RECLAMATION

Managing Water in the West

Final Environmental Assessment

Bubbling Ponds Fish Hatchery Pipe Renovation, Yavapai County, Arizona

U.S. Department of the Interior
Bureau of Reclamation
Lower Colorado Region
Phoenix Area Office
Glendale Arizona

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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Acronyms and Abbreviations

ADEQ	Arizona Department of Environmental Quality
AGFD	Arizona Game and Fish Department
AQP	Air Quality Program
BPH	Bubbling Ponds Fish Hatchery
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
CRMP	Cultural Resource Management Program
CWA	Clean Water Act
DOI	Department of the Interior
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FPEIS	Final Programmatic Environmental Impact Statement
FR	Federal Register
HCP	Habitat Conservation Plan
HDP	High Density Polyethylene
IPaC	Information for Planning and Consultation
ITAs	Indian Trust Assets
LCR	Lower Colorado River
LCR MSCP	Lower Colorado Multi-Species Conservation Program
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
O&M	Operations and Maintenance
PL	Public Law
PVC	Polyvinyl Chloride
RASU	Razorback sucker
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Office
SR	State Route
SRP	Salt River Project
SWFL	Southwestern willow flycatcher
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
YBCU	Yellow-billed cuckoo

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1.0 Introduction

In accordance with the National Environmental Policy Act of 1969, (P.L. 91-190) the Bureau of Reclamation has prepared this Environmental Assessment (EA) to evaluate the potential impacts resulting from the proposed Bubbling Ponds Fish Hatchery (BPH) Pipe Renovation Project (Project). The proposed action includes sleeving an existing 30-inch corrugated pipe with a 24-inch high-density polyethylene (HDP) pipe, stabilizing a hill slope above and below the pipe, and replacing a metal rack at one of the outtakes. The Project is located on Arizona Game and Fish Department (AGFD) property and private lands in Cornville, Yavapai County, Arizona (Figure 1).

1.1 Background

The Bubbling Ponds Fish Hatchery property was acquired in 1952 with facility construction in 1954 as a warm water hatchery. The facility was originally managed as a satellite production unit of the Page Springs Hatchery complex. Currently, BPH is operated by the AGFD. Water is supplied to the hatchery from Bubbling Springs, a natural spring located about 0.5 miles north of the hatchery. The water travels from the spring through an open ditch, then moves through a pipe until it reaches the hatchery ponds. About 600 feet of the pipe is on private property, with the remainder on AGFD property. Four private owners have rights to the water, although only two use the water currently.

The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is a multi-stakeholder Federal and non-Federal partnership responding to the need to balance the use of the Lower Colorado River (LCR) water resources and the conservation of native species and their habitats in compliance with the Endangered Species Act (ESA). This is a long-term (50 year) plan to conserve at least 26 species along the LCR from Lake Mead to the Southerly International Boundary with Mexico through the implementation of a Habitat Conservation Plan (HCP). Razorback sucker (RASU) is listed by the AGFD as a species of special concern and was federally listed in 1991 as endangered under the ESA. Reclamation is the implementing agency for the LCR MSCP and the AGFD is a committed signatory and partner to the program and the HCP.

This Project is a partnership between Reclamation and AGFD for the principle purpose of maintaining the RASU population in the lower Colorado River and associated drainages pursuant to goals set forth in the LCR MSCP. The LCR MSCP has funds available for maintenance, repair and replacement of infrastructure used in production of native fish for the LCR. The LCR MSCP has entered into partnership with AGFD to provide rearing space at their facilities for native fish production. This pipeline project also supports the 2008 Biological Opinion on Transportation and Delivery of Central Arizona Project Water to the Gila River Basin in Arizona and New Mexico.

Since the installation of the pipe for the hatchery many of the pipeline sections have become completely rusted through and failed to deliver water. Some of the buried supply line has been replaced within the hatchery facility, however, none of the pipeline supplying water to the

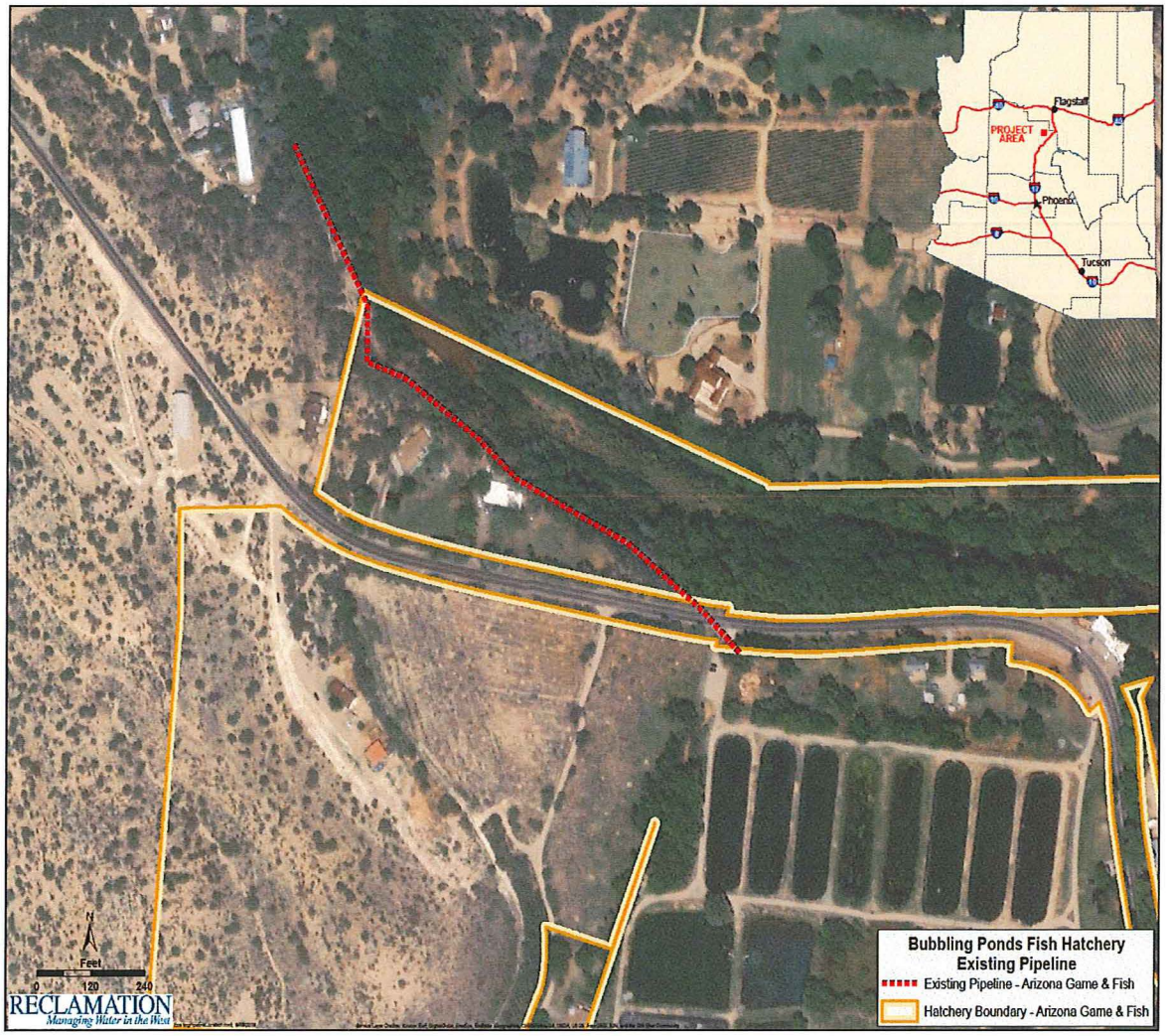
hatchery from the spring has been replaced since the hatchery was acquired by the state. Since the spring supplies the only source of water to BPH, and is used to rear native fish for the LCR MSCP, it is vital to keep this supply continuous, and of proper quality. Interruption to the spring source could cause suffocation of endangered fish, and potential take under the ESA.

AGFD has supplied RASU for Reclamation projects on the LCR since 1999 and has met or exceeded target goals almost every year since the partnership was formed.

1.2 Project Location

The Project is located about 6 miles north of Cornville in Yavapai County, Arizona, in portions of Township 16 North, Range 4 East, and Section 23 (Gila and Salt River Baseline and Meridian; Figures 1 and 2). The pipe originates at Bubbling Pond, crosses under Page Springs Road, and continues into the hatchery pipe system.

Figure 1. Bubbling Ponds Existing Pipeline Location



1.3 Purpose and Need

The purpose and need of the proposed action is to ensure clean and adequate water is supplied to the hatchery and to ensure the safe and continuous functioning of the hatchery's rearing facilities for native fish. Most of the water conveyance pipe was inspected by video in June 2009 and again in March 2016 and found to be in poor condition. The existing Bubbling Ponds pipe was installed when the hatchery was built in the 1950s and is vital to hatchery operations. The existing pipe has holes, leaks, and root blockages, with several locations of bowing caused by large rocks. The holes pose a safety risk to those walking above ground, as well as potential threats to water quality from contamination for hatchery fish. Without functional water conveyance pipes, the hatchery will be unable to continue the rearing of Arizona's endangered, threatened and sport fishes.

