RECLAMATION

Managing Water in the West

PROPOSED REAPPLICATION OF ROTENONE IN BONITA CREEK

Supplement to the Environmental Assessment on Native Fish Restoration in Bonita Creek Gila Box Riparian National Conservation Area Graham County, Arizona

U.S. Department of the Interior
Bureau of Reclamation
Phoenix Area Office

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BACKGROUND

The Decision Record and Finding of No Significant Impact (FONSI) for the February 2007 Draft Environmental Assessment on Native Fish Restoration in Bonita Creek (hereafter referred to as the 2007 EA)[1] was signed by Tom Schnell, Bureau of Land Management (BLM) acting Field Manager, Safford Field Office, on July 13, 2007. Carol Erwin, Bureau of Reclamation Area Manager, Phoenix Area Office, signed a FONSI on July 16, 2007. The decision was to authorize actions to protect the existing native fish assemblage (including endangered Gila chub *Gila intermedia*) and facilitate the repatriation[2] of threatened spikedace (*Meda fulgida*), threatened loach minnow (*Tiaroga cobitis)*, endangered desert pupfish (*Cyprinodon macularius*), and endangered Gila topminnow (*Poeciliopsis occidentalis*) into Bonita Creek. Public involvement for the project included a scoping meeting in Safford, distribution of scoping information to potentially interested parties, and posting information on the Phoenix Area Office Web site. In February 2007, the EA was distributed to more than 160 individuals, organizations, and agencies (Reclamation and BLM 2007). The 2007 EA is available at http//:www.usbr.gov/lc/phoenix.

The 2007 EA and Decision Record/FONSIs considered the effects of fish barrier construction, stream renovation, and repatriation of the federally listed native fish species into Bonita Creek. Construction of the fish barrier was completed in September 2008. Salvage of native fishes and renovation of the 1.7-mile reach of Bonita Creek between the barrier and a City of Safford water-system dike using a formulation of rotenone, CFT Legumine®, was undertaken in October 2008. Following the renovation, native unlisted and federally listed fishes including salvaged Gila chub and loach minnow, spikedace, desert pupfish, and Gila topminnow were stocked into the stream. In 2009, nonnative mosquitofish (*Gambusia affinis*) and green sunfish (*Lepomis cyanellus*) were detected and have repopulated a portion of the renovated stream reach. Efforts to remove these nonnative fish using mechanical methods (including nets, traps, and electrofishing,) are ongoing. If these efforts fail, Reclamation, in cooperation with the BLM, U.S. Fish and Wildlife Service (FWS), and Arizona Game and Fish Department (AGFD), propose to retreat the same 1.7-mile reach of Bonita Creek with CFT Legumine® to eradicate the remaining mosquitofish and green sunfish (Figure 1). The BLM Field Manager of the Safford Field Office, as the Responsible Official for the action area, would need to render a decision to authorize reuse of rotenone.

The 2007 EA did not consider the possible need for retreatment with a piscicide after Gila topminnow, desert pupfish, loach minnow, and spikedace were stocked into the stream. In addition, suitability of streamside habitat for southwestern willow flycatcher (SWWF) (*Empidonax traillii extimus*) may have changed since 2007. Therefore, this supplement has been prepared to analyze the effects of future chemical renovations of the stream to recently repatriated species, the existing population of Gila chub, and SWWF.

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[1] Public comment on the draft EA did not identify significant issues or concerns; therefore, the draft EA was considered final and was not reissued as a final document.

[2] *Repatriation* is defined as the intentional release of individuals of a species into an area formerly occupied by that species (Reinert 1991).

The effects of chemical renovations on water resources, the City of Safford municipal water supply, non-target biota, cultural resources, recreation, and public safety and health were addressed in the 2007 EA and are not repeated here. This document is tiered to and supplements the 2007 EA.

PURPOSE AND NEED

The 2007 EA described the adverse effects of nonnative fish populations on native fish communities. Continued persistence of mosquitofish and green sunfish will likely suppress or result in the loss of recently stocked populations of federally listed fishes in Bonita Creek. In order to obviate these effects and promote long-term sustainability of the native fish community, Reclamation and the cooperating agencies propose the management option of providing additional chemical renovations. These renovations would be performed on an as-needed basis to address any current or future threats posed by nonnative fishes in the stream that otherwise cannot be adequately addressed by employing mechanical removal methods. Bonita Creek is considered a high-value stream for achieving enhanced status for spikedace, loach minnow, and other species. As noted in the 2007 EA, the Bonita Creek native fish restoration project will contribute toward improvement of the conservation status of imperiled native fishes.

