor changes in the riparian ecosystem. The most recent type maps were derived by using imagery acquired in 1997. These acre figures were used throughout the LCR MSCP planning process. This project will provide system status at the initiation of LCR MSCP implementation. Periodic updates will be conducted over the course of the LCR MSCP to help monitor the system status. While this information may be occasionally accessed by other parties, its primary purpose is for MSCP system monitoring.</p> <p>In the mid-1980's, BIO-WEST conducted a study for Reclamation on the backwaters along the LCR between Davis Dam and the Southerly International Boundary. Existing backwaters were mapped and a model was developed to classify general wildlife and fish habitat values for these backwaters. These maps were updated in 2000. The mapping and classification system</p>

developed during these studies have allowed Reclamation to determine the extent of backwaters, to assess existing backwaters for habitat value, and to determine factors necessary when constructing backwaters for fish and wildlife. This project will update the backwater maps and further refine rating criteria for fish and wildlife values of backwater habitat, especially for LCR MSCP covered species. These data and models will be used to prioritize backwater restoration projects.

<b>Work Task C2:</b>	<b>Lower Colorado River Native Fishes Database Management</b>
<b>Partners:</b>	Arizona State University (ASU) Bureau of Reclamation
<b>Point of Contact:</b>	Tom Burke, LC-2300 (702) 293-8711
<b>Purpose:</b>	Maintain data for native fish reared under the LCR MSCP Program and released into the lower Colorado River (LCR).
<b>Conservation Measure:</b>	MRM1 and MRM2
<b>Long-term Goal:</b>	The two principal fishes to be reared are the razorback sucker and the bonytail. Both species are long-lived (30+ years), so the database will need to be maintained over the 50 year life of the program. In FY07, the program will be reviewed and, if needed, a modification will be initiated.
<b>FY04 Obligation:</b>	\$235,000 was obligated under a grant to ASU.
<b>FY04 Accomplishment:</b>	A grant was awarded to ASU in September 2004 to set up a database to record the capture of native fish for the LCR MSCP Program in 2005. This database is an addition to the database system for native fishes in Arizona that is maintained by ASU. This addition is specifically for the MSCP. The grant provided funding to cover the cost for initializing the addition and for three years of data entry, management, and data retrieval.
<b>Project Description:</b>	This project will track stocked fish for the LCR MSCP. ASU currently maintains a database for native fishes in Arizona. Various agencies, including Reclamation, pay into this program. Reclamation is paying the portion for the LCR MSCP. Funds provided will cover fishes stocked into the LCR for the MSCP and provide a point of contact for future recapture to assess survival and distribution. Reclamation's use of this database system has been ongoing and began in 1992 as part of the Lake Mohave Native Fish Repatriation Program. It was expanded to include the fishes reared and released under the Lake Havasu Fishery Improvement Project, and it was again expanded to cover fishes stocked into the system by Reclamation under the 1997 Biological Opinion for routine operation and maintenance of the LCR.

<b>Work Task D1:</b>	<b>Beal Lake Riparian, Havasu National Wildlife Refuge</b>
<b>Partners:</b>	U.S. Fish and Wildlife Service Bureau of Reclamation
<b>Point of Contact:</b>	Barbara Raulston, LC-2455 (702) 293-8788
<b>Purpose:</b>	Demonstrate restoration techniques (using areas covered by material from dredging of Beal Lake) with native riparian vegetation to create habitat for willow flycatchers, yellow-billed cuckoos, black rails and other LCR MSCP covered species. Restoration techniques being evaluated include; hydroseeding, broadcast seeding, poles, and potted plants.
<b>Conservation Measure:</b>	Develop techniques in support of all covered species habitat creation requirements.
<b>Long-term Goal:</b>	This site has been engineered to provide facilities to allow a wide range of restoration research tasks to be conducted and monitored. The information obtained from the seeding, planting, and flooding regimes explored on this site will be directly applicable to other restoration projects. The total estimated restoration on the site is approximately 100 acres of cottonwood and willow, 100 acres of mesquite, and 5 acres of marsh.
<b>Location:</b>	In Arizona proximate to Topock Marsh on Havasu National Wildlife Refuge (NWR) located just south of Needles, CA.
<b>Obligation:</b>	\$1,232,267 for in-house staff and contract support, prior to and including FY04
<b>FY04 Accomplishment:</b>	Development of the site started in FY01 and will continue through FY06. Tasks completed through FY04 include: (1) procurement and installation of a pump and platform; (2) clearing, leveling and installation of an irrigation system for Phase I; (3) clearing, leveling, and installation of an irrigation system for Phase II; (4) experiments with 55 acres of cottonwood, willow and mesquite in Phase I; and (5) experiments with 48 acres of cottonwood, willow, and mesquite in Phase II.