1.4 Public Involvement

Scoping letters were mailed to federal, state, local, and tribal parties and other potential stakeholders and interested parties on September 29, 2017. The only responses were from the State Historic Preservation Office (SHPO), and Salt River Project (SRP). The SHPO stated that they would participate via the National Historic Preservation Act, Section 6 process. SRP expressed concerns of an increase in consumptive use for AGFD and the downstream users, and impacts to SRP's flow measurement equipment. AGFD responded by letter dated November 17, 2017. There will be no increased water use, but the water will be off for a 3-5 day time period as permitted and no water will pass through the measuring device at those times (Appendix A).

1.5 Decisions to be Made

The Responsible Official for Reclamation (Area Manager of the Phoenix Area Office) must determine whether the proposed action would have significant impacts on the quality of the human environment, and therefore whether an Environmental Impact Statement must be prepared.

2.0 Proposed Action and Alternatives

2.1 Description of the Proposed Action

Under the proposed action, Reclamation would jointly fund the renovation of the pipe which conveys water from Bubbling Ponds Spring to the hatchery complex. The pipe is approximately 1,500 feet in length, originating from the diversion point ditch (from the spring) to an existing irrigation structure along the entrance to the hatchery on North Page Springs Road. The existing pipe is 30 inches in diameter, composed of corrugated metal, and buried at a depth of no more than 4 feet throughout its extent.

Project activities would begin in October 2018 and be completed by early January 2019. If the Project is delayed beyond January 2019, activities would be postponed to October 2019 through Jan 2020. In order to complete the renovations, water to the hatchery would be shut off at 4-5-day intervals for sections of the pipeline to be repaired and sleeved. Water will have to be turned back on for 4-5 consecutive days following a shut off event to replenish water within the hatchery and to maintain water quality. An experimental cessation of water flow in early 2017 determined that 4-5 consecutive days without flow was the limit to maintain suitable conditions. The erosion control part of this Project would be accomplished outside the water shut off intervals.

Water Diversion and Gated Culvert/Valve Improvements

The first step of the sleeving and repair process would be to divert approximately one-half to two-thirds of the water at the spring using the bypass valve. The diverted water would flow from the spring into a ditch that terminates at a small man made pond on the private landowner's property. The outflow from this pond flows through a channel into Oak Creek. The remaining water from the spring will flow through the channel. This will provide the necessary water for the Page springsnails that are present throughout the channel. The temporary diversion would be installed approximately 33 feet above the gated culvert. First, the diversion will be used to direct water away from the bypass valve so the bypass valve can be replaced: the water will flow through the grated culvert down the existing 30-inch pipe to the hatchery. Second, the diversion structure will be placed in front of the culvert diverting the water through the open bypass valve. This water will flow through the valve into a channel which terminates at Oak Creek. The water diversion will allow the work at the culvert to take place. This work includes extending the concrete base (by pouring footers/pad) that the grate currently sits on to allow the grate to be placed at a 45-degree angle for more efficient cleaning.

Pipe Cleaning

The pipe would be cleaned using only physical methods, no chemical solution will be used. A combination of removal by hand, water jetting or vacuum, or pulling a mandrel through the line, will be used. Cleaning the existing pipe of any blockages such as roots, rocks, and sediment will be with a process known as hydro jetting. This involves the insertion of a hose with a high pressure forward facing water jet system that pushes and cuts through blockages with back facing jets that push debris remnants out toward the opening. The hydro jet system will be inserted at both the northern and southern extent of the pipe with expelled debris accumulating at both ends before their removal. Minimal debris and sediment will be returned to the creek downstream. Most debris in the pipe is made up of roots and larger rocks. Some smaller sediment may be caught in the roots and may dislodge during cleaning. A majority of this sediment would be captured in the hatchery or the existing boxes when normal flow is restored to the pipeline. No debris or sediment from the construction is expected to move upstream of the work.

Pipe Improvements

Once cleaned, a 24-inch HDP replacement pipe will either be sleeved at six predetermined connection points, or if necessary, the top half section of the pipe will be exposed and opened for

direct placement of the replacement pipe. If any section of the existing pipe would have to be removed, the replacement pipe would be replaced in-kind along the same alignment and depth.

Trenching for sections of the replaced pipe segments would be about 42 inches wide and 4 feet deep, backfilled with native material, and compacted. The water would have to be diverted in the same manner as the diversion described above.

Proposed Staging Areas

There are five staging areas where there will be an opening in the existing corrugated metal pipe to enable work on the pipeline (Figure 2).

- Staging Area 1 is on the privately-owned land at the gated culvert. This area is large enough to allow access to vehicles and the insert can be pushed through from here. AGFD has obtained a temporary right of entry across the property.
- Staging Area 2 is behind the residence at 2075 North Page Springs Road where there is currently a junction box with an irrigation pump that is used by AGFD and a private landowner who has a water right. One concrete pump and diversion vault measuring 5 feet by 4 feet will be installed along the pipeline at this junction. A flow meter will be installed in this vault to measure the water used for irrigation purposes.
- Staging Area 3 is behind the residence at 2055 North Page Springs Road. There is an opening in the pipe that will be used as a pushing/pulling point for the insert. An old water pump and the vertical 30-inch pipe will be removed. Once the insert is put in place this opening will be covered so that it will be a straight pipe.
- Staging Area 4 is just north of the road across from the hatchery where the pipe curves to the east. The old pipe will be uncovered and opened. This opening will be used to push or pull the new liner. Once the liner is in place it will be covered with soil. The section of pipe that travels beneath the county road (Page Springs Road) will either need to be sleeved (preferred) or dug up and replaced. The AGFD or its contractor will coordinate with Yavapai County for Project activities affecting Page Springs Road.
- The fifth and last staging area is an existing junction box to the east of a parking lot used by bird watchers adjacent to the hatchery.

Bank Stabilization

Portions of the existing pipe are also threatened by existing bank erosion and erosional damage. One location along the pipeline would require stabilization due to the slope gradient and existing erosion. Bank stabilization will initially require the removal of any dead limbs and/or shrubs that have accumulated and trimming the existing live vegetation in order to properly implement measures. The ground will be reshaped to fill in the channel cut into the bank while maintaining the existing drainage pattern. This may require approved material to be added to stabilize the

area. An erosion mat with open cells will be laid down and filled with soil to promote future vegetative growth. Any imported soil will be from an Arizona Department of Transportation approved material source (Figure 3).

Equipment used for pipeline replacement and erosion control may include a track excavator, bobcat, backhoe, and pickup trucks. Large equipment would not access the pipeline corridor due to width and weight of large vehicles, but remain in an upland staging area. All Staging Areas will be on AGFD property but some access points may also be on adjacent private property. All equipment access from Page Springs Road will occur on existing dirt or two-track roads; no overland travel will be necessary.

AGFD-Only Property Alternative

In the event that private property owners do not provide permission for access and construction, the following adjustments would be made to the Project plan:

- Alternative Staging Area 1 (see Proposed Staging Areas above) will be used in lieu of Staging Area 1.
- Pipeline improvements from the gated culvert to Alternative Staging Area 1 will not be performed.
- The gated culvert rack and diversion valve improvements will also not be constructed. Water will still have to be diverted at the gated culvert site by opening up the existing diversion valve; this can be accomplished by one person accessing the valve on foot.

Figure 2. Locations of construction (All staging/laydown on AGFD property)