DESCRIPTION OF THE PROPOSED ACTION

Bonita Creek upstream of the fish barrier will be managed for the foreseeable future as a native-only stream, whereby management prescriptions such as mechanical and chemical removals of invading nonnative aquatic organisms, repatriations, and augmentations[3] of native fishes, are all options needed to maintain and protect the native fish assemblage. This supplement considers the effects of all of these potential management actions to listed fishes.

Details of the fish salvage and holding, chemical application and detoxification, restocking of salvaged fishes, and subsequent monitoring of fishes are essentially identical to those described in the 2007 EA and are not repeated here. The major differences include the re-salvage and repeated holding of all native fishes (except Gila topminnow at this time) prior to subsequent renovation activities, and effects of renovations to repatriated fishes not present in the stream at the time of the initial application of rotenone. Gila topminnow would not be salvaged in order to ensure that they are not accidentally mixed with the similar-appearing nonnative mosquitofish.[4] Potential re-applications of piscicides as a management option need to be considered in the event of unsuccessful renovations (i.e., failure to kill all nonnative fishes in the reach), human-aided transfer of nonnatives upstream of the fish barrier subsequent to renovation, movement of fishes past the fish barrier due to its failure or other unforeseen event, or other unlikely but possible incidents that result in an introduction of nonnative

[3] A*ugmentation* is defined as the release of individuals of a species into an area already occupied by that species (Reinert 1991).
[4] Gila topminnow could be salvaged and handled as other natives during potential future unplanned renovations if the offending nonnative(s) to be targeted did not include mosquitofish.

aquatic organisms upstream of the barrier. These potential piscicide applications would be limited to the 1.7-mile reach of Bonita Creek shown in Figure 1. Similar to protocol established for the original renovation, piscicides would not be applied during periods of precipitation and storm runoff to avoid water quality effects outside of the targeted area.

Salvage operations for unlisted fishes, endangered Gila chub, and the listed repatriated fishes would be identical to those described in the 2007 EA. The duration of holding of those salvaged fishes prior and subsequent to the initial re-application of rotenone, however, is anticipated to be longer than the relatively brief period (1 to 2 weeks) of the original renovation. In this case, salvaged fishes may be transported in hatchery trucks to established fish-holding facilities including but not limited to the Arizona-Sonora Desert Museum, University of Arizona, and/or Bubbling Ponds Hatchery. Longer-term holding of fishes prior to restocking would allow for additional interim monitoring (intensive searches for live fishes using standard fishery equipment) to enable better determination of the success of the piscicide application. This delay in repatriation would facilitate repeated rotenone applications, if required, while the stream remains fish free, thereby minimizing future losses of native fishes. Salvaged fishes would be held at minimum through the summer following the initial re-treatment (scheduled for June 2010), and possibly for up to 1 year or more to facilitate hatchery propagation to bolster the number of fishes available to be stocked.

During holding and possible propagation, fishes would be maintained and fed according to standard hatchery practices. If any species is held through winter of 2010-2011, propagation may be attempted via either volunteer spawning or by injection of the synthetic hormone Ovaprim®. Following spawning, the adults would likely then be placed in Bonita Creek, and the progeny would be allowed to mature until autumn of their first year and then stocked.

It is also possible that native species captured (except Gila topminnow as described above) during salvage activities would be moved to upper Bonita Creek upstream of the City of Safford infiltration gallery. However, only a small number (<200) of Gila chub and the other species that are already present in the upper section would be repatriated to minimize effects on existing populations. The repatriated species (except Gila topminnow as just described) have already been (spikedace) or are planned to be (loach minnow, desert pupfish) released into this reach anyway, so if they are determined free of parasites and pathogens of concern, they will be moved upstream and released immediately following salvage using a truck or helicopter transport system.

Sonora mud turtle (*Kinosternon sonoriense*) and aquatic invertebrates from several locations throughout the treated section also would be salvaged, held onsite in portable tanks, and restocked immediately following chemical renovation. Pre- and post-renovation monitoring may be conducted for these taxa as well as other aquatic amphibians and reptiles.

