Final Environmental Assessment

NATIVE FISH RESTORATION IN FOSSIL CREEK

Coconino and Tonto National Forests, Arizona

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CHAPTER 1 - PURPOSE AND NEED

1.1 Introduction

The Bureau of Reclamation (Reclamation) and the Forest Service have prepared this Environmental Assessment (EA) to analyze potential effects to physical, biological, and cultural resources that may result from construction of a fish barrier and other native fish recovery efforts in Fossil Creek. The EA was prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR 1500-1508), Reclamation NEPA Handbook, and Forest Service NEPA Handbook 1909.15. Reclamation and the Forest Service are the lead Federal agencies pursuant to NEPA. The U.S. Fish and Wildlife Service (FWS) and Arizona Game and Fish Department (AGFD) are cooperating agencies.

This document is organized into six chapters:

- *Chapter 1 – Purpose and Need:* Presents information on the history of the project proposal, the purpose of and need for the project, and the lead agencies' proposal for achieving that purpose and need. This section also details how the lead agencies informed the public of the proposal and how the public responded.

- *Chapter 2 – Comparison of Alternatives, including the Proposed Action:* Provides a detailed description of the lead agencies' proposed action; alternative methods for satisfying the stated purpose and need; and significant issues raised by the public, project proponents, and other agencies. This discussion includes mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

- *Chapter 3 – Affected Environment and Environmental Consequences:* Describes the environmental effects of implementing the proposed action and other action alternative. The analysis is organized by resource topic. Within each section, the affected environment is described first, followed by the effects of no action and the action alternatives.

- *Chapter 4 – Agencies and Persons Consulted:* Lists preparers and agencies consulted during the development of the EA.

- *Chapter 5 – Environmental Laws and Directives:* Lists Federal environmental laws and directives that are relevant to the project.

- *Chapter 6 – Literature Cited:* Lists documents used in the preparation of this EA.

- *Appendices:* The appendices provide more detailed information to support the analysis presented in this EA.

1.2 Background

Native Arizona fishes[1] are among the most endangered group of aquatic species in the United States. Twenty of 35 native fish species (54 percent) are federally listed as endangered or threatened. This sharp decline in status is partly the result of a long history of poor watershed practices and water development in Arizona which has dramatically altered riverine habitats (Minckley 1997). Human utilization of land and water resources has dramatically affected the characteristics of streams (water quality, hydrology, and geomorphology) and associated biotic communities since the early 1900s. Surface water diversions and ground-water pumping have gradually turned major segments of perennial streams into ephemeral-flow channels, resulting in lost interconnectivity of aquatic ecosystems and habitat fragmentation. Compounding these effects, predatory nonnative fish, crayfish, and bullfrogs have decimated or eliminated populations of native fishes and aquatic wildlife in many areas where perennial flows persist. Destabilization of riverine systems has lead to a typical pattern in Arizona where native species tend to be restricted to the upper reaches of major drainage basins (FWS 2001). The decline of native fishes is particularly acute in the Gila River basin, which drains the southern half of Arizona and portions of New Mexico and Sonora.

Gila River Basin Fishes. Within the past century, the effects of habitat modification and interaction with nonnative species have significantly reduced the abundance and distribution of native fishes in the Gila River basin (see Appendix A, Table A-1). Nearly 66 percent of the 20 species of native fishes that historically occupied the Gila River basin are currently imperiled or have disappeared (11 are federally listed as endangered or threatened, 1 is proposed endangered, and 1 recently became extinct). At one time, all of the basin's native fishes not formally listed under the Endangered Species Act (ESA) were on the Candidate list, until a regulatory change reassigned most to the category of "species of concern." Populations of native fishes within the basin continue to decline.

Since the early 1900s, at least 40 species of nonnative fish have become established in the Gila River basin (see Appendix A, Table A-2). Many of these nonnatives were purposefully introduced to increase the diversity of the sport fishery, and some were accidentally released as bait or ornamental fish. Regardless of the mode of arrival, nonnative fishes have had a detrimental effect on native aquatic species. The introduction and proliferation of nonnative aquatic fauna, especially fish, is increasingly viewed as one of the most serious long-term threats to the status and recovery of native aquatic vertebrates, equaled in severity only by the effect of habitat destruction (Minckley 1991, Rosen et al. 1995, Pacey and Marsh 1998, Marsh and Pacey in press).