**Project Description:**

Develop up to three distinct areas adjacent to the lake to evaluate and demonstrate various riparian restoration techniques and their watering requirements. Experimental testing for the establishment of cottonwood, willow and mesquite is underway and is expected to continue through FY09. At that point the site will be re-evaluated and a long term plan determined..

Phase 2 of the project is partially planted with 50 acres of cottonwood, willow and mesquite; the remaining acres will be planted in 2005.

Phase 3 is approximately 80 acres and designs have been completed for the site to be leveled and fitted with irrigation infrastructure in the future. If completed, the site would be planted mostly with mesquite. Areas within all phases that contain saline soils will be planted with either mesquite or salt-tolerant shrubs and/or wetland plants such as bulrush, depending on salinity levels.



<b>Work Task D2:</b>	<b>Pintail Slough, Havasu National Wildlife Refuge</b>
<b>Partners:</b>	Ducks Unlimited, Inc. U.S. Fish and Wildlife Service Bureau of Reclamation
<b>Point of Contact:</b>	Kim Kirkland, LC-2451 (702) 293-8151
<b>Purpose:</b>	The site will be used to demonstrate restoration techniques with native riparian vegetation to create habitat for willow flycatchers, yellow-billed cuckoos, black rails and other LCR MSCP covered species.
<b>Conservation Measure:</b>	Develop techniques in support of all covered species habitat creation requirements.
<b>Long-Term Goal:</b>	The goal is to develop restoration techniques. Primary technique used here has been mass planting pole stock. Future discussions with the Refuge will determine whether habitat creation is going to be requested and only if there is a long term commitment for operation and maintenance. This area will provide a suitable habitat which will benefit the southwestern willow flycatcher and the yellow-billed cuckoo, by restoring up to 88 acres of riparian breeding habitat. This large increase in available breeding habitat should enhance the flycatcher population and provide sufficient acreage to support breeding cuckoo at the refuge. The habitat value of the riparian areas located adjacent to seasonal wetlands will be enhanced will provide additional foraging opportunities.
<b>Location:</b>	Pintail Slough is located in Arizona at the north end of Topock Marsh on Havasu National Wildlife Refuge (NWR) which is just south of Needles, CA.
<b>Obligation:</b>	\$95,000 for a grant to Ducks Unlimited. The funding was obligated in FY2001; however, only \$35,000 was expended in FY02 and the remainder is anticipated to be expended in FY05.
<b>FY04 Accomplishment:</b>	To date, the main concrete irrigation canal has been lined, but the seasonal wetland has not yet been contoured. Due to extenuating circumstances, including weather, the agreement has been extended and site-leveling is expected to be completed in FY04-05.
<b>Project Description:</b>	Riparian restoration work at Pintail Slough is being conducted with a final goal of providing habitat required under the grant agreement with Ducks Unlimited. Work

will consist of improving a water conveyance and control system and expanding the acreage of riparian and seasonal wetland habitats. Improvements to the water system will focus on maximizing the use of the existing pump system by concrete lining the main canal, establishing an independent fill and drain system for each unit in the slough, and improving water distribution and drainage for each unit. Habitat work will focus on removing nonnative vegetation, recontouring select areas to facilitate water distribution and drainage, and restoring native riparian and seasonal wetland vegetation.

<b>Work Task D3:</b>	<b>Farm Unit #1, Cibola National Wildlife Refuge (Cottonwood Genetics Study)</b>
<b>Partners:</b>	Northern Arizona University U.S. Fish and Wildlife Service (FWS) Bureau of Reclamation
<b>Point of Contact:</b>	Gregg Garnett, LC-2455 (702) 293-8644
<b>Purpose:</b>	Research project to investigate the influence of genetic diversity in Fremont cottonwood on community diversity in the context of habitat restoration. One result of this study will be to determine the genetics of the existing stands of cottonwoods along the lower Colorado River (LCR). Concerns have been raised over the introduction of unknown or exotic genetic strains of cottonwoods.
<b>Conservation Measures:</b>	Develop techniques in support of all covered species habitat creation requirements and a potential site for creation of habitat.
<b>Long-Term Goal:</b>	Use the information gained from this study to select trees with genetically superior traits with respect to growth, reproduction, survival, and the habitat quality they influence. The experimental plot will supply stock of known genetic diversity and origin for future restoration efforts.
<b>Location:</b>	Two 20-acre active alfalfa fields within Arizona in Farm Unit #1 on Cibola National Wildlife Refuge (NWR). Cibola NWR is located just south of Blythe, CA.
<b>FY04 Obligation:</b>	\$110,004 for Northern Arizona University (NAU) through a cooperative agreement
<b>FY04 Accomplishment:</b>	Funding for the entire 5-year period was obligated in FY04. Two active farm fields in Farm Unit #1 have been selected as the location of the experimental plots.
<b>Project Description:</b>	Information is lacking regarding the relative levels of genetic diversity within the remaining cottonwoods along the lower Colorado River and the impact of this genetic diversity as it pertains to community structures and ultimately, wildlife diversity within restoration sites. In an effort to increase knowledge and success in creating functional wildlife habitat, Reclamation's restoration group solicited the scientific community for proposals to investigate these relationships. NAU was awarded a cooperative agreement and contributed matching funds to undertake these investigations. Their