To facilitate effectiveness of rotenone applications, beaver dams within the treatment reach would be breached a few days in advance of the renovation(s) to drain pools and

reduce problematic areas where submerged debris and plant material could impede circulation of the piscicide. Pools behind beaver dams and the fish barrier may also be siphoned. Mechanical removal of nonnative fishes using standard fishery equipment may also be practiced anywhere in the stream below the San Carlos Apache Reservation boundary, depending on circumstances.

Following the planned re-application of rotenone, salvaged native fishes and those from other sources, as necessary, would be repatriated to the renovated reach of Bonita Creek or potentially anywhere in the stream downstream of the San Carlos Apache Reservation and upstream of the fish barrier.

Augmentations of repatriated species from appropriate sources would occur during the first several years following the initial re-treatment period, but could occur any time during the foreseeable future until it has been determined the species have either established self-sustaining populations or are unlikely to result in successful establishment. Augmentation events may include releases of tens to thousands of individuals, depending on the species and source availability, at any locality or localities upstream of the constructed fish barrier and downstream of the San Carlos Apache Reservation.

The proposed chemical renovation(s) would be closely coordinated with the City of Safford to avoid any adverse effect on operation of the Bonita Creek municipal water system. Measures described in the 2007 EA to minimize public exposure during renovation would be included in the proposed project.

AFFECTED ENVIRONMENT

The affected environment, as described in the 2007 EA, has been modified as the result of eradication of several nonnative fish species, although mosquitofish and green sunfish have re-established populations in the lower 1.7-mile reach of Bonita Creek. In addition, the resident fish community (Gila chub, longfin dace, speckled dace, desert sucker, and Sonora sucker) has been supplemented with Gila topminnow, desert pupfish, loach minnow, and spikedace, all of which were stocked into the renovated reach during 2008. Spikedace was also stocked into Bonita Creek upstream of the City of Safford infiltration gallery in 2009. All species except desert pupfish have been detected during subsequent monitoring. Consequently, this modified fish assemblage forms a new environmental baseline that must be considered in the determination of effects of the proposed action.

There are no known changes to the affected environment with respect to the SWWF. Because it is possible that suitability of habitat for SWWF could have improved since the summer of 2007, habitat conditions in the action area would be re-evaluated prior to implementing the proposed action.

ENVIRONMENTAL CONSEQUENCES

Native Fishes

Because salvage attempts are unlikely to capture all fishes present in affected reaches of Bonita Creek prior to renovations, all native fish species occupying the stream likely would experience some unquantifiable level of mortality as a result of the proposed action. As no Gila topminnow are to be salvaged under the proposed action, all would be killed from the piscicide application. Sources of mortality to other species also could include salvage efforts and transport and holding activities. These impacts to federally listed fishes were addressed under formal Section 7 Endangered Species Act consultation with FWS (FWS 2010). Depending on quantities, mortality caused by salvage, transport, and holding also may be covered under AGFD's Endangered Species Act Section 10(a)(1)(A) permit.

This mortality would diminish the supply of fishes to be repatriated back into Bonita Creek following the proposed and potential future unplanned renovations. However, the Gila chub population upstream of the infiltration gallery (and repatriated species if they establish there) would be unaffected by the renovation(s) and can serve as a source to increase the numbers of fish to be repatriated to the renovated reach. Some mortality also can be expected during hatchery propagation and transport and release activities, which also may be covered by AGFD's Section 10(a)(1)(A) permit associated with stocking events.

All stocks of the repatriated species are actively under captive propagation at Bubbling Ponds Hatchery, the Lower San Pedro River Preserve ponds, Arizona State University, and elsewhere; and, thus, additional fishes would be available to bolster the numbers to be restocked or augmented. Wild stocks of loach minnow and spikedace are also available from Aravaipa Creek, Gila topminnow from Bylas Springs, and desert pupfish from El Doctor Marsh, depending on the natural variability in the size of those populations and access to those sites. All of these sources of fish were originally planned to be used to augment populations that were repatriated to Bonita Creek under the native fish restoration project.

If the proposed action is successful, all listed fishes restocked into Bonita Creek will accrue considerable conservation benefit by elimination of the known limiting factor of nonnative fishes. Protection of these populations into the future as provided by the fish barrier would enhance the conservation status of all species and aid in the recovery of those species.