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1 "Native" (also indigenous, endemic, and aboriginal) refers to organisms that occur, or formerly occurred, in a particular region as a result of ecological processes. This is opposed to organisms that have been intentionally or accidentally introduced outside their natural historic ranges by human activity. The introduced fish species that proliferate in the Verde River and threaten Fossil Creek evolved in the Great Lakes and Mississippi drainage systems, but are not native to the Colorado, Gila, or other western river basins.

Potential future releases and dispersal of new nonnative aquatic species poses an additional threat that could further hasten the extirpation of endemic species (Rosen et al. 1995).

Direct impacts of nonnative fishes to native forms include predation, competition, hybridization, and parasite and pathogen transmission. Predation on early life stages (eggs, larvae, juveniles) is considered the primary avenue by which nonnative fishes depress and often eliminate what are considered predator-naive native species (Minckley 1991). These effects are often exacerbated by habitat degradation. Case history shows that fishes as diverse as the "big river" razorback sucker (*Xyrauchen texanus*) and diminutive Gila topminnow (*Poeciliopsis occidentalis*) can live and reproduce in degraded habitats as long as they are unaccompanied by nonnative fishes, but they commonly wane or disappear when nonnatives become established (Pacey and Marsh 1998).

Native fishes, with only a few exceptions, are broadcast spawners that afford no parental care to their progeny, while nonnative kinds are predominated by nest-builders that provide some degree of parental protection of eggs and young (Pacey and Marsh 1998). Furthermore, there is broad overlap among native and nonnative fishes in their use of physical habitats and biological resources, with the exception that most nonnatives are piscivores[2] or omnivores[3] (Pacey and Marsh 1998). Thus, predation on early life stages is an intense, ever-present limiting factor inhibiting successful completion of native fish life cycles where the two groups coexist. For this reason, removal of nonnative fishes from native fish habitats, followed by stocking depleted or extirpated native species in concert with actions to prevent reinvasion by nonnatives, are among the foremost objectives of native fish recovery efforts in the Gila River basin (FWS 1994, 2001).

Effects of Central Arizona Project (CAP) on Gila River Basin Fishes. On September 30, 1968, Congress passed the Colorado River Basin Project Act (Act). This Act authorized the Secretary of the Interior, through Reclamation, to construct the CAP to deliver Colorado River water for agricultural, industrial, and municipal uses in central and southern Arizona. The CAP, which was declared "substantially complete" in 1993, conveys Colorado River water through a 336-mile long system of pumping plants, aqueducts, dams, and reservoirs.

During the late 1980s, the issue of introduction and spread of nonnative aquatic species through the CAP began to receive serious consideration among fisheries biologists. Because the CAP is an interbasin water transfer system, concern was expressed that the CAP could accelerate the rate at which nonnative species are spread across basins and invade habitats occupied by native fishes. Recognizing the CAP could potentially affect protected native fishes, Reclamation, in 1991, requested formal consultation with the FWS, pursuant to Section 7(a)(2) of the ESA. On April 15, 1994, the FWS issued a final biological opinion on the delivery of CAP water to the Gila River basin (FWS 1994).

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2 Animals that consume fish.
3 Animals that consume both animal and plant material.

In March 1997, the Southwest Center for Biological Diversity filed suit, alleging that the biological opinion's reasonable and prudent alternative did not sufficiently remove jeopardy to threatened or endangered native fishes or adverse modification to their critical habitats. A U.S. District Court ruling in September 2000, upheld the FWS' jeopardy conclusion in the 1994 biological opinion, but also held that subsequent amendments to the reasonable and prudent alternative were arbitrary and capricious. As a result, Reclamation and the FWS reentered formal consultation, which culminated in the FWS issuing a revised biological opinion on CAP water delivery (FWS 2001).