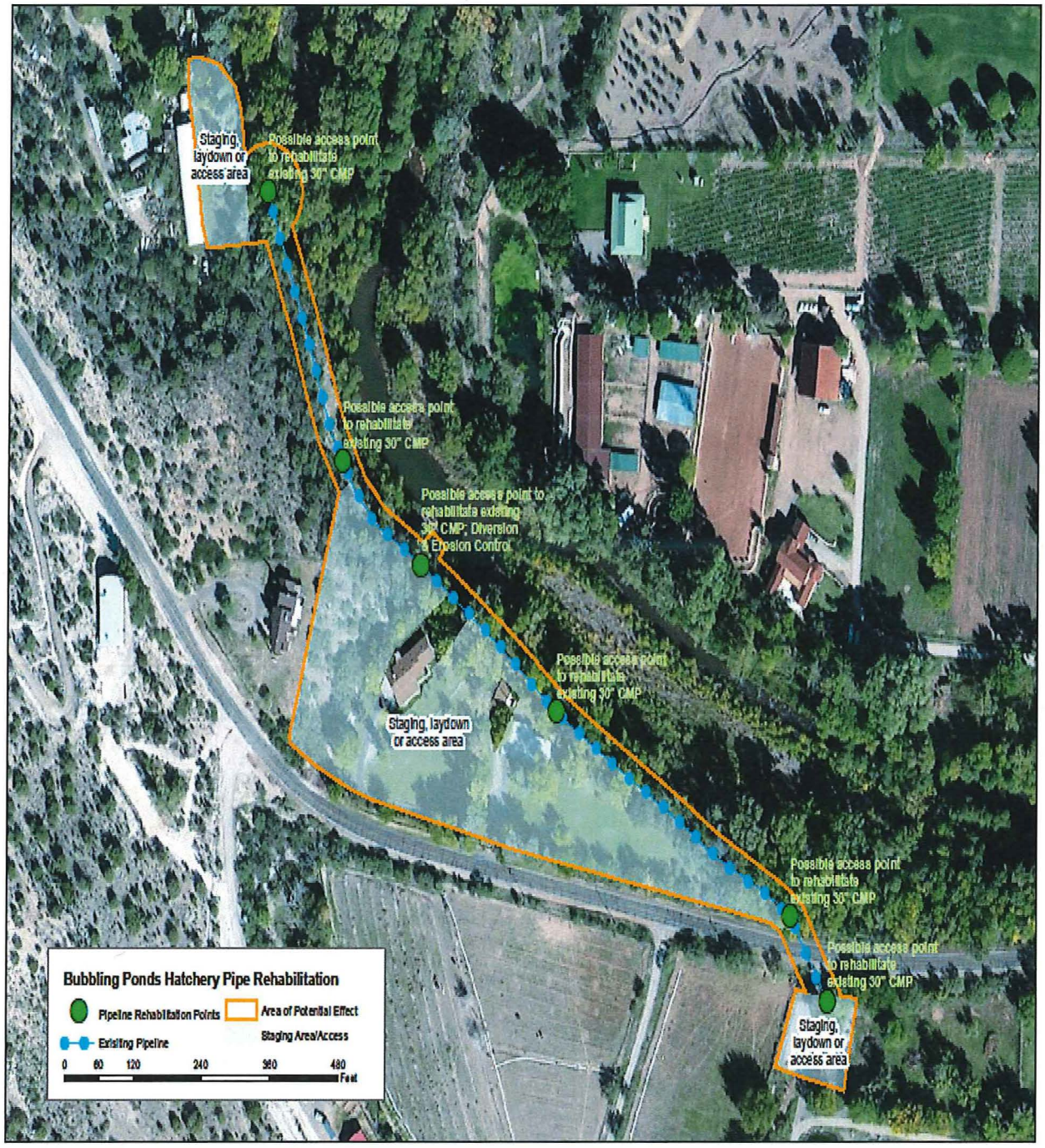


Figure 3. Erosion Area

2.2 No Action

Under the No Action alternative, renovations to the hatchery pipe would not be conducted. Without renovation, the pipe would continue to deteriorate in condition and function and would eventually cease to function as designed for adequate water conveyance.

2.3 Alternatives Considered but Eliminated from Further Study

One alternative was to completely dig up the pipe throughout its current location and replace it with a similar pipe. This alternative was not feasible due to cost, time, and environmental concerns.

3.0 Affected Environment, Environmental Consequences, and Cumulative Effects

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the proposed Project. Reclamation takes a "hard look" at all potential impacts by considering the direct, indirect, and cumulative effects of the proposed action on the environment, along with connected and cumulative actions. In those cases where impacts are either not anticipated or are expected to be negligible, the issues and impact topics are dismissed from detailed analysis. As described in NEPA regulations, NEPA analysis should focus on issues that are truly significant to the action in question, rather than amassing needless detail (CEQ NEPA regulations, 40 CFR 1500.1 (b)).

The CEQ NEPA regulations require an assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as, "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Therefore, a cumulative impact analysis captures the effects that result from the proposed action in combination with the effects of other actions in the proposed action's region of influence.

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects in the vicinity of the study area. The geographic scope for this analysis includes actions both, within and outside of the study area, depending on the resource. The temporal scope includes projects within a range of approximately ten years.

Table 1 lists cumulative projects that were identified in the study area based on readily available information. Current status of these cumulative projects may change and proposals for new projects may be developed. The table indicates the project name, location, status, description, and timeframe for each project.

Table 1. Other Projects in the Analysis Area

Project Name	Location	Status	Description	Timeframe
Bubbling Ponds Hatchery now Aquatic Research and Conservation Center (ARCC) rehabilitation/modernization project is in the final year of a 3 year project.	At hatchery	In Final year of project	The land has been cleared and construction of facilities is underway.	Present

Cumulative biological, cultural, and geological and soils impacts from improvements to and construction of water delivery facilities could result in localized effects on desert habitat and cultural resources, but the severity and extent of such impacts would be minor given the limited scope of the proposed action. Cumulative adverse impacts to cultural resources would not occur as a result of the proposed Project, with the implementation of avoidance measures.

3.1 Resources Eliminated from Further Study

The following resources were considered but are not addressed further in this EA because it was determined that the resource is not present or that minimal or no impacts would result from the proposed action.

3.1.1 Air Quality

The proposed action would cause short-term emissions of pollutants during construction. The laydown sites are already cleared and the areas for pipe construction are small and work will be of short duration of up to 4 days at a time. This is not expected to impact air quality. The Project is not located within a nonattainment or maintenance area for emission constituents. Therefore, air quality was eliminated from further study in this EA.

3.1.2 Water Resources

The Project requires water from a spring to be bypassed around a gated culvert for a short duration to reconstruct the gate to a 45-degree angle. This part of the Project would require one days' work. Water to the hatchery would only be cut off for up to 3-4 days at a time to renovate sections of pipe by sleeving. During public scoping, the SRP had two concerns which were: an increase in acreage and location of water use, and any adverse impact to SRPs monitoring and flow measurement equipment at the hatchery as a result of the new piping. AGFD replied to these concerns by stating that there would be no increase in the amount of water or consumptive use for them or other downstream water right owners. The water will be diverted into Oak Creek while construction to the pipe is occurring and bypass SRP's monitoring device for 3-5 days. Then water will pass to the hatchery for 5-7 days and be turned off again for 3-5 days. Overall, the work is expected to take 60-90 days. The proposed action would have no effect on water quality or quantity in the area; therefore, water resources were eliminated from further study in this EA.

3.1.3 Geology and Soils

The proposed action will occur on a moderately compacted dirt bench, located above another bench and occur 100-200 feet above Oak Creek. There are scattered rocks and low vegetation as this has been used for many years as a trail along Oak Creek. The areas for the laydown are also compacted and open with gravel or low weedy vegetation. The proposed Project will not cause changes in the topography, soils, or geologic composition of the surrounding area. Therefore, geology and soils were eliminated from further study in this EA.

3.1.4 Vegetation

The Project area encompasses two primary vegetation communities: (1) Semidesert Grassland, and (2) Sonoran Riparian Deciduous Forest and Woodlands. The location of the pipeline, erosion repair and laydown areas are in previously disturbed locations. The location of the pipe is under a well-worn path used for day-to-day operations of the hatchery, including checking pumps and facilities. The shelf or ledge where the pipeline resides has a low growing grass/forb mix and weeds, and has small and large rocks in places. Very little vegetation will be removed from the proposed action, and predominantly trimming and removal of dead trees would take place.

3.1.5 Floodplains and Wetlands

All areas of the proposed Project are outside the 100-year flood zone, and above the floodplain of Oak Creek. The pipeline runs along an upper bench, which is above a secondary bench 20 feet above Oak Creek. There would be no effect to floodplain capacity or flood flow characteristics. Extension of the concrete box for the intake grate by approximately 80 inches would have minimal impacts to the riparian area along the ditch. No wetlands would be impacted because none exist in the project area.

3.1.6 Noise

Residential homes exist across Oak Creek from where this Project will take place as well as a few homes above the location of the pipe. No noise-sensitive receptors (e.g., libraries, schools, campgrounds, etc.) are located in the vicinity of the proposed action. Construction activities would be limited to pickup trucks and a bobcat, and be of very short duration. All work will take place during daylight hours, and during winter months. Therefore, noise was eliminated from further study in the EA.

3.1.7 Socioeconomic

The proposed action would not have an immediate socioeconomic impact within the Town of Cornville or Yavapai County. Therefore, socioeconomic impacts were eliminated from further study in the EA.

3.1.8 Environmental Justice

The Town of Cornville has a population of 3,280 of which 93 percent are white and 91 percent have lived above the poverty line in the last 12 months (U.S. Census Bureau 2016). The proposed action would not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. Therefore, Environmental Justice has been eliminated from further study in this EA.

3.2 Cultural Resources

3.2.1 Affected Environment – Cultural Resources

The Project area is located along Oak Creek Canyon, a perennial stream running through the surrounding arid environment. This stream would have been used by various cultural groups

from the prehistoric Paleo and Archaic groups to the Southern Sinagua, followed by proto-historic Yavapai, Apache, and Pai peoples and into the modern era with the historic European settlement.

Two Class III Cultural resource surveys were completed within the Project area. These surveys examined the entire Project area footprint. The first was completed in 2014 when new land was added to the hatchery and reported in *A Cultural Resources Survey of 31.5 Acres Prior to Land Acquisition by the Arizona Game and Fish Department near Cornville, Yavapai County Arizona.* The second report was completed as part of the current pipe repair project that surveyed the private land involved. That report is entitled: *Class III Cultural Resources Survey of 2.20 Acres for the Bubbling Ponds Fish Hatchery Pipe Rehabilitation Project in Cornville, Yavapai County, Arizona.* Neither report identified any eligible cultural resources within the Project area footprint.

Based on the two surveys there are no known National Register eligible historic properties within the Project area. Consultation was initiated with the Arizona State Historic Preservation Office and interested Native American Tribes on Reclamation's finding of *No Historic Properties affected.* The Arizona State Historic Preservation Office concurred with our assessment on June 5, 2018.