The 2007 EA considered the effects of temporarily breaching beaver dams by the City of Safford to facilitate access for repair and maintenance of infrastructure associated with the Bonita Creek municipal water system. Breaching the beaver dams prior to renovation of the stream, as proposed in this supplement, would produce environmental effects that are substantially the same as those described in the 2007 EA. Such breachings could cause some mortality to Gila chub and repatriated fishes in the stream, as noted in the

2007 EA, but the effect of this mortality on these species is expected to be minor. Mortality of listed fishes resulting from breaching the dams was also covered under Section 7 consultation with FWS, as well as under AGFD's Section 10(a)(1)(A) permit. The breached dams likely would be repaired by beavers immediately following the renovation(s).

Anticipated cumulative effects are substantially the same as those described in the 2007 EA. The proposed project is expected to ultimately improve the conservation status of Gila chub, loach minnow, spikedace, desert pupfish, and Gila topminnow.

Southwestern Willow Flycatcher

SWWF surveys were conducted along Bonita Creek from 2004 through 2007. No willow flycatchers were ever documented, and the closest nesting flycatcher was a single SWWF located 3 miles south of the project area in 2003. All other records were from the Gila River approximately 20 to 25 miles southwest of the project area. SWWF habitat suitability declined from 2004 to 2007 primarily from increased beaver activity which reduced the vegetation density adjacent to the stream. As a result, habitat suitability for SWWF was considered marginal by 2007. Reclamation concluded that the project as proposed in the 2007 EA would have no effect on the SWWF.

Although it is unlikely that a SWWF would be present along Bonita Creek, based on past survey results, that conclusion cannot be reached without conducting a site visit to determine current habitat conditions. Reclamation conducted informal Section 7 consultation with the FWS on January 27 and 28, 2010, which resulted in the following:

1) Reclamation will conduct one SWWF survey during the first survey period (15-31 May). During the survey, the habitat suitability for the SWWF will be evaluated. If habitat conditions appear similar to conditions during the last (2007) survey, Reclamation would draft a memorandum to the file indicating that habitat suitability is marginal; and, based on the previous survey records, it is unlikely that a SWWF would be present in the project area. Reclamation would conclude that the proposed project would have no effect on the SWWF.

2) If habitat conditions have improved, Reclamation would conduct a second survey after the June 15 migrant cut-off date and prior to renovation activities. If no SWWFs are observed during the second survey, Reclamation would document the findings in a memorandum to the file concluding that the proposed renovation would have no effect on the SWWF.

3) If, on the other hand, a SWWF is observed during the second survey, Reclamation would document the location. This information would be provided to personnel conducting the renovation activities. Renovation personnel would be required to minimize their activities near the SWWF territory. With this mitigation in place, the proposed project "may affect, but would not likely adversely affect" the SWWF, as determined in a Biological Assessment prepared by Reclamation and submitted to the

FWS (Reclamation and BLM 2010). In consultation with the FWS, Reclamation would request expedited concurrence with this determination, so that the renovation project could proceed prior to onset of the monsoon season and increased flood risk. Reclamation would conduct a third SWWF survey after renovation was completed in accordance with survey protocol.

FUTURE REGULATORY CHANGES

Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the U.S. Environmental Protection Agency (EPA) is charged to consider the effects of pesticides on the environment by determining whether a pesticide will perform its intended function without unreasonable adverse effects. The EPA, in its March 2007 Reregistration Eligibility Decision for Rotenone, determined the use of rotenone, when used as a piscicide in accordance with product instructions, will not cause unreasonable adverse effects on human health or the environment.

On November 27, 2006, the EPA issued a Final Rule (71 *Federal Register* 68,483) concluding that pesticides when applied to or near waters of the United States in accordance with FIFRA are exempt from the Clean Water Act permitting requirements. However, on January 7, 2009, the United States Court of Appeals for the Sixth Circuit (*National Cotton Council vs. U.S. EPA*) vacated the Final Rule, thereby requiring dischargers of piscicides to comply with the National Pollutant Discharge Elimination System (NPDES) permitting process. Following the ruling, the EPA was granted a stay of the mandate until April 9, 2011, during which time EPA will work with NPDES-authorized states, such as Arizona, to develop general permits. The Arizona Department of Environmental Quality anticipates having a permit in place to provide Arizona Pollutant Discharge Elimination System (AZPDES) coverage for piscicide applications by the April 2011 deadline. The AGFD, as the piscicide applicator, would obtain permit coverage for any future chemical renovations once the AZPDES permit becomes available.

LIST OF AGENCIES AND PERSONS CONSULTED

This supplement will be distributed to individuals, organizations, and agencies that commented on and/or received the 2007 EA. The names and addresses of entities that receive this supplement will be retained in the administrative record at the Phoenix Area Office of Reclamation. A copy of this supplement is available at http//:www.usbr.gov/lc/phoenix.