project is twofold and includes: (1) the identification of genetic stocks of Fremont cottonwoods that possess traits including superior growth, reproduction, and survival in a typical restoration site, and (2) the identification of stocks of Fremont cottonwood trees that support diverse biological communities, including communities that sustain wildlife species especially LCR MSCP covered species.

The first part of the project includes genetic screening of tissues collected from stands of Fremont cottonwood trees across the southwestern U.S. The second involves creating an experimental plot to propagate representatives of the collected genetic stock and monitor the expressions of these different genotypes. Cibola NWR is providing approximately 40 acres (in two roughly 20-acre fields) of agricultural land with water and irrigation infrastructure for NAU to establish their experimental cottonwood plot.

**Additional Tasks:**

These tasks include tissue sampling and genetic screening of cottonwoods and planting of the experimental plot in the spring of 2005. Monitoring of growth, survivorship, and biological communities will commence after the plot is established and continue until 2009.

<b>Work Task D4: Tribes</b>	<b>Ahakhav Tribal Preserve, Colorado River Indian Tribes</b>
<b>Partners:</b>	Colorado River Indian Tribes Bureau of Reclamation
<b>Point of Contact:</b>	Barbara Raulston, LC-2453 (702) 293-8788
<b>Purpose:</b>	Two distinct projects are underway at the Tribal Preserve. First, restoration technique testing is underway on agricultural fields which will test planting, maintenance and irrigation methods to assess success at producing cottonwood and willow in a large habitat block. Secondly, a research and development agreement was awarded to the Colorado River Indian Tribes (CRIT) for research and development which will test planting, maintenance and irrigation methods on CRIT farmlands. Future discussions with the CRIT will determine whether habitat creation is going to be requested and only if there is a long term commitment for operation and maintenance.
<b>Conservation Measures:</b>	Develop techniques in support of all covered species habitat creation requirements and a potential site for creation of habitat.
<b>Long-term Goal:</b>	Initiate and evaluate a suite of restoration research techniques to reduce the cost of restoration while increasing the value of the restored habitat. Restoration work at the Preserve is being conducted with a final goal of providing habitat required under the LCR MSCP.
<b>Location:</b>	The Ahakhav Tribal Preserve is located on the lower Colorado River south of Parker, AZ.
<b>Obligation:</b>	\$1,037,791 in total of which \$200,000 was obligated in FY01 and \$200,000 was obligated in FY03 specifically for habitat creation and the remaining \$673,791 for a Research and Development (R&D) Agreement was obligated in FY04.
<b>Accomplishment:</b>	In FY01-03 approximately 135 acres of cottonwood and willow were planted on fallow agricultural lands.  In FY04 the competitive cooperative R&D Agreement process was completed and awarded to the CRIT in September of 2004. .
<b>Project Description:</b>	In 1995, the Colorado River Indian Tribes established the Preserve to protect fish, wildlife and plants in

riparian areas along the river. The Preserve has become an important gathering place for Tribal members and the public for recreational and educational purposes. Restoration projects to improve native riparian habitat have been successful here.

*Riparian Habitat Creation.* Phase I began in 2001 when 73 acres were cleared of non-native vegetation, leveled, and subdivided into 3-acre parcels to allow for efficient irrigation. Soil analysis was completed, lined irrigation canals were installed, and cuttings of local plant stock were collected to begin providing propagates for planting. Over 7000 cottonwood, willow and mesquite trees 18-24” in height were planted in November 2001 and April 2002. Monitoring is being conducted by personnel at the Ahakhav Tribal Preserve.

Phase II converted an additional 62 acres of fallow agricultural lands to cottonwood and willow. Phase I and II are both located adjacent to the tribal preserve.

*Research and Development Agreement.* The project will utilize four areas to test different mass planting techniques, irrigation methods, weed control, seed collection, and site maintenance. All work will be done in an effort to find the most successful, efficient, and cost-effective methods for various types of habitat creation projects. The project will utilize a variety of methodology and procedures from start to finish. Adaptive management of the project restoration effort will include standard restoration efforts and modern farming techniques. Ahakhav staff will closely document all steps so they will easily be able to be recreated and expanded upon in the future. The end result of this project will be approximately 120 acres of newly created habitat, a 135-acre maintenance project, and valuable data on many aspects and methods of the restoration process.