3.2.2 Environmental Consequences – Cultural Resources

3.2.2.1 No Action

Under the No Action alternative there would be no impact to cultural resources because no project will be implemented. Continued use of the eroding pipe will have no effect on cultural resources as there are none known to exist in the area.

3.2.2.2 Proposed Action

As with the No Action alternative, the proposed action will also have no effect on cultural resources as the entire Project area has been surveyed and there are no known cultural resources in the Area of Potential Effect.

3.2.2.3 Cumulative Effects

Since the Project is not anticipated to have any effects to cultural resources, there would not be any cumulative effects.

3.3 Indian Trust Assets

3.3.1 Affected Environment – Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust by the U.S. Government for Indian tribes or individuals. Assets can be real property, physical assets, or intangible property rights. ITAs cannot be sold, leased, or otherwise encumbered without the approval of the U.S. Government. A trust relationship is established through a congressional act or Executive Order

(EO), as well as by provisions identified in historic treaties. As trustee, the Department of the Interior (DOI) is legally obliged to fulfill treaty and statutory obligations and to manage, protect, and conserve Indian trust resources and lands in utmost good faith. Lands associated with a reservation, rancheria, or public domain allotments are examples of ITAs. Resources located within reservations, including timber, minerals, oil and gas, and others, are also considered trust assets. Treaty rights and water rights, as well as hunting and fishing rights, may also be ITAs. Six Indian Tribes were consulted to identify and address concerns for ITAs. No ITAs were identified through this process.

3.3.2 Environmental Consequences – Indian Trust Assets

3.3.2.1 No Action

Under the No Action alternative, no new construction would occur. Therefore, this alternative would have no impact on ITAs.

3.3.2.2 Proposed Action

Under the proposed action there would be no change to water use and, therefore no effect to ITAs.

3.3.2.3 Mitigation Measures

None proposed.

3.3.2.4 Cumulative Effects

No Cumulative effects are expected.

3.4 Biological Resources

3.4.1 Affected Environment – Terrestrial Wildlife

Neotropical migrants that may be observed in riparian habitat near the Project area include the summer tanager (*Piranga rubra*), Bell's vireo (*Vireo bellii*), common yellowthroat (*Geothlypis trichas*), and yellow warbler (*Dendroica petechia*). Birds of prey that can be found in the area include the red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), and American kestrel (*Falco sparverius*). There is a seasonal bald eagle (*Haliaeetus leucocephalus*) nest to the south on Oak Creek but outside the action area. Golden eagles (*Aquila chrysaetos*) have also been seen in the area, as well as Gambel's quail (*Callipepla gambelii*).

Information for Planning and Consultation (IPaC) from the U. S. Fish and Wildlife Service (USFWS) lists several migratory birds of conservation concern that could be in the area. These birds include: Bendire's Thrasher (*Toxostoma bendirei*), black throated sparrow (*Amphispiza*

bilineata), black-chinned sparrow (*Spizella atrogularis*), black-throated gray warbler (*Sendroica nigrescens),* blue-throated hummingbird (Lampornis *clemenciae*), Elf owl (*Micrathene whitneyi*), Grace's warbler (*Dendroica graciae*), gray vireo (*Vireo vicinior*), Lark bunting (*Calamospiza melanocorys*), Lewis's woodpecker *(Melanerpes lewis*), Mexican whip-poor-will (*Antrostomus arizonae*), Phainopepla (*phainopepla nitens*), pinyon jay (*Gymnorhinus cyanocephalus*), Red-faced warbler (*Cardellina rubrifrons*), Rufous hummingbird *(selasphorus rufus*), rufous-winged sparrow (*Aimophila carpalis*), and Virginia warbler (*Vermivora virginiae*).

The area also exhibits a wide diversity of mammal species such as the black bear (*Ursus americanus*), collared peccary (*Tayassu tajacu*), bobcat (*Felis rufus*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). Other mammals include the ringtail (*Bassariscus astutus*), mountain lion (*Puma concolor*), and bobcat (*Lynx rufus*).

Common lizards found in the area include the greater earless lizard (*Cophosaurus texanus*), side-blotched lizard (*Uta stansburiana*), and plateau lizard (*Sceloporus tristichus*). Small mammals of the area provide an abundant prey source for snakes such as the ground snake (*Sonora semiannulata*), ring-necked snake (*Diadophis punctatus*), and black-tailed rattlesnake (*Crotalus molossus*). Amphibians known to the area include the Mexican spadefoot (*Spea multiplicata*), red-spotted toad (*Bufo punctatus*), and Woodhouse's toad (*Bufo wodhousii*).

3.4.2 Environmental Consequences – Terrestrial Wildlife

3.4.2.1 No Action

Under the no action alternative, there would be no direct effect to terrestrial wildlife because no project would be implemented.

3.4.2.2 Proposed Action

The proposed action would impact approximately 7,330-square feet (0.17 acres) total in already disturbed habitat. Work will take place in winter outside breeding season for the majority of migratory birds. Although several birds such as the Phainopepla, Lewis woodpecker, pinyon jay, Bedire's thrasher, and the three sparrow species are year-round residents no habitat would be impacted by this Project. This Project is not expected to impact migratory birds.

3.4.2.3 Mitigation Measures

A biological monitor will be conducting Project clearance prior to any construction and be on site during the proposed work. This Project will have no impacts on terrestrial wildlife.

3.4.2.4 Cumulative Effects

The effects of the proposed Project will not remove any habitat for terrestrial wildlife and will be cumulative to land development, agriculture and other human influences affecting the area along Oak Creek.

3.5 Special Status Species

3.5.1 Affected Environment – Special Status Species

A compilation of federally listed species that occur within a 5-mile radius of the Project location was obtained from AGFD's Arizona Environmental Online Review Tool Report, dated January 14, 2018 and the USFWS's IPaC. This Trust Resource Report was generated for the Project area on July 12, 2017 and the quick reference guide to all Arizona Species (Tables 2 and 3). Of the 15 species with occurrence records, only the yellow-billed cuckoo and northern Mexican gartersnake is likely to be found near the Project location. Several species of federally-listed fish, however, are housed and propagated at the hatchery and will not be impacted by the Project. Section 7 of the ESA requires consideration of only listed and proposed species. The Page springsnail is protected by a Candidate Conservation Agreement with Assurances and is present within Bubbling Ponds and the diversion channel.

Table 2. Compilation of federally-listed species

These are the federally-listed species that occur within five miles of the Project location, based on IPAC and the Arizona Environmental Online Review Tool Report, January 14, 2018.
E = endangered, T = threatened, C = candidate, PT = Proposed Threatened,
EXPN = Experimental Non-Essential Population, CCAA = Candidate Conservation Agreement with Assurances.

Species	Federal Status	Habitat	Occupancy Determination/Explanation
BIRDS			
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Unlikely to occur. The Project will take place outside the flycatcher season. The nearby cottonwood/willow and tamarisk vegetation also lacks the density that is needed for flycatchers.
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Large blocks of cottonwood, willow, or tamarisk galleries.	Likely to occur. Species has numerous recent records near Project area. See page 19.
FISH			
Gila chub (*Gila intermedia*)	E	Pools, springs, cienegas, and streams.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
Headwater chub (*Gila nigra*)	PT	Medium-sized streams in large, deep pools often associated with cover.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
Loach minnow (*Tiaroga cobitis*)	E	Small to large perennial streams with swift shallow water over cobble and gravel.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
Razorback sucker (*Xyrauchen texanus*)	E	Riverine and lacustrine areas, generally not in fast moving water and may use backwaters.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.

Roundtail chub (*Gila robusta*)	PT	Cool to warm waters of rivers and streams, often occupy the deepest pools and eddies of large streams.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
Spikedace (*Meda fulgida*)	E	Medium to large perennial streams with moderate to swift velocity waters over cobble and gravel substrate.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
Woundfin (*Plagopterus argentissimus*)	EXPN	Inhabits shallow, warm, turbid, fast-flowing water.	Unlikely to occur. There is no suitable aquatic habitat in the Project area.
AMPHIBIANS and REPTILES			
Narrow-headed gartersnake (*Thamnophis rufipunctatus*)	T	Clear, rocky streams using predominantly pool and riffle habitat that includes cobbles and boulders.	Unlikely to occur. There is lack of habitat for this species and there are no known records.
Northern Mexican gartersnake (*Thamnophis eques megalops*)	T	Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests.	Present. Species has numerous recent records near Project area.
PLANTS			
Arizona cliffrose (*Purshia subintegra*)	E	White limestone soils derived from tertiary lakebed deposits.	Unlikely to occur. There are no limestone deposits within the Project area. Nearest record is 4.5 miles southwest of Project.
INVERTEBRATES			
Page springsnail (*Pyrgulopsis morrisoni*)	CCAA	Permanently saturated cienegas, firm substrate like cobble, gravel, woody debris, and aquatic vegetation.	Present. Records identify presence within Bubbling Ponds.

Table 3. Critical habitat

Species	Presence of Critical Habitat in Project Area
Northern Mexican gartersnake	Project area located in proposed critical habitat.
Narrow-headed gartersnake	Project area located in proposed critical habitat.
Yellow-billed cuckoo	Project area located in proposed critical habitat.

