

Restoration of Cienega Creek Bottomlands

Cienega Creek Natural Preserve, Pima County, Arizona

Background

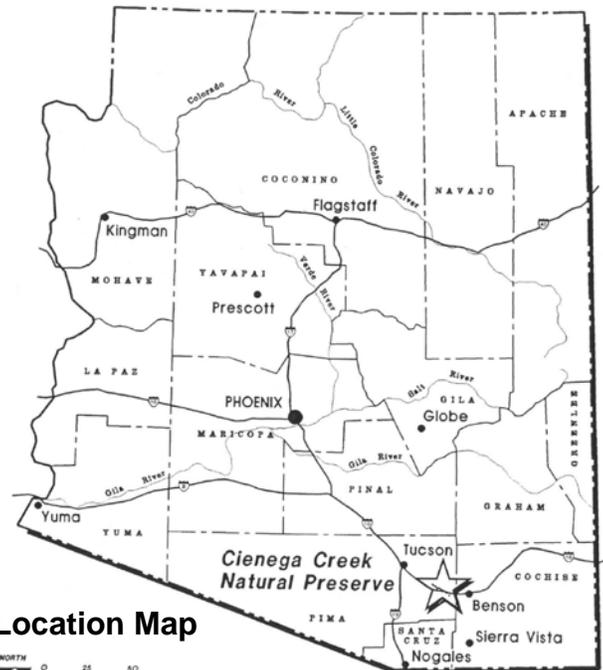
The Cienega Creek Natural Preserve (Preserve) was established by the Pima County Board of Supervisors in 1986 for the purposes of preserving and protecting the natural and scenic resources of the property for benefit of Pima County, its resources, residents and visitors. The Preserve's management plan (1994) identified several areas that were previously disturbed as sites where native plant cover would be reestablished and riparian ecosystems would be improved as grants or other funding sources become available. This project was developed using a federal Assistance Agreement from the U. S. Department of the Interior, Bureau of Land Management.

Location

The project is located on 880 acres of District-owned land within the preserve, south of Interstate 10. The lands were purchased from Empirita Ranch Partnership, Inc. in 1991. The cattle ranch still operates today under the guidance of the Parsons Company Inc., the land steward on the property.

Baseline Surveys

A number of surveys were conducted to provide clearances and guidance for construction activities, as well as to characterize pre-construction conditions of the watershed. Pima County Survey identified and field marked the corners of the District-owned properties, while District staff used a hand-held Global Position System (GPS) unit to identify and flag property boundaries to be fenced. Archeological clearance for fence line construction was obtained through a study conducted by Archeological Research Services, Inc. (2004). Biological clearance was obtained through the U.S Fish and Wildlife Service, who provided guidance for fence line construction activities to avoid disturbance of the cactus ferruginous pygmy-owl, the only listed species occurring in the project area. Soil surveys from Statistical Research, Inc. were conducted in the northernmost pasture to help determine the area's potential for restoration (both natural and man-made). Vegetation and watershed condition were surveyed along four transects within the historic pastures and adjacent floodplain near Empirita Ranch headquarters to measure pre-project conditions for soil cover, plant species diversity, soil stability and erosion potential.



Location Map

NORTH
0 25 50
0 50 100
MILE
KILOMETER
Pima County Department of
Transportation and Flood Control District



Jeffrey Homburg documenting the soil profile of Trench 1 near the northwest corner of the Northern Field. Statistical Research, 2004

Construction Activities

Construction activities were performed to remove non-native species threats and stressors from the project site. New fencing was installed to keep cattle out of the bottomlands, where grazing is prohibited. The cattle were entering District lands from neighboring State Lands that are leased for grazing to Parsons Company, Inc. The O'Leary Windmill well was equipped with a solar pump connected to a 5000-gallon storage tank that feeds into a watering trough outside of the District-owned property. The watering trough provides an alternative water source for cattle to help compensate for exclusion from the bottomlands and may be used by native wildlife. A large clump of giant reed (*Arundo donax*) was removed from a location near the Empirita Ranch Headquarters. Giant reed is an invasive, non-native grass (one of the largest in the world) that can spread quickly through riparian areas and out-compete most native vegetation.

Resource Monitoring

Resource monitoring was conducted to help determine the effect of construction activities on the project site. Monthly precipitation was recorded by the District's rain gauge at the Interstate 10 bridge crossing and by the land steward at the Empirita Ranch headquarters. Groundwater levels near the center of the project site were measured on a monthly basis by Pima Association of Governments staff for the District. Stream flow events were recorded by the District's stream gauge at Interstate 10. Condition of the watershed was monitored by District staff at four sites on the Cienega Creek floodplain near Empirita Ranch. Condition of the creek and associated riparian vegetation was surveyed by District staff in 2005 and compared with a previous study by Arizona Department of Environmental Quality in 2002.