The FWS, in its 2001 biological opinion, concluded that interbasin water transfer through the CAP seriously and adversely affects the endangered Gila topminnow and razorback sucker and the threatened spikedace (*Meda fulgida*), loach minnow (*Tiaroga cobitis*), and bald eagle (*Haliaeetus leucocephalus*). The FWS also determined that CAP operations adversely modify critical habitat of the razorback sucker, spikedace, and loach minnow. Potential for establishment of nonnative aquatic species within the CAP system, and their subsequent escape and invasion into habitats occupied by protected native fishes, were cited as reasons for these adverse effects. Canal systems using CAP-supplied water, and associated irrigation releases to the rivers of the Gila River basin, were identified by the FWS as principal routes, among others, by which nonnative species could move from the CAP to the Gila River and its tributaries.

The 2001 CAP biological opinion incorporated the 1994 reasonable and prudent alternative and mitigative commitments proposed by Reclamation during reconsultation, which are collectively referred to in the 2001 opinion as conservation measures. These conservation measures required construction and operation of a single drop-type fish barrier in Fossil Creek and other specified drainage systems of the Gila River basin in Arizona and New Mexico.[4] In its 2001 biological opinion, the FWS concluded that the strategic placement of fish barriers, when combined with other proposed conservation measures, would avoid the likelihood that operation of the CAP will jeopardize the continued existence of listed species or adversely modify designated critical habitat.

Fish barriers built pursuant to the 2001 CAP biological opinion are subject to NEPA compliance. According to the opinion, if any of these barriers cannot be constructed, Reclamation must reinitiate formal consultation with the FWS, unless an acceptable alternative site can be identified.[5]

Forest Service Policy. Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to implement programs for the conservation of threatened and endangered species. Chapter 5 provides a list of other laws that guide Forest Service management relative to this project.

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4 The drainages consist of the Verde River between the town of Clarkdale and the confluence of Sycamore Creek; Bonita Creek near its confluence with the Gila River; Hot Springs, Redfield, and O'Donnell canyons in their lower reaches; Blue River near its confluence with the San Francisco River; and a stream to be identified in the Tonto Creek basin.

5 Reinitiation of formal consultation would be required if an acceptable site on an alternative stream cannot be identified or barrier construction at the alternative site results in adverse effects to listed species that are not already addressed in the 2001 CAP biological opinion.

Forest Service policy is to recover threatened and endangered species so that special protection measures provided under the ESA are no longer necessary, and to ensure, through development and implementation of appropriate management practices, that nonlisted species do not become threatened or endangered because of Forest Service actions (FSM 2602, 2670). Policy also is to encourage or initiate the repatriation of listed species onto suitable unoccupied habitat when such actions promote recovery of the species (FSM 2674). The National Forest Management Act of 1976 requires the Forest Service to provide for the biological diversity of national forests consistent with overall multiple-use objectives of the planning area and to maintain viable populations in the planning area. The Coconino and Tonto Forest Plans (Forest Service 1987 and 1985, as amended) have goals, objectives, standards, and guidelines for maintaining viable populations of native fishes, and for recovering federally-listed species. Forest Plans also have management direction for many other resources and designations such as Wilderness and Wild and Scenic Rivers. Because the project area includes a portion of the Mazatzal Wilderness, the Wilderness Implementation Plan (Forest Service 1994) is also relevant to this project.

Childs-Irving Hydroelectric Project. Arizona Public Service Company (APS) owns and operates the Childs and Irving hydroelectric facilities on Fossil Creek. Built in the early 1900s, these facilities utilize stream flow diverted from Fossil Creek to generate hydroelectric power. An important element of the hydroelectric system is the Fossil Springs diversion dam, which captures and directs nearly all of the stream's 43 cubic feet per second (cfs) base flow through a series of flumes, tunnels, and pipes to supply the Childs and Irving power plants.