Northern Mexican gartersnake – Members of this species are known to heavily utilize the Bubbling Ponds complex for denning, foraging, and reproductive purposes during the active season which is approximately April to October, or when air temperatures consistently range above 71 degrees Fahrenheit. For the remaining months or when the air temperature is consistently below that threshold, which is considered the dormant season, individuals usually travel to and stay within close proximity to their preferred denning sites. Many individuals at Bubbling Ponds retreat to denning sites south and east of the adjacent ARCC complex while others utilize concealed sites around the ponds (Bateman et al. 2015). It is believed that northern Mexican gartersnakes inhabiting Bubbling Ponds serve as a source population for satellite populations elsewhere along Oak Creek (Jeff Servoss, USFWS, personal communication, 1/14/15).

Based on the pipeline location and habitat suitability, northern Mexican gartersnakes likely utilize the area during the active and dormant season. The pipeline borders riparian habitat along Oak Creek and there is a modified water channel and a series of pools that parallels a portion of the pipeline. Members of this species utilize structures such as rodent burrows and cavities in riparian habitat near aquatic edges, open floodplain, mesquite bosque, and along habitat edges. They are also known to communal den, which means multiple snakes will utilize a den at the same time (Emmons and Nowak 2013). As part of their study, Emmons and Nowak (2013) identified two winter dens approximately 2.5 and 4 meters from a graveled walking trail near a lagoon at Dead Horse Ranch State Park. Other snakes used winter den sites that were 0.5-156 meters from the nearest water source.

In order to minimize disturbance to the greatest extent possible, sleeving the existing pipeline with a 24-inch HDP pipe will be the first option that will be pursued. If sleeving the entire length or a segment is not possible, then the top half section of the pipe will be exposed and opened for direct placement of the replacement pipe. This will result in the greatest extent of disturbance at 7,330-square feet (0.17 acres) due to the temporary removal of soil at the surface, the utilization of equipment along a portion or the entire alignment, and improvement of the erosion control area. The movement of equipment and displacement of soil creates a greater opportunity for the collapse and removal of den sites and disturbance or mortality of snakes. If permission is denied to work on private land, then the total scale of impact would be reduced by 1,400-square feet (0.03 acres), for a total of 5,930-square feet (0.14 acres). If the pipeline is successfully sleeved along the entire length, the installation of concrete joint boxes will still result in a surface disturbance of approximately 80-square feet (0.001 acres).

Yellow-billed cuckoo – The proposed Project falls within proposed critical habitat, and there are recent records of cuckoos a short distance downstream from the proposed Project (Sabra Tonn, AGFD, personal communication, 7/24/17). The area of Oak Creek that runs parallel to the pipeline is considered suitable habitat for cuckoos, but the immediate vicinity of the Project area has been modified for human use and may not have the ideal conditions necessary for breeding cuckoos. The surrounding area still provides suitable foraging conditions.

Trimming branches will be kept to a minimum and will occur along the outer western edge to the riparian corridor. While most cuckoos are known to have left Arizona by the end of September, there are some records of individuals in southeast Arizona that stayed into early October to feed older fledglings (Corman and Magill 2000). The Project is scheduled to start in October which

may result in some individuals being briefly disturbed and displaced till they start their migration south. The higher likelihood of impacts to the species will be to the habitat itself, but the extent of that impact will be minimum and exclusive to trimming branches.

Page springsnail – The primary objective of this Project is the replacement of an existing pipeline that starts 1424 feet (0.27-miles) from the southern edge of Bubbling Ponds, where the Page springsnail resides. It is believed that proximity to spring vents plays a critical role for this endemic species by maintaining higher quality habitat by minimizing sediment accumulation through higher water velocity (Martinez and Thome 2006). Man-made outflow channels such as the one that diverts water from the springs to the existing pipeline were also believed to be of no benefit to the species. In 2006, a water flow measuring station was installed at the downstream end of the pond where it drains into the existing outflow channel. The flow station changed the habitat features of the channel, and in 2008 hundreds of snails were found on watercress (*Nasturtium officinale*) and water pennywort (*Hydrocotyl verticillata*) downstream from the springs (Sorensen and Martinez 2015). Colonization of that channel may not have been possible without the addition of rocky fill material to the eastern shoreline which was quickly inhabited within three months. Prior to the eastern shoreline improvements, no Page springsnails were found in the southern end of the pond. In October 2017, the channel was resurveyed and Page springsnails were found along the entire length of the outflow channel and within close proximity to the existing bypass valve and grated culvert.

Impacts to Page springsnail habitat will be minimized by maintaining at least one-third of base flows within the channel. Only a section of approximately 33 feet in length will be completely dewatered upstream from of the grated culvert. Additional minimization will occur by salvaging and moving a majority of the affected springsnails from areas in the channel that will be dried, specifically around the end where the culvert and diversion valve is located, and also along the length where the water level is reduced and springsnails may be stranded. Salvage will be done prior to sleeving the pipe and modification of the culvert, ideally before or during the reduction of water. AGFD staff experienced in springsnail identification will conduct the salvage. They will be supervised on site by the Invertebrate Wildlife Program Manager, who will help confirm snail identifications and direct the relocation of snails back to Bubbling Springs Pond and the upper 115 feet of the channel (the "core habitat" for the springsnail population).

Springsnails and the rocky substrate and aquatic vegetation they are attached to will be collected by hand and moved in 5-gallon buckets partially filled with water from the channel. Biologists will attempt to minimize dislodging the snails from their substrate as much as possible and move smaller rocks and plants to locations upstream so that they will maintain their natural shelter and forage substrates. Dislodged snails will be in the water in the transport buckets and will be poured into the nearshore rocky habitats of Bubbling Ponds and the upper 115 feet of the channel. Rocks that are too large to move in the lower channel will be gently brushed to dislodge springsnails into smaller trays or pails and added to the transport buckets for movement upstream.

While it will be impossible to salvage all springsnails that may be affected by reduced flows in the channel and the 33 feet area immediately above the culvert, it is anticipated that a significant portion of the channel population will be moved and safeguarded. The proposed action will not have long-term impacts to the snail population at Bubbling Springs Pond or within the channel.

Once the repair work is complete and normal flows are resumed, the springsnail population will recolonize the channel on its own. Past experience with salvage efforts for the springsnail prior to the 2010 rotenone treatment of Bubbling Springs Pond (as documented in Ward et al. 2010 and Sorensen and Martinez 2015) demonstrate that it can be successful in moving and protecting the springsnail population at this site. Likewise, initial studies by the USFWS (Martinez and Sorensen 2007) on the Page springsnail populations at Page Springs have demonstrated that the species is fairly resilient to temporary reductions in their population numbers and capable of rebounding.

3.5.2 Environmental Consequences - Special Status Species

3.5.2.1 No Action

Under the no action alternative, there would be no direct effect to the federally-threatened northern Mexican gartersnake or the Page springsnail because no project would be implemented. There would be no loss of or disturbance to the species other than from routine operation and maintenance of the existing pipe.

3.5.2.2 Proposed Action

With the exception of the federally threatened northern Mexican gartersnake and the Page springsnail, the proposed action may affect, but is not likely to adversely affect the yellow-billed cuckoo and its habitat due to species absence and minimal construction disturbance. This Project would not affect any other federally-listed and candidate species that occur near the Project area because suitable habitat is absent in the Project area, or current ranges of the species are outside the Project area.

Northern Mexican gartersnake has the potential to be present in the Project area. The proposed Project may have localized, short-term adverse effects to northern Mexican gartersnake because of possible lethal contact with construction equipment and/or other disturbances from Project implementation activities.

In an attempt to avoid, minimize or mitigate potential negative effects of the Project to northern Mexican gartersnake an AGFD permitted biologist would conduct a biological survey of the Project area potentially affected by construction immediately prior to initiation of construction, and move any gartersnakes encountered away from the Project area. During the course of construction, Reclamation or its designee will monitor for presence of northern Mexican gartersnake. If any gartersnakes are detected in the immediate Project area, work would cease at the site until the individual(s) was captured and transported away from the area.

Once the Project is completed, localized effects to northern Mexican gartersnake are expected to be neutral. The 0.14-acre Project area does not contain all the primary constituent elements of critical habitat; therefore, the Project would not adversely affect proposed critical habitat. All work activities will take place during winter months when the snakes are less active and less likely to be impacted. There is still a small chance of harm to a snake and therefore Reclamation's determination is that this project 'may affect and is likely to adversely affect "the Northern Mexican gartersnake."' There are no anticipated impacts to proposed critical habitat.

Impacts to Page springsnail habitat will be minimized by maintaining at least one-third of base flows within the channel and salvaging a majority of the affected springsnails from areas in the channel that will be de-watered. This is in compliance with the USFWS 2009 Conference Opinion regarding the approval of a Candidate Conservation Agreement with AGFD.

3.5.2.3 Cumulative Effects of Special Status Species

In December 2014, the AGFD acquired 31.5 acres of property adjacent to the Bubbling Ponds Fish Hatchery to conserve northern Mexican gartersnake and increase native fish production capacity of the hatchery. Construction of native fish production ponds and protection of habitat for northern Mexican gartersnake on the newly acquired land would have a beneficial cumulative effect on this species. Adverse effects to northern Mexican gartersnake could occur from a number of possible actions in the area that might affect water or habitat quality, such as road maintenance or construction, land development, livestock grazing in riparian bottoms, and wildfire. These events can singularly or cumulatively affect northern Mexican gartersnake through alterations in habitat characteristics. Ultimately, the native fishes propagated at the hatchery and repatriated to the wild would enhance prey availability for northern Mexican gartersnake in portions of its range.