LITERATURE CITED

Reclamation and BLM. 2007. Draft environmental assessment: Native fish restoration in Bonita Creek, Gila Box Riparian Conservation Area, Graham County, Arizona.

Reclamation and BLM. 2010. Draft biological assessment: Effects of rotenone application and related native fish management actions to federally listed fishes in Bonita Creek, Graham County, Arizona.

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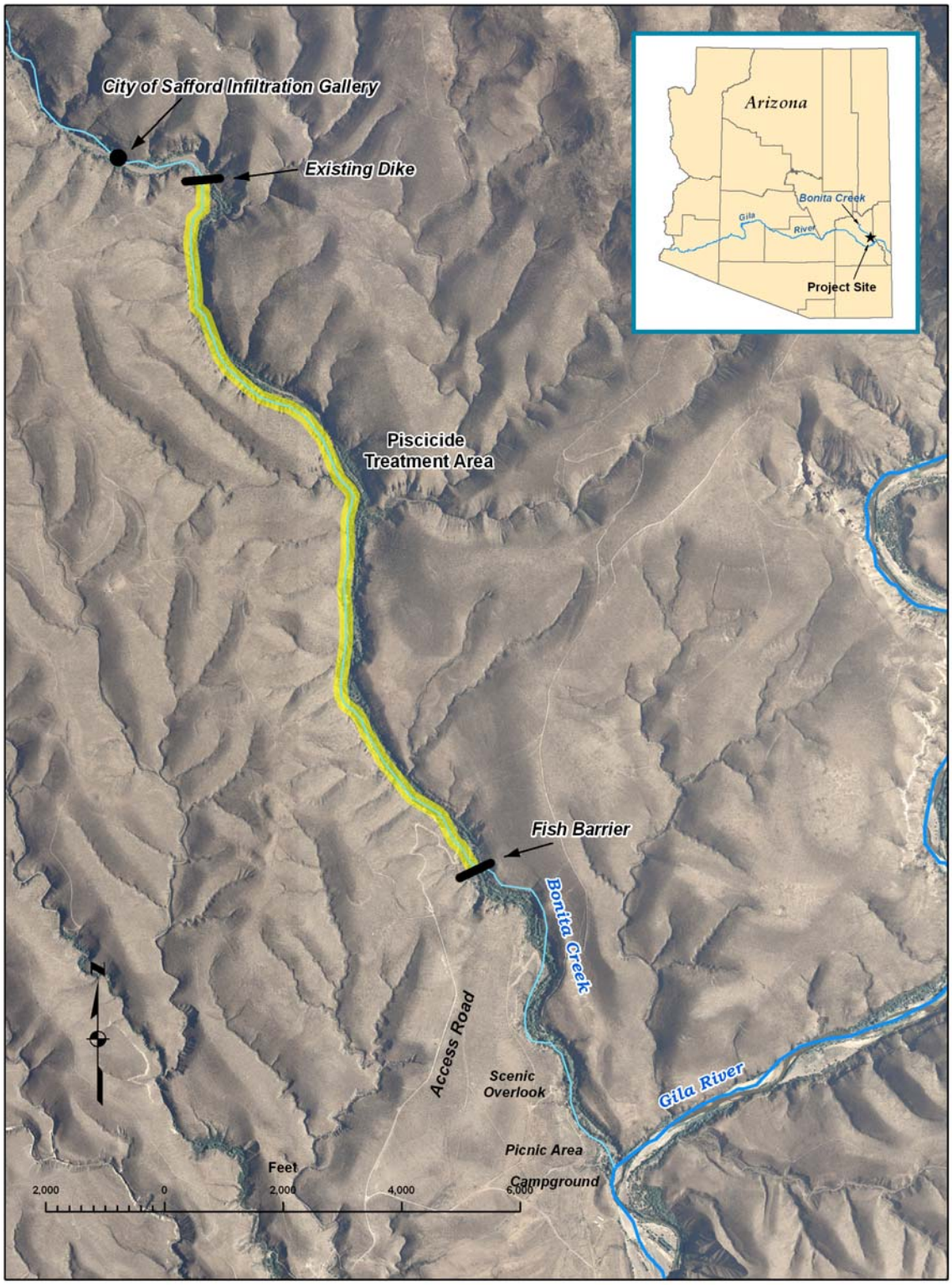

Figure 1. Piscicide treatment area.