In December 1992, APS filed an application with the Federal Energy Regulatory Commission (FERC) to relicense the Childs-Irving Hydroelectric Project for 30 years. On August 14, 1997, FERC issued a draft EA on the relicensing proposal and invited public comment. After a period of negotiation with a coalition of groups including American Rivers, The Nature Conservancy, the Yavapai-Apache Tribe, the Northern Arizona Audubon Society, the Sierra Club, and the Center for Biological Diversity, APS signed an Agreement in Principle in 1999 to decommission the facilities and return full flows to Fossil Creek. FERC is currently analyzing the effects related to decommisioning and facility removal in the stream corridor and watershed.

Potential decommissioning of the Childs-Irving Hydroelectric Project is driving the schedule for implementing native fish restoration actions in Fossil Creek. If decommissioning occurs according to the terms of the Agreement in Principle, APS will return base flows of approximately 43 cfs to Fossil Creek no later than December 31, 2004. Native fish restoration work would need to be completed before full flows are returned to the stream. Once full flows are returned, renovation and any in-stream work would be logistically and economically much more difficult to achieve successfully.

1.3 Purpose and Need for Action

The purpose of the proposed project is to restore and allow a native fish assemblage to persist in as much of Fossil Creek as possible. The project would secure middle and upper reaches of Fossil Creek for use by existing native fishes and future repatriated species that have been extirpated from the system.

Located within the northern portion of the middle Gila River basin (Figure 1), Fossil Creek supports an abundant and diverse native fish community. However, since the mid-1990s, community dominance of nonnative species has moved upstream from lower reaches of Fossil Creek and the Verde River. Competitory and predatory interactions by nonnatives fishes have reduced reproduction and recruitment of native fishes in the 10.6-mile segment below Irving (AGFD 2001), threatening the long-term viability of native fish populations in most of Fossil Creek. Action regarding native fish restoration in Fossil Creek is needed because:

- Fossil Creek is one of a few perennial, warmwater streams remaining in Arizona with multiple species of native fish that still exist together, and actions taken now would prevent continued declines or losses that are probable in the foreseeable future;
- nonnative fishes and other aquatic organisms such as crayfish and bullfrogs are moving up Fossil Creek from the Verde River and adversely affecting native populations;
- native fish populations in Fossil Creek (and the remainder of the Gila River basin) are declining as nonnative fish populations are increasing in numbers and extent; self-sustaining populations of native fish may not persist in the long term if action is not taken;
- existing low flows in the creek provide conditions where restoration actions are likely to be the most effective; and
- improved status for recovery of listed species would be achieved pursuant to the 2001 CAP biological opinion.

Fossil Creek is unique on the Coconino and Tonto National Forests for its potential to contribute to native, warmwater fish restoration and recovery. A combination of factors makes Fossil Creek particularly distinctive as compared to other streams in the Gila River basin.

- a native assemblage of six fish species persists in headwater reaches of the stream, indicating it has high potential for assisting recovery, if nonnatives can be eliminated;
- restoration of high base flows and the resulting travertine deposition below the Fossil Springs diversion dam will create more complex and diverse instream habitats capable of supporting a high diversity of native fishes and other biota;

FLAGSTAFF
Sycamore Creek
Verde River
West Clear Creek
Fossil Creek
East Verde River
Salt River
Salt River
PHOENIX
Gila River
Gila River
San Pedro River
PROJECT AREA
ARIZONA
MIDDLE GILA RIVER BASIN
CENTRAL ARIZONA
FIGURE 1
MAY 12, 2004

- the present low-flow reaches of Fossil Creek below the diversion dam, which have been invaded by several nonnative species, are conducive to treatments to rid the stream of nonnative fishes and to construct a fish barrier to prevent reinvasions;
- the area is relatively wild and remote and is used very little as a sport fishery for nonnatives, providing ideal conditions for restoring and emphasizing a native fishery; and
- the stream is almost entirely in Federal ownership with only one small parcel of private land.

One of the most important potential uses for Fossil Creek is as a replication site for endemics like the rare Verde River population of spikedace. That population, which is substantially different from all other spikedace populations, is the last remaining in the Verde River drainage, and its replication in another stream would be a major step toward initiating recovery and preventing its extinction. Additionally, Fossil Creek is recognized as having potential to contribute to recovery of razorback sucker (EnviroNet Inc. 1998) and several other native species, including Gila topminnow, desert pupfish (*Cyprinodon macularius*), and loach minnow (Forest Service 1997). The potential for some of these species partly depends upon how habitats develop following flow restoration and travertine formation (see below).

