



# Staff Report

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**Agenda Item:** Letter of Support for the Tavasci Marsh- Wetland Restoration Project at Tuzigoot National Monument - Approval of a Letter of Support to the Arizona Water Protection Fund Commission for the Tavasci Marsh- Wetland Restoration Project at Tuzigoot National Monument.

**Sponsored By:** Mayor Doug Von Gausig

**Staff Contact:** Walt Good, Deputy Town Clerk

**Meeting Date:** June 10, 2008

**Background:** Goal of the project is to restore and protect eight acres of Tavasci Marsh. Supporting documentation and copy of proposed letter are enclosed with this staff report.

**Recommendation:** Approval of the Mayor to sign and send letter of support on behalf of the Town Council for the Tavasci Marsh- Wetland Restoration Project to the Arizona Water Protection Fund Commission.

# TOWN OF CLARKDALE

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Arizona Water Protection Fund Commission  
Arizona Department of Water Resources  
3550 N. Central Avenue  
Phoenix, Arizona 85012

June 13, 2008

Re: Tavasci Marsh Restoration Project, Tuzigoot National Monument

Dear Arizona Water Protection Fund Commissioners:

The Town of Clarkdale, which is adjacent to Tuzigoot National Monument and Tavasci Marsh, is proud to express our support for the Tavasci Marsh – Wetland Restoration Project at Tuzigoot National Monument by the National Park Service. We understand that the purposes of the project are to develop a conceptual design to restore native plant communities and wildlife habitat diversity and to implement a pilot project. As a stakeholder, we appreciate the opportunity the project provides to restore and enhance aquatic and wetland community diversity and wildlife habitat in this unique desert wetland, which have been lost due to artificial manipulation of the flow of Pecks Lake's water through the marsh and a hundred years of farming, grazing, burning, and ditching.

The National Park Service has begun public scoping to restore Tavasci Marsh. The conceptual design and pilot project to re-establish a native plant community, such as a cottonwood-willow association, will be incorporated into the final plan and environmental assessment.

Over the past decade there has been an increase in cattail communities that resulted in a loss of cottonwood/willow forests, sedge/rush herbaceous plant communities, and other aquatic/riparian habitats. This restoration effort will help the National Park Service manage invasive plant species by reintroducing native, non-invasive vegetation. The project will provide educational opportunities through the establishment of interpretive plots and trails for visitors and public outreach opportunities.

The Town of Clarkdale recognizes the investment in this project requested of the Arizona Water Protection Fund and is enthusiastic about the opportunity to provide support and assistance for restoring the Tavasci Marsh – Wetland Restoration Project. We agree to work closely with the National Park Service and other stakeholders to see this project to completion and to help with its success into the future.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Doug Von Gausig  
Mayor

# **Tavasci Marsh Riparian Enhancement Project**

Tuzigoot National Monument,  
Tavasci Marsh Unit

**DRAFT**  
**AWPF Application Package**

Submitted by:  
Natural Channel Design, Inc.  
206 S. Elden St  
Flagstaff, Az. 86001

## **EXECUTIVE SUMMARY**

The goals of the project are to restore and protect wetland marsh vegetation and wildlife habitat; restore proper hydrologic conditions/function; and to decrease the negative impacts of monotypic vegetation on eight acres of Tavaschi Marsh. Accomplishing stated goals will also create diverse, high quality wildlife habitat for several species, including the Southwest river otter, a federally listed species of concern. The project will act as a pilot project to jumpstart additional restoration efforts at Tavaschi Marsh.

The National Park Service (NPS) recently acquired ownership of the 83 acre Tavaschi Marsh from Phelps Dodge. Since being acquired, the marsh has been managed through Tuzigoot National Monument. The NPS is interested in managing a monotypic stand of cattails to create high quality wildlife habitat by increasing plant diversity and reintroducing native marsh plant communities. The NPS will work in collaboration with Natural Channel Design (NCD) to develop a plan to achieve project goals and objectives.

An empirical design approach will be used to develop design alternatives for restoration efforts at Tavaschi Marsh. This approach aims to improve ecosystem function, pattern, habitat, and conditions using a design that imitates "natural conditions." An empirical design approach seeks to identify and compare the potential of the system (through local reference sites) and the existing conditions to develop a plan to move the existing conditions to the desired reference conditions. The approach does not use a set design, but develops a plan based on site specific morphology and adaptive management.

Past management activities have led to Tavaschi Marsh becoming a dense monotypic community of cattails with little open water area. This monotypic stand of cattails has devoured native cottonwood/willow habitat, shoreline habitat, and important transitional ecotone habitat. Native riparian vegetation will be planted throughout the project area to create a gradual habitat transition from open water to upland mesquite bosque. Additional alteration to the outlet channel of the marsh may be required for stabilization and creation of a "riparian zone" back to the river.

## PROJECT OVERVIEW

### ***Background***

Freshwater marshes act to purify waters, as well as provide important habitat for a variety of plant and animal species. Marshes are heavily influenced by the surrounding environment, and are a function of the type and deposition rate of sediment, supply of nutrients, and movement of water. These characteristics determine plant composition, species richness, and overall health and productivity of the marsh. Typical ecosystems associated with freshwater marshes include deep open water, wetted shoreline, sedge/rush, cattail/bulrush, cottonwood/willow, grasslands, and mesquite bosques. Usually, these ecosystem types gradually transition from one to the next. The zone between each ecosystem type is a transition zone (or ecotone). Ecotones include characteristics of each zone to create a unique ecosystem that is vital to many wildlife species.