4.0 Environmental Commitments

The following section is a comprehensive listing of the mitigation measures incorporated into this EA. These mitigation measures will be implemented as part of the proposed Project.

Reclamation prepared a biological assessment that determined the proposed project may effect, and is likely to adversely affect the northern Mexican gartersnake due to potential localized mortality during construction. Further, the proposed project may affect, but is not likely to adversely affect the yellow-billed cuckoo or its habitat. No other federally-listed species would be adversely impacted by the project. The biological assessment was submitted to USFWS on April 2, 2018 and a biological opinion was received August 30, 2018. The USFWS concluded that the proposed Bubbling Ponds project would not jeopardize the continued existence of the gartersnake. No reasonable and prudent measures were included in the biological opinion's take statement beyond what Reclamation proposed as part of the proposed action.

USFWS concurred with Reclamation's determination that the action would have no effect on proposed critical habitat for the gartersnake. Further, they concurred with Reclamation's finding that the action was not likely to adversely affect the yellow-billed cuckoo.

Bio-1 Prior to construction the biomonitor will provide an environmental awareness program that will cover northern Mexican gartersnake life history, status, identification, and mitigation measures to avoid encounters and impacts.

Bio-2 In an attempt to avoid, minimize, or mitigate potential negative effects of the northern Mexican gartersnake, a permitted biologist would survey the project area for the presence of gartersnakes immediately prior to initiation of construction, and move any

gartersnakes encountered away from the project area. All holes or other types of cover within the erosion control area that could function as a snake shelter will be marked with a construction flag prior to the application of a geomat or other erosion control material. They will be modified as necessary or displaced a reasonable distance from the flagged locations in order to not bury any potential dormant snakes.

Bio-3 If AGFD is unable to sleeve the pipeline and they must dig a trench to replace sections of pipe, all open trenches will be inspected daily for possibly entrapped snakes, regardless of time of year.

Bio-4 Any northern Mexican gartersnake fatalities would be thoroughly documented and reported to the US Fish and wildlife Service.

Bio-5 In order to provide access to the grated culvert and pipeline, approximately a 33 foot section of the Bubbling Ponds diversion channel will be completely dewatered. AGFD will salvage Page springsnails within the dewatered section and below the channels base flow high water mark, and move them to Bubbling Springs Pond and the upper 115 feet of the channel. Upstream a minimum of one-third base flows within the channel will be maintained for the remaining springsnails. AGFD staff experienced in springsnail identification will conduct the salvage and be supervised on site by the Invertebrate Wildlife Program Manager.

CR-1 An archaeological monitor shall be present during all ground-disturbing activities in order to identify and record any inadvertently discovered cultural remains and to ensure there is no adverse effect to cultural resources.

V-1 Vegetation disturbances will be limited to the Project area and all revegetation efforts will involve the use of native plant species to the extent possible.

5.0 Consultation and Coordination

Reclamation submitted information on the Project proposal to the following entities during the development of the Draft EA. The names of the individuals are retained in the administrative record.

Cooperating Agencies:

Arizona Game and Fish Department

Other Federal Agencies:

USDA Forest Service (Coconino NF)
U.S. Fish and Wildlife Service

County Agencies:

Yavapai County Development Services Department
Yavapai County Flood Control District

Other State Agencies:

Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona State Land Department
Arizona State Historic Preservation Office

Indian Communities:

Fort McDowell Yavapai Nation
Yavapai-Apache Nation
Yavapai-Prescott Tribe
Hualapai Tribe
Hopi Tribe
Navajo and Historic Preservation
Navajo Nation

Conservation, Environmental, and Recreation Organizations:

Center for Biological Diversity
Sierra Club

Other Agencies and land owners:

Salt River Project
Richard and Annie Pena
Donna Ross
Claudette Cave
Veronica Moody

6.0 List of Preparers

This EA was prepared by Carol Evans, Biologist, Bureau of Reclamation, Phoenix Area Office, Glendale, Arizona.

The following individuals contributed to the development or review of this EA:

Sean M. Heath: Manager, Environmental Resource Management Division, Bureau of Reclamation, Phoenix Area Office, Glendale, Arizona.
Thomas Bommarito: Wildlife Biologist, Bureau of Reclamation, Phoenix Area Office, Glendale, Arizona.
David Gifford: Archaeologist, Bureau of Reclamation, Phoenix Area Office, Glendale, Arizona.

7.0 References

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Bateman, H. and T. Sprague. 2015. Northern Mexican gartersnake microhabitat and movement assessment at Bubbling Ponds Hatchery. May-December Progress Report to Arizona Game and Fish Department.

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_____. 2009. Intra-Service Section 7 Conference Opinion Regarding the Approval of a Candidate Conservation Agreement with Assurances for the Page Springsnail and the Potential Issuance of a Section 7 10(a) 1(A) Enhancement of Survival Permit (TE-174351-0) to the Arizona Game and Fish Department.

Appendix A. Scoping Letters

United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Phoenix Area Office
6150 West Thunderbird Road
Glendale, AZ 85306-4001

IN REPLY REFER TO:
PXAO-1500
2.1.1.04

MAY 3 1 2018

Mr. Stewart Koyiyumptewa
Director
Cultural Preservation Office
Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

Subject: Section 106 Consultation, Class III Cultural Resource Survey at Bubbling Ponds Fish Hatchery (Aquatic Research and Conservation Center) for a Pipeline Rehabilitation Project (PXAO-CCRS-Report-2018-016) located in Township 16 North, Range 4 East, Section 23 of the Gila and Salt River Baseline and Meridian, near Cornville, Yavapai County, Arizona

Dear Mr. Koyiyumptewa:

The Bureau of Reclamation is funding the rehabilitation of an existing pipeline at the Bubbling Ponds Fish Hatchery near Cornville, Arizona.

The hatchery is operated by the Arizona Game and Fish Department (Department). Water is supplied from a natural spring located approx. 0.5 miles north of the hatchery. The water travels from the spring through an open ditch, then moves through a corrugated metal pipe until it reaches the ponds. The pipe is located on Department property, and private land.

The Bubbling Ponds hatchery was acquired in 1952, with facility construction, including the pipeline, in 1954, as a warm water hatchery. Facility design and features have not changed (other than deterioration) since then, and much of the hatchery infrastructure has essentially exceeded its expected life span.

The purpose of this project is to repair the pipe that conveys water from the spring to the hatchery ponds. The existing pipe has holes, leaks, and root blockages, with several locations of bowing caused by large rocks, and is critical to the mission of conveying water to the hatchery ponds.

The project will repair the entire piped section at the same depth as the existing pipe. Repairs will be done by inserting a smaller diameter pipe into the existing pipe. The existing pipe will be cleaned and then lined with a 24-inch diameter high-density polyethylene tube. The method used to insert the new pipe will be push, pull, or a combination of both, to sleeve the new pipe into the existing.

It is expected that small track mechanical equipment will be required to perform various tasks. Equipment may include a track hoe, excavator, dump truck, bobcat, loader, and back hoe. Heavy equipment that may damage the pipe or compromise the surrounding ground shall not be used. It is expected that selected trees will have to be cut and/or trimmed, and roots removed. ABC material, sand bedding, and native material, will also be required for fill. The fill material will be obtained from a supplier on the Arizona Department of Transportation's approved material list previously cleared for cultural resources.

There may be a need to stabilize the bank above and below the pipeline due to the slope gradient, and evidence of erosion, that may require reshaping, fill, riprap, and seeding.

There is a debris rack, located on private property, which needs to be modified from its current vertical position to a 45-degree angle. This will require additional concrete work on the existing box. The water diversion valve near this box will also be replaced. In addition, a valve on Bubbling Ponds Hatchery grounds will be replaced. This valve is located inside the concrete junction box diverting water to the lower ponds.

Two Class III Cultural resource surveys have been completed within the project area. These surveys have examined the entire project area footprint, including the various structure modifications, and valve replacements. The first report was completed in 2014 as part of the land acquisition process, and reported in: *A Cultural Resources Survey of 31.5 Acres Prior to Land Acquisition by the Arizona Game and Fish Department near Cornville, Yavapai County Arizona*. The second report was completed as part of this project, to survey the private land involved. That report is entitled: *Class III Cultural Resources Survey of 2.20 Acres for the Bubbling Ponds Fish Hatchery Pipe Rehabilitation Project in Cornville, Yavapai County, Arizona*. Neither report identified any eligible cultural resources within the project area footprint. Both reports are enclosed for your review.

We are requesting your concurrence with our finding of ***No Historic Properties Affected.***

If you have any questions about this project, please contact Mr. Dave Gifford, Archaeologist, at 623-773-6262, or via email at dgifford@usbr.gov.