Restoring a native fish community in Fossil Creek would also benefit native fishes in the Verde River. Removing nonnative fish from Fossil Creek would reduce the total nonnative biotic load of the Verde system and prevent Fossil Creek from becoming a major source of nonnative fishes that would contribute nonnative numbers and species to the Verde River. Repatriation of native fish into Fossil Creek would provide a secure source population of several species to the Verde River and, thereby, enhance or establish populations there. For some species, such as razorback sucker, a restored and renovated Fossil Creek would serve as a grow-out area to greatly increase the success of existing repatriation efforts in the Verde River that have been ongoing for 20 years.

1.4 Proposed Native Fish Recovery Project

The project proposed by Reclamation and the Forest Service to meet the purpose and need is to construct a single reinforced concrete fish barrier and renovate a segment of Fossil Creek. Elements of the project that are described in this section are common to the two action alternatives that are discussed in this EA. Additional detail describing the project is presented in Chapter 2.

Fish Barrier. The fish barrier is intended to create an effective impediment to fish movement upstream during stages of stream flow most likely to foster ingress of nonnative fishes from the Verde River and lower reaches of Fossil Creek (i.e., base flow, lower flood discharges, and ascending and descending stages of higher floods). Upstream movement of fishes is not expected during peak flooding due to high flow velocities and sediment loads. The barrier would also prevent reinvasion of nonnative

aquatic fauna that are transported out of the stream during flooding and function as a downstream control site for eradication of nonnative fishes between the barrier and the Fossil Springs diversion dam. See Section 2.3 for information on construction.

Nonnative fishes that have invaded Fossil Creek include green sunfish (*Lepomis cyanellus*), smallmouth bass (*Micropterus dolomieu*), flathead catfish (*Pylodictis olivaris)* (Roberson et. al 1996), and yellow bullhead (*Ameiurus natalis*). Green sunfish is an aggressive invader of small streams in the Gila River basin, to the point of being nearly ubiquitous. The species has invaded Fossil Creek to near the base of Fossil Springs diversion dam (Appendix A, Table A-3), and it has been shown to be an effective predator on young native fish (Dudley and Matter 2000). For example, distributions of Gila chub (*Gila intermedia*) and green sunfish in Sabino Creek, Arizona, are complementary; where green sunfish have invaded, Gila chub are absent. Young life stages of Gila chub apparently cannot persist in the presence of green sunfish (Dudley and Matter 2000). Suppression of native fish populations by green sunfish was also documented by Lemly (1985).

Smallmouth bass has recently invaded Fossil Creek to below the natural falls at Irving (Appendix A, Table A-3). This species is a renowned predator of fishes that is also capable of suppressing reproductive success by native Arizona fishes, and displacing them (Minckley 1973). Comparisons of roundtail chub (or headwater chub) habitat use in Fossil Creek (in the absence of smallmouth bass) and the adjacent Wet Beaver Creek (in the presence of smallmouth bass) support the conclusion that smallmouth bass negatively interact with chub (Barrett and Maughan 1992).

Yellow bullhead is a highly carnivorous species that readily consumes fishes (Minckley 1973). The species primarily inhabits pools and slow-flowing runs. Yellow bullhead has been introduced to most major drainages of the State, and is commonly found in mainstem and tributary waters of the Santa Cruz, Verde, Salt, Gila, and San Pedro River basins. Little is known concerning its impacts to native species in the southwest, but its tendency to piscivory undoubtedly impacts native populations where the two co-occur.

Fish Salvage. Prior to stream renovation, native fishes would be salvaged for holding and restocking. Electrofishing, angling, and netting would be deployed to capture native fishes alive. Captured fish would be transferred to large holding tanks and released to the stream following the piscicide treatment. Small samples of native sentinel fish would be held in live cages in the treated section to ensure the stream is no longer toxic, prior to releasing salvaged native fishes. See Section 2.3 for further information on fish salvage.