Tavasci Marsh is a natural wetland directly downstream of Pecks Lake near the Verde River in Clarkdale, Arizona. It was named for a pioneer family who leased land from the mining company for a dairy operation. The marsh was drained to provide more land for grazing and farming. Waters have since been returned to the marsh. The marsh was owned by Phelps Dodge, and managed by Arizona Game and Fish Department. Recently, eighty-three acres of Tavasci Marsh was obtained by the National Parks Service and is being managed as part of Tuzigoot National Monument.

Thousands of years ago Tavasci Marsh and Pecks Lake were directly connected to the Verde River, but the river slowly changed course, and abandoned the meander that connected the river to the marsh and lake. Prior to its failure in a January 2008 flood, a diversion from the Verde River supplied water to Pecks Lake, with excess flows from the lake routed through the marsh and back to the Verde River. These excess flows were somewhat beneficial to the marsh, but not considered essential to maintaining the marsh and frequently created difficulties in conveying different volumes of water through the marsh. Currently, the marsh is fed primarily by Shea Springs located along the northwest side of the marsh. The flows are estimated to be 1.2 to 1.6 cubic feet per second (cfs) and are deemed sufficient for maintaining the freshwater marsh.

The vegetation at Tavasci Marsh has been compromised from historic management practices. Today, the marsh is dominated almost exclusively by cattail, with little to no open water habitat/conditions. Tavasci Marsh is also lacking the gradual transition from ecotone to the next. Vegetation at Tavasci marsh moves directly from cattail habitat to mesquite bosque habitat. Cattails generally part of marsh ecosystems. However, they usually occur as scattered sterile plants. The marsh is lacking several natural habitat types including cottonwood/willow, shallow water, and shoreline habitats. In the early 1990's, an Arizona Game and Fish (AZGF) project created a small area of open water habitat in the downstream section of the marsh.

The purpose of the project is to 1) restore and enhance native wetland plant communities, 2) manage invasive plant species, 3) create diverse high quality wildlife habitat that is associated with freshwater marsh ecosystems, and 4) provide for educational opportunities for visitors regarding the importance of wetland vegetation and the wildlife habitats associated with them. Project objectives include the management of invasive plant species; the revegetation of plant communities associated with wetland marsh habitat; enhance the diversity of wildlife habitat; creation of trails, signs, and other educational and interpretive infrastructure for visitors to Tuzigoot National Monument and Tavasci Marsh.

The project area includes eight acres near the downstream end of the marsh; in the vicinity of the previous AZGF project. Design components may include changes in depth, slopes, or other

topography for different sections of the marsh to optimize and diversify wildlife habitat, such as wetted shorelines, deep open water, and willow-cottonwood habitats.

### **Goals**

The purpose of the project is to 1) restore and enhance native wetland plant communities, 2) create diverse high quality wildlife habitat that is associated with freshwater marsh ecosystems, and 3) provide for educational opportunities for visitors regarding the importance of wetland vegetation and the wildlife habitats associated with them.

### **Objectives**

1. Create and diversify marsh ecosystems and habitats. The project shall design and implement an enhancement plan that will convert the existing monotypic cattail stand to a landscape that is more diverse, having representative plants and animals from several marsh ecosystem types. These ecosystem types include deep open water, wetted shoreline, sedge/rush, cattail/bulrush, cottonwood/willow, grassland, and mesquite bosque.
2. Establish a management plan that optimizes ecosystem function for desired habitats.
3. Enhance public educational opportunities for Monument visitors through restoration efforts and interpretive infrastructure.

### **Statement of Problems/Causes**

1. The marsh was drained and topography likely altered to allow for farming and grazing activities. When waters were returned to the marsh, a monotypic stand of cattails dominated the landscape.
2. The monotypic cattail stand replaced important vegetative communities, including cottonwood/willow, sedge/rush, and grasslands communities. Wetted shoreline and deep water habitats have also been replaced by cattails.
3. Although the area is currently open to the public, the dominant weedy species reduce the aesthetics of the area and the lack of a native riparian plant community limits the potential for education and interpretive opportunities.

### **Statement of Solutions**

1. Assess the topography of the marsh to determine if resloping, dredging, or topography changes are necessary or desired.
2. The project will convert the monotypic stand of cattail to a diverse selection of plant communities that gradually transition from one eco-type to the next. This transition will be accomplished through physical and mechanical removal of a portion of the cattail stand. The project will aggressively re-vegetate with native plant species through seeding and planting to increase diversity. Re-vegetation is expected to benefit wildlife by creating desired diverse habitats, including edge habitat that many wildlife species depend on for survival. The primary tool to manage invasive vegetation long-term is to establish vigorous and healthy native plant communities.
3. A public outreach plan will improve social benefits to Tuzigoot National Monument, Tavasci Marsh by increasing opportunities for recreation and education, and improving aesthetic beauty and other environmental services. Once established, the created and enhanced habitats will be maintained through a revised management plan that optimizes

environment and educational opportunities. The outreach plan may include: interpretive signs, public workshops, newspaper articles, and/or volunteer workdays.

***Statement of Project Years of Benefit***

The project area, its high quality habitats, and educational opportunities will become an important and integral part of the Tuzigoot National Monument, Tavasci Marsh. The project will provide benefits for a period greater than 20 years. One of the primary objectives of NPS is the protection of native ecosystems and the education of visitors. Tavasci Marsh will be part of the Verde Valley far into the future and will become increasingly visited as the regional population rises. After project implementation has been completed, operation and maintenance will be transferred to Tuzigoot National Monument.