Sincerely,

Concur-
Margaret
for
Concurrence
6-5-18

Sean M. Heath
Manager, Environmental Resource
Management Division

Enclosures – 2

SHPO-2018-1026 (143204)
ARIZONA STATE HISTORIC PRESERVATION OFFICE

United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Phoenix Area Office
6150 West Thunderbird Road
Glendale, AZ 85306-4001

RECEIVED
JUN 05 2018
ARIZONA STATE HISTORIC PRESERVATION OFFICE

IN REPLY REFER TO:
PXAO-1500
2.1.1.04

MAY 31 2018

Dr. James Cogswell
Archaeologist
State Historic Preservation Office
Arizona State Parks
1300 West Washington Street
Phoenix, AZ 85007

Subject: Section 106 Consultation, Class III Cultural Resource Survey at Bubbling Ponds Fish Hatchery (Aquatic Research and Conservation Center) for a Pipeline Rehabilitation Project (PXAO-CCRS-Report-2018-016) located in Township 16 North, Range 4 East, Section 23 of the Gila and Salt River Baseline and Meridian, near Cornville, Yavapai County, Arizona

Dear Dr. Cogswell:

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The Bubbling Ponds hatchery was acquired in 1952, with facility construction, including the pipeline, in 1954, as a warm water hatchery. Facility design and features have not changed (other than deterioration) since then, and much of the hatchery infrastructure has essentially exceeded its expected life span.

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There may be a need to stabilize the bank above and below the pipeline due to the slope gradient, and evidence of erosion, that may require reshaping, fill, riprap, and seeding.

There is a debris rack, located on private property, which needs to be modified from its current vertical position to a 45-degree angle. This will require additional concrete work on the existing box. The water diversion valve near this box will also be replaced. In addition, a valve on Bubbling Ponds Hatchery grounds will be replaced. This valve is located inside the concrete junction box diverting water to the lower ponds.

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We are requesting your concurrence with our finding of ***No Historic Properties Affected.*** 6/6/18

If you have any questions about this project, please contact Mr. Dave Gifford, Archaeologist, at 623-773-6262, or via email at dgifford@usbr.gov.

CONCUR

Sincerely,

Teresa Cogswell 6/21/18

Arizona State Historic Preservation Office

Sean M. Heath
Manager, Environmental Resource
Management Division

Enclosures – 2

United States Department of the Interior

BUREAU OF RECLAMATION
Lower Colorado Region
Phoenix Area Office
6150 West Thunderbird Road
Glendale, AZ 85306-4001

MAY 3 1 2018

RECEIVED
JUN 04 2018
BY:

IN REPLY REFER TO:
PXAO-1500
2.1.1.04

Honorable Ernest Jones, Sr.
President
Yavapai-Prescott Indian Tribe
530 East Merritt Street
Prescott, AZ 86301-2038

Subject: Section 106 Consultation, Class III Cultural Resource Survey at Bubbling Ponds Fish Hatchery (Aquatic Research and Conservation Center) for a Pipeline Rehabilitation Project (PXAO-CCRS-Report-2018-016) located in Township 16 North, Range 4 East, Section 23 of the Gila and Salt River Baseline and Meridian, near Cornville, Yavapai County, Arizona

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The purpose of this project is to repair the pipe that conveys water from the spring to the hatchery ponds. The existing pipe has holes, leaks, and root blockages, with several locations of bowing caused by large rocks, and is critical to the mission of conveying water to the hatchery ponds.

The project will repair the entire piped section at the same depth as the existing pipe. Repairs will be done by inserting a smaller diameter pipe into the existing pipe. The existing pipe will be cleaned and then lined with a 24-inch diameter high-density polyethylene tube. The method used to insert the new pipe will be push, pull, or a combination of both, to sleeve the new pipe into the existing.

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Two Class III Cultural resource surveys have been completed within the project area. These surveys have examined the entire project area footprint, including the various structure modifications, and valve replacements. The first report was completed in 2014 as part of the land acquisition process, and reported in: *A Cultural Resources Survey of 31.5 Acres Prior to Land Acquisition by the Arizona Game and Fish Department near Cornville, Yavapai County Arizona*. The second report was completed as part of this project, to survey the private land involved. That report is entitled: *Class III Cultural Resources Survey of 2.20 Acres for the Bubbling Ponds Fish Hatchery Pipe Rehabilitation Project in Cornville, Yavapai County, Arizona*. Neither report identified any eligible cultural resources within the project area footprint. Both reports are enclosed for your review.

We are requesting your concurrence with our finding of ***No Historic Properties Affected.***

If you have any questions about this project, please contact Mr. Dave Gifford, Archaeologist, at 623-773-6262, or via email at dgifford@usbr.gov.

Sincerely,

Sean M. Heath
Manager, Environmental Resource
Management Division

cc: Ms. Linda Ogo
Director, Culture Research Department
Yavapai-Prescott Indian Tribe
530 East Merritt Street
Prescott, AZ 86301-2038
(w/encl)

☒ CONCUR

☐ CONCUR - NO CONCERNS

☐ SEE ATTACHED

Gregory T. Blanco 6-26-2018
YAVAPAI-PRESCOTT INDIAN TRIBE
CULTURE RESEARCH DEPARTMENT
COMPLIANCE OFFICER

Appendix B. Biological Opinion

United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Office
9828 North 31st Avenue, Suite C3
Phoenix, Arizona 85051
Telephone: (602) 242-0210 Fax: (602) 242-2513

In reply refer to:
AESO/SE
02EAAZ00-2017-F-0921

August 30, 2018

Memorandum

To: Manager, Environmental Resource Management Division, Bureau of Reclamation, Glendale, Arizona

From: Acting Field Supervisor

Subject: Biological Opinion for Pipeline Replacement at Bubbling Ponds Fish Hatchery, Yavapai County, Arizona

Thank you for your request for formal consultation/conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (Act). Your request was dated April 2, and received by us on April 5, 2018. At issue are impacts that may result from the proposed Pipeline Replacement at Bubbling Ponds Fish Hatchery located in Yavapai County, Arizona. The proposed action may affect the threatened northern Mexican gartersnake (*Thamnophis eques megalops*).

In your letter, you requested our concurrence that the proposed action is not likely to adversely affect the threatened yellow-billed cuckoo (*Coccyzus americanus*). We concur with your determination and include our rationale in Appendix A.

Critical habitat is proposed in the Oak Creek Subunit, which includes the Arizona Game and Fish (AGFD) property on which Bubbling Ponds Fish Hatchery is located. Although the proposed critical habitat rule stated that "this subunit contains sufficient physical or biological features, including primary constituent elements (PCEs) 1 (aquatic habitat characteristics) and 2 (terrestrial habitat characteristics)..." (USFWS 2013, p. 41564), the project area (pipeline alignment, 0.21 acres) does not contain the aquatic habitat characteristics or the terrestrial habitat characteristics of proposed critical habitat. This is not to say that Bubbling Ponds Fish Hatchery and the surrounding areas do not contain these PCEs, but that the pipeline alignment does not. The location of the pipeline and characteristics of adjacent habitat gives high probability that northern Mexican gartersnakes likely utilize the area during the active and dormant season. The Bureau of Reclamation (Reclamation) states in the biological assessment that the pipeline

alignment and erosion control area has a long history of being historically disturbed and managed for the delivery of water to Bubbling Ponds and nearby homes; therefore, it does not include the proposed PCEs of critical habitat and Reclamation determined there will be no effect to proposed critical habitat. "No effect" determinations do not require review from the FWS and will not be addressed further.

Reclamation also determined that the action would have "no effect" on yellow-billed cuckoo proposed critical habitat, and the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and its critical habitat. As sated above, "no effect" determinations do not require our review and are not addressed further.

This biological opinion is based on information provided in the April 2018 biological assessment, telephone conversations, field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern or on other subjects considered in this opinion. A complete record of this consultation is on file at this office.

Consultation History

- April 5, 2018: We received Reclamation's April 2, 2018, request for formal consultation.
- May 7, 2018: We responded to Reclamation with a 30-day letter.
- August 23, 2018: We sent the draft biological opinion to Reclamation and AGFD for review.
- August 24 and 27, 2018: We received and incorporated comments from AGFD and Reclamation on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed project is to replace a deteriorating water pipe located on private land and land owned by the AGFD along Oak Creek near Cornville, Arizona, in Yavapai County. The pipeline is located on private property and on the Bubbling Ponds Fish Hatchery, which is owned by AGFD, but the project is jointly funded by Reclamation. The pipe alignment is located in Section 23 of Township 16 North, Range 4 East of the Gila and Salt River Baseline and Meridian (Figure 1).

The purpose of the proposed action is to repair or replace sections of pipe that have deteriorated and are no longer functioning as designed. The project is needed to ensure that clean and adequate water is supplied to the hatchery, and to ensure the safe and continuous functioning of the hatchery's rearing facilities for native fish.

The proposed project includes the replacement of approximately 1,500 feet (ft) of an existing 30 inch (in) diameter corrugated metal pipe with the insertion of 24-inch high-density polyethylene pipe (HDPE), installation of concrete joint boxes, the modification of an existing debris rack, replacement of a pipe valve, installation of two water flow meters, and a diversion pipe to Oak Creek. The pipe will be replaced at its existing alignment, but some locations along the pipe will be expanded because of the installation of concrete joint boxes.