Stream Renovation. Renovation would entail eradicating populations of nonnative fishes through application of the piscicide antimycin A (trade name Fintrol; see Appendix B). Antimycin A has proven especially effective and safe for stream renovations. It has been tested with no detectable effect on terrestrial wildlife and non-gill breathing aquatic animals when applied in recommended formulations, nor does it affect plants. Antimycin naturally breaks down in flowing water within a few hours to a few days of treatment and can be readily detoxified with potassium permanganate. Application of this piscicide for

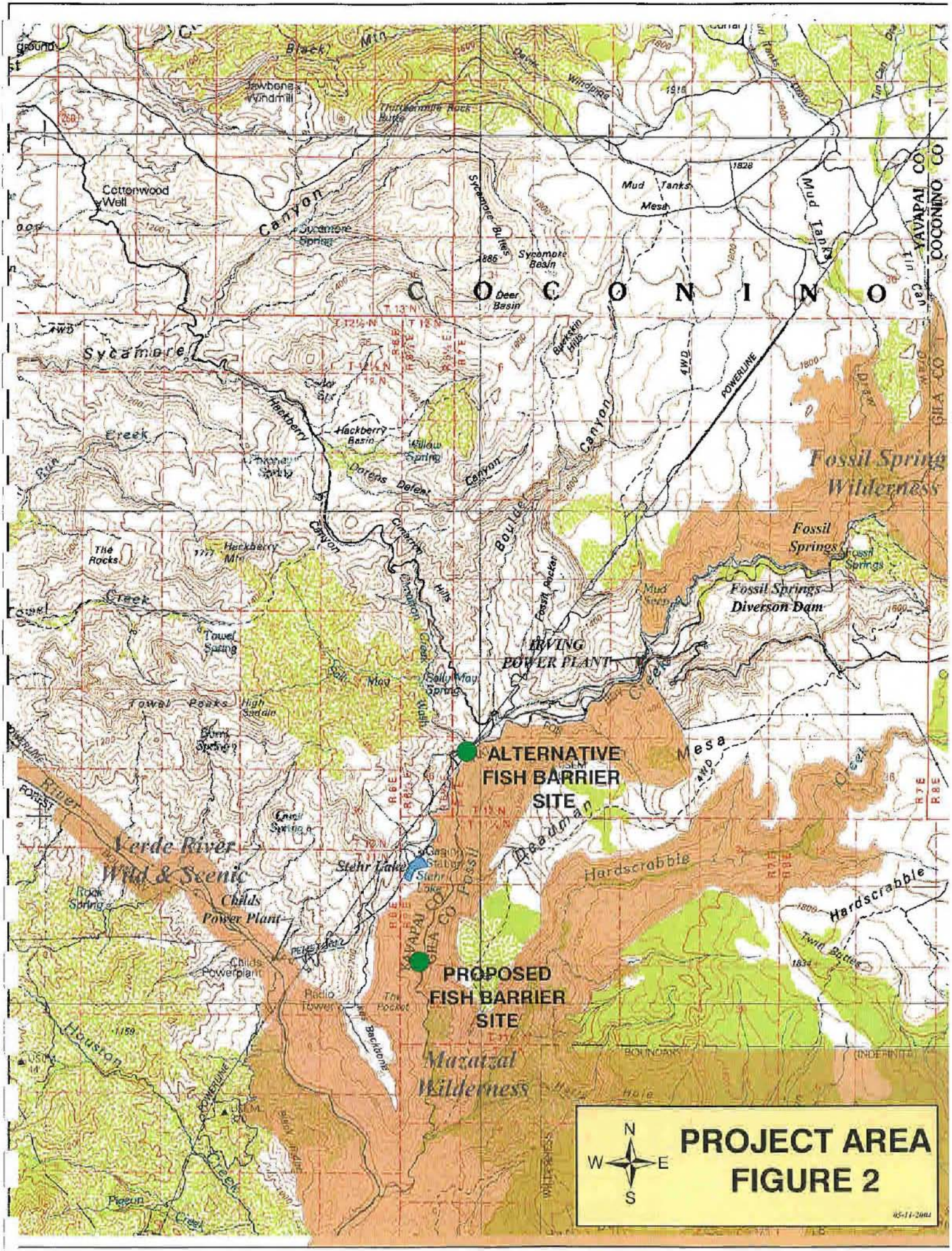
modern fishery management has been practiced successfully for many decades. Antimycin A has been effective and safe for Apache trout (*Oncorhynchus apache*) renovations in Arizona and Gila trout (*O. gilae*) and Rio Grande cutthroat trout (*O. clarki virginalis*) renovations in New Mexico, where in total hundreds of miles of stream have been successfully treated to remove nonnative fishes without incident (S. Gurtin, AGFD, and D. Propst, New Mexico Department of Game and Fish, personal communication; also see project list in Appendix C, Table C-1). Several renovations of streams in Arizona to eliminate green sunfish for the benefit of native populations have recently been implemented (e.g., Arnett Creek, O'Donnell Canyon, and Romero Canyon), and others are in planning stages. See Section 2.3 for further information on stream renovation.