<b>Work Task D5:</b>	<b>Butler Lake, Imperial National Wildlife Refuge</b>
<b>Partners:</b>	U.S. Fish and Wildlife Service Bureau of Reclamation
<b>Point of Contact:</b>	Nathan Lenon, LC-2457 (702) 293-8015
<b>Purpose:</b>	Assessment of an existing backwater. The backwater has been identified as a potential location for a self-sustaining population of native fish. However, water quality is poor and may require substantial improvement. If successful, this project would provide 43 acres of habitat for razorback sucker and bonytail.
<b>Conservation Measures:</b>	Potential site for creation of habitat for the covered species.
<b>Long Term Goal:</b>	Identify and address the source of poor water quality in the backwater and explore management options that could ensure suitability of the backwater for native fish. These management options would also be applicable to other backwaters that may be considered for inclusion in the LCR MSCP program
<b>Location:</b>	Imperial National Wildlife Refuge (NWR) in Arizona at River Mile 61.5.
<b>FY 04 Obligation:</b>	\$6,673 for in-house preparation of the assessment.
<b>FY04 Accomplishment:</b>	Performed preliminary habitat assessment, researched possible approaches for habitat restoration. In October of 2004, a report <i>Butler Lake Native Fish Refugium, Preliminary Assessment</i> was completed and distributed to project stakeholders. This report described the lake's ecology, probable causes of its poor water quality, and several alternative approaches for restoring the lake.
<b>Project Description:</b>	Butler Lake, a 43-acre floodplain lake, is seepage-driven, with no known surface connection to the LCR, or any other body of water. The lack of freshwater flushing has caused the lake to become hypereutrophic (an advanced state of nutrient enrichment).  Working jointly with Imperial NWR, Reclamation evaluated Butler Lake as a potential site for establishing a native fish refugium. This analysis consisted of a comprehensive limnological analysis, general surveys for fish and waterfowl, as well as a GIS-based bathymetry map. To date, more than one year of baseline monitoring has been completed, which is a minimal requirement in

the restoration of an isolated aquatic system. This data will provide: (1) a better understanding of what drives the aquatic system from an aquatic ecology perspective, and (2) a baseline from which to measure the success of any potential restoration activities.



<b>Work Task D6:</b>	<b>Pratt Agricultural Lease</b>
<b>Partners:</b>	Pratt Farms Bureau of Land Management-Yuma, AZ Bureau of Reclamation
<b>Point of Contact:</b>	Barbara Raulston, LC-2453 (702) 293-8788
<b>Purpose:</b>	The overall project is to demonstrate restoration and management techniques with native riparian vegetation to create habitat for Southwestern Willow Flycatchers (SWFL), and provide vegetation cuttings and seed for use at other restoration sites along the lower Colorado River (LCR). The purpose for this specific request is the payment of costs to provide irrigation of the site during FY04.
<b>Conservation Measure:</b>	Develop techniques in support of all covered species habitat creation requirements.
<b>Long-term Goal:</b>	The research is intended to provide site management criteria which would be applicable on other conservation opportunity areas. For example, the tracking of water diversions necessary to create suitable conditions in cooperation with bird monitoring will provide an estimate of the water requirements of future restoration projects. The payment for irrigation will be a yearly cost into the future.
<b>Location:</b>	12-acre agricultural site adjacent to Laguna Dam in southern Arizona.
<b>FY04 Obligation:</b>	\$5,088 for irrigation services provided by Pratt Farms.
<b>FY04 Accomplishment:</b>	During FY04 the site was irrigated frequently throughout the SWFL breeding season by Pratt Farms to simulate nesting conditions. Bird surveys and banding are being conducted in conjunction with management actions to determine when and if SWFLs use the site.
<b>Project Description:</b>	In 1999, BLM removed 12 acres from a contiguous 58 acre agricultural lease, and BLM and Reclamation restored the area with cottonwood and willow. Five years of growth have produced a healthy stand of riparian habitat and migrating SWFL use the site. However, the willow and cottonwood trees are maturing into a gallery forest that is devoid of an understory, making it largely unsuitable habitat for SWFLs. Random patches of vegetation are now being cut in order to produce different size classes and a dense shrub layer

to encourage nesting by this species. In the near future, other areas adjacent to the site will also be restored to native riparian habitat in partnership with BLM.

The current Management Plan and commitments in the associated Biological Assessment agreed upon by Reclamation, FWS and BLM ensures that the following activities are implemented in a manner that is compatible with management of the site for wildlife. Items addressed in the Management Plan include: (1) monitoring, management, and protection of the site as habitat for the endangered SWFL and other native species; (2) demonstration of irrigation, planting, and vegetation management; (3) research and monitoring of various aspects of riparian vegetation; and (4) harvesting of cuttings, poles and seeds. Costs of the management plan beyond FY04 will be included in the LCR MSCP future budgets