Roadway Evaluation

An evaluation was conducted to assess the effects of the existing roadway network on resource management within the project area. In all, four roads were determined to serve some purpose for management of the Preserve and/or ranch operations. Drainage and erosion problems were evaluated along these roads and wildcat roads were identified during field visits. Recommendations were provided by District staff to help solve these issues.



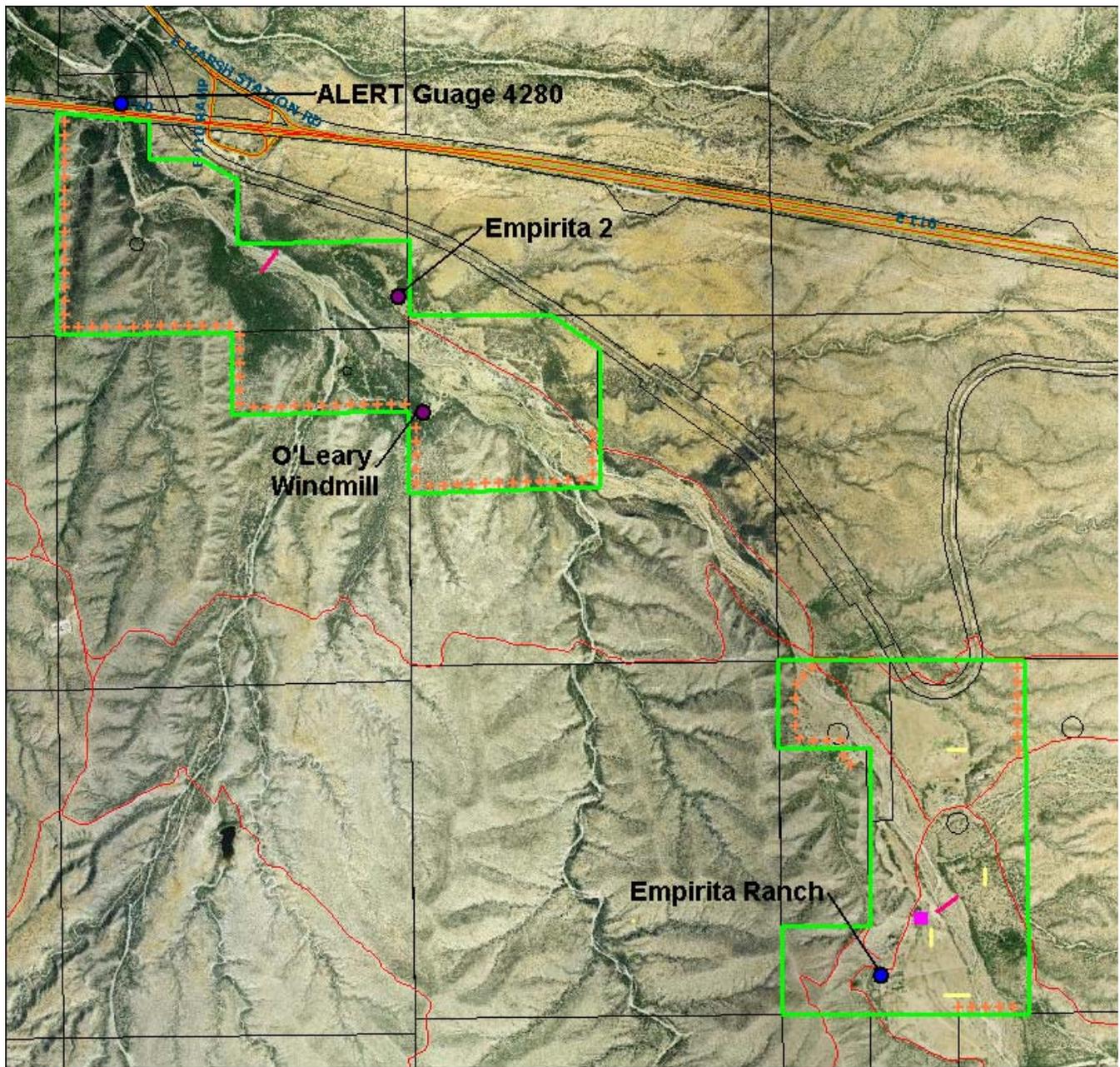
Livestock water development: water storage tank (top) and drinker (below)



Watershed condition monitoring transect along Cienega Creek in floodplain east of Empirita



RESTORATION OF CIENEGA CREEK BOTTOMLANDS PROJECT



- Property Boundaries
- Riparian Condition Transect
- Watershed Condition Transect
- Arundo Removal
- New Fencing
- Well
- Rain Gauge
- Roadway



scale 1 : 23,750