Repatriation of Native Fishes. Native fishes salvaged prior to the treatment would be released near their point of capture once the stream has detoxified. Based on sampling and discussions among agency biologists and academic experts, fishes captured in the untreated reach above Fossil Springs diversion dam may also be released at several points upstream of the fish barrier if the numbers of salvaged fish repatriated are inadequate. Natural downstream movements of fishes from above the dam would likewise serve as a source for repatriation to the treated stream reach. A key goal is to secure the rare Verde River population of spikedace in a hatchery environment, build up its numbers through artificial propagation, and replicate the population into Fossil Creek. In addition, repatriations into Fossil Creek of other rare Gila River basin native fishes such as Gila topminnow and loach minnow, the latter having been extirpated from the entire Verde River drainage, are also planned. See Section 2.3 for further information on repatriation of native fishes.

Rationale for the Proposed Project. The strategy of combining barrier construction with stream renovation and repatriation of native fishes has been practiced successfully for decades in the southwest with native salmonids and species of warmwater fishes. Past renovations for at-risk native fishes prevented immediate extinctions of rare populations, stabilized those populations, and replicated them, all essential steps in a rare species recovery program. Except for unique circumstances, renovation of surface waters with an approved piscicide is the only method that has a high assurance of total removal of nonnative fish from a system. Antimycin A is the most effective piscicide for renovation of streams, and it has been used extensively in the southwestern U.S. for several decades.

1.5 Project Area Description

The project area is located on Fossil Creek, in the Mazatzal Mountains of central Arizona (Figure 2). Fossil Creek forms the boundary between Yavapai and Gila Counties, as well as Tonto and Coconino National Forests over most of its course. Except for a private inholding that encompasses a short segment of the stream south of Irving, the project area consists entirely of National Forest System lands, and includes the northern portion of the Mazatzal Wilderness. No State, tribal, or other lands are included in this area.


ALTERNATIVE FISH BARRIER SITE
PROPOSED FISH BARRIER SITE
Fossil Springs Wilderness
Fossil Springs
Fossil Springs Diverson Dam
IRVING POWER PLANT
Verde River Wild & Scenic
Childs Power Plant
Stehr Lake
Mazatzal Wilderness
Hardscrabble
Deadman Mesa
Sycamore Canyon
Boulder Canyon
Hackberry Canyon
Mud Tanks Mesa
Sycamore Basin
Deer Basin
Hackberry Basin
Willow Spring
Sycamore Spring
Cottonwood Well
Jawbone Windmill
Towel Spring
Towel Peaks
Sally May Spring
Radio Tower
The Pocket
Rock Spring
Pigeon Creek
Houston
POWERLINE
YAVAPAI CO
COCONINO CO
GILA CO
N
S
E
W
PROJECT AREA
FIGURE 2

Fossil Creek is one of Arizona's rare warmwater perennial streams, flowing from a complex of springs, known as Fossil Springs, 14.3 miles through rugged and isolated terrain before entering the Verde River. Fossil Springs produces a constant water temperature of approximately 70 degrees Fahrenheit and flow of 43 cfs (slightly more than 320 gallons per second), most of which is captured by APS at the 25-foot high Fossil Springs diversion dam located 0.3 mile downstream of the springs. Base flows below the diversion dam vary between 2 cfs and 5 cfs, although episodic flows of much higher magnitude are possible from rainfall and snowmelt. The project area considered in this analysis includes a 9.5-mile reach of Fossil Creek between the Fossil Springs diversion dam and the lowermost barrier site proposed by Reclamation, including 2.8 miles of stream in the upper portion of the Mazatzal Wilderness.

1.6 Decision to be Made

Reclamation and the Forest Service must decide whether to implement the proposed action, other action alternative, or no action. If the project is implemented, Reclamation would construct the fish barrier on National Forest System land. Long-term maintenance of the structure would be performed by the Central Arizona Water Conservation District. The Central Arizona Project Fund Transfer Program, established under the 1994 and 2001 CAP biological opinions, would provide funding for renovation of Fossil Creek and repatriation of native fishes. Renovation of the stream would be a joint effort involving AGFD, Reclamation, FWS, and Forest Service.

The Regional Forester is the official responsible for approving the construction of the fish barrier, application of antimycin, and deciding the conditions where motorized equipment or non-emergency mechanical transport, including helicopters and non-emergency helispots, may be allowed within wilderness. The Area Manager of Reclamation's Phoenix Area Office has authority to implement construction of the barrier project once Forest Service approval has been granted.

1.7 Public Involvement

The proposal has been listed in the Coconino National Forest's Schedule of Proposed Actions (SOPA) since April 2002, and the Tonto National Forest's SOPA since July 2003. A scoping letter which described the proposal was also distributed to the public and other agencies during scoping. Scoping information was mailed to 63 individuals, agencies, and organizations on April 25, 2002. Seventeen respondents submitted written comments.

Several issues were identified from discussions among interdisciplinary team members and other agencies, and comments from the public during scoping. These issues defined the range of actions, alternatives, and impacts that are addressed in this document, and served as the basis for refining the project and developing mitigation measures.

The interdisciplinary team evaluated issues raised during public scoping and categorized each according to possible significance or lack thereof. Significant issues were defined as those that form the basis for alternative development and met the following criteria: (1) were within the scope of the project (i.e., satisfy the purpose and need); (2) were not already decided/required by law, regulation, or other previous decisions; (3) were relevant to the decision being made; and (4) were amenable to scientific analysis rather than conjecture. No significant issues were identified for this project through public scoping. However, the interdisciplinary team identified several issues that could affect the location alternatives for the barrier.

Public comments were generally supportive of the project, but many respondents asked the agencies to conduct thorough analyses and disclose effects of the actions being proposed. These comments are summarized as follows:

- disclosure of effects of renovation and neutralization chemicals on water quality
- disclosure of effects of renovation and neutralization chemicals on human health and safety
- disclosure of effects of renovation chemicals on non-target biota
- disclosure of how renovation and neutralization chemicals will be applied
- disclosure of how native fish will be salvaged and returned
- disclosure of effects of fish barrier construction on sediment transport and stream dynamics
- disclosure of effects of fish barrier on gene pool of aquatic macroinvertebrates and fish
- disclosure of importance of Fossil Creek to native fish restoration and recovery

Although no significant issues were identified from public scoping, the Forest Service has identified the following significant issues for the project:

- effect of nonconforming uses in wilderness (i.e., nonconforming structure and use of motorized equipment)
- effect on Wild and Scenic River eligibility and classification
- potential for nonnative fishes to be reintroduced into the creek at some time after chemical renovation

The draft EA was mailed to more than 90 addressees on December 23, 2003, for 30-day comment. In addition, a public notice was published in the Arizona Republic, and news releases were sent to other news media regarding availability of the draft EA. The draft EA was also available on the Coconino National Forest NEPA website and at specified offices of the Coconino and Tonto National Forests. Eleven respondents submitted written comments on the native fish restoration project during the 30-day public comment period. These comments and agency responses are included in Appendix L of this final EA.