Project activities are scheduled to begin in October 2018 and be completed by early January 2019. If the project is delayed beyond January 2019, activities would be postponed to October 2019 through January 2020. In order to complete the renovations, water to the hatchery would be shut off at four to five day intervals for sections of the pipeline to be replaced. Water will have to be turned back on for at least four to five consecutive days following a shut-off event to replenish water within the hatchery and to maintain water quality. An experimental cessation of water flow in early 2017 determined that four to five consecutive days without flow was the limit to maintain suitable conditions at the hatchery.

The first step of the replacement process will be to divert approximately half to two-thirds of the water at the spring to an alternate channel that is downhill from Bubbling Ponds and parallel to Oak Creek. This diverted water will flow into a small pond on private property before it terminates in Oak Creek. The remaining water from the spring will flow through the primary channel that terminates at the pipeline. The temporary diversion will be installed approximately 33 ft above the "grizzly" or grated culvert. First, the diversion will be used to direct water away so the bypass valve can be replaced; the water will flow through the grizzly down the existing 30-inch pipe to the hatchery. Second, the diversion structure will be placed in front of the culvert diverting the water through the open bypass valve. This water will flow through the valve into a channel, which ends in Oak Creek. The water diversion will allow the work at the culvert to take place. This work includes extending the concrete base (by pouring footers/pad) that the grate currently sits on to allow the grate to be placed at a 45 degree angle for more efficient cleaning.

The pipe will be cleaned using only physical methods (i.e. removal by hand, water jetting or vacuum, or pulling a mandrel through the line), no chemical solutions will be used. Cleaning the existing pipe of any blockages such as roots, rocks, and sediment will be with a process known as hydro jetting. This involves the insertion of a hose with a high pressure forward facing water jet system that pushes and cuts through blockages with back facing jets that push debris remnants out toward the opening. The hydro jet system will be inserted at both the northern and southern extent of the pipe with expelled debris accumulating at both ends before their removal. Minimal debris and sediment will be returned to the creek downstream. Most debris in the pipe is made up of roots and larger rocks. Some smaller sediment may be caught in the roots and may dislodge during cleaning; most of this if not all will be captured in the hatchery or the existing boxes, since the majority of the cleaning will be performed during normal flow, or when flow is restored it will run through the hatchery. No debris or sediment from the construction is expected to move upstream of the work area.

Once cleaned, a 24-in HDPE replacement pipe will either be sleeved at predetermined connection points, or if necessary, the top half section of the pipe will be exposed and opened for direct placement of the replacement pipe. If removal of any pipe section is required, the replacement pipe would be placed along the same alignment and depth. Trenching for sections of the existing and replaced pipe segments would be about 42 in wide and 4 ft deep, backfilled with native material, and compacted. The water would be diverted as described above.

There are five staging areas where there will be an opening in the existing corrugated metal pipe to enable repair or replacement.

- Staging Area 1 is located on the privately owned land at the grated culvert. This area is large enough to allow access to vehicles and the insert can be pushed through from this location.

- Staging Area 2 is located behind the residence at 2075 N. Page Springs Road where there is currently a junction box with an irrigation pump that is used by AGFD and a private landowner who has a water right. One concrete pump and diversion vault measuring approximately 5 ft 4 in by 4 ft by 7 ft 4 in deep will be installed along the pipeline at this junction. A flow meter will be installed in this vault to measure the water used for irrigation purposes.

- Staging Area 3 is located behind the residence at 2055 N. Page Springs Road. There is an opening in the pipe that will be used as a pushing/pulling point for the insert. An old water pump and the vertical 30-in pipe will be removed. Once the insert is put in place this opening will be permanently closed.

- Staging Area 4 is just north of the road across from the hatchery where the pipe curves to the east. The old pipe will be uncovered and opened. This opening will be used to push or pull the new liner. Once the liner is in place it will be covered with soil. The section of pipe that travels beneath the county road (Page Springs Road) will either need to be sleeved (preferred) or dug up and replaced. The AGFD or its contractor will coordinate with Yavapai County for project activities affecting Page Springs Road.

- Staging Area 5 (the last staging area) is an existing junction box to the east of the birding parking lot at the hatchery.

In the event that permission is not given to do the work on private land, a junction box measuring 3 ft by 3 ft by 3 ft will need to be installed approximately 15 ft within the AGFD property line to provide for the first staging area (Alternative Staging Area 1). The pipe will be uncovered, a section will be removed, and a pre-made concrete box will be installed with the pipe connecting to the box from either end. This scenario will still require the diversion of the water and communication with the private landowners/water users.

Portions of the existing pipe are also threatened by existing bank erosion and erosional damage. One location along the pipeline would require stabilization due to the slope gradient and existing erosion. Bank stabilization will initially require the removal of any dead limbs and/or shrubs that have accumulated and trimming the existing live vegetation in order to properly implement measures. The ground will be reshaped to fill in the channel cut into the bank while maintaining the existing drainage pattern. This may require approved material to be added to stabilize the area. An erosion mat with open cells will be laid down and filled with soil to promote future vegetative growth. Any imported soil will be from an Arizona Department of Transportation approved material source.

Equipment used for pipeline replacement and erosion control may include a track excavator, bobcat, backhoe, and pickup trucks. Large equipment would not access the pipeline corridor due to width and weight of large vehicles, but remain in an upland staging area. All Staging Areas will be on AGFD property but some access points may also be on adjacent private property. All equipment access from Page Springs Road will occur on existing dirt or two-track roads; no overland travel will be necessary.

Conservation Measures

Reclamation's commitment to avoid or minimize adverse effects to sensitive resources has led to the incorporation of protective measures into the project design. These Conservation Measures are considered part of the Proposed Action and are described below:

- Prior to initiation of construction, contractor personnel would be provided with an environmental awareness program that will cover northern Mexican gartersnake life history, status, identification, and mitigation measures to avoid encounters and impacts.

- In an attempt to avoid, minimize, or mitigate potential negative effects of the project to the northern Mexican gartersnake, a permitted biologist would survey the project area for the presence of gartersnakes immediately prior to initiation of construction, and move any gartersnakes encountered away from the project area. All holes or other types of cover within the erosion control area that could function as a snake shelter will be marked with a construction flag prior to the application of a geomat or other erosion control material. They will be modified as necessary or displaced a reasonable distance from the flagged locations in order to not bury any potential dormant snakes.

- If AGFD is unable to sleeve the pipeline and they must dig a trench to replace sections of pipe, all open trenches will be inspected daily for entrapped snakes, regardless of time of year.

- Any northern Mexican gartersnake fatalities would be thoroughly documented and reported to Supervisory Fish and Wildlife Biologist Shaula Hedwall (928-556-2118) and FWS species lead Jeff Servoss (520-670-6150 x2310). If injured snakes are found, they will be captured and transported to a location determined in advance by FWS and AGFD for potential rehabilitation. Reclamation will receive weekly monitoring updates from AGFD and shall submit a summary report of the project to the FWS within 12 weeks of project completion that documents the implementation of mitigation measures and any gartersnake encounters. All northern Mexican gartersnakes found dead would be placed in a plastic bag and labeled with the date, time, location, source of mortality, and any other pertinent information needed for documentation provided to Mason Ryan, AGFD (623-236-7504). Place the carcass in a freezer until Mason can pick it up.

- In order to provide access to the grated culvert and pipeline, approximately a 33 ft section of the Bubbling Ponds diversion channel will be completely dewatered. AGFD will salvage Page springsnails within the dewatered section and below the channels base flow high water mark and move them to Bubbling Springs Pond and the upper 115 ft of the channel. Upstream a minimum of one-third base flows within the channel will be maintained for the remaining springsnails. AGFD staff experienced in springsnail identification will conduct the salvage and be supervised on site by the Invertebrate Wildlife Program Manager.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR § 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment. The action area for this analysis includes the northern most extent of the Bubbling Ponds diversion channel to the termination of the pipeline just south of Page Springs Road. Pipeline replacement activities will be limited to the immediate area along the pipeline. The project area includes up to 9,508 square feet (0.21-acres) land along the pipeline alignment and 2,000 square ft (0.045-acre) within erosion control area.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The information in this section summarizes the rangewide status of each species considered in this BO. Further information on the status of these species can be found in the administrative record for this project, documents on our web page (Arizona Ecological Services Office Documents by Species), and in other references cited in each summary below.

Northern Mexican gartersnake

The FWS published the notice listing the northern Mexican gartersnake as threatened under the Act on July 8, 2014 (USFWS 2014). We proposed critical habitat on July 10, 2013 (USFWS 2013), but this rule has yet to be finalized. Please refer to these rules for more in-depth information on the ecology and threats to the species and critical habitat, including references. The final listing and proposed critical habitat rules are incorporated herein by reference.

The northern Mexican gartersnake ranges in color from olive to olive-brown or olive-gray with three lighter-colored stripes that run the length of the body, the middle of which darkens towards the tail. It may occur with other native gartersnake species and can be difficult for people without specific expertise to identify because of its similar appearance to sympatric gartersnake species. The snake may reach a maximum length of 44 in (112 cm).

Throughout its rangewide distribution, the northern Mexican gartersnake occurs at elevations from 130 to 8,497 ft (Rossman *et al.* 1996) and is considered a "terrestrial-aquatic generalist" by Drummond and Marcías-García (1983). The northern Mexican gartersnake is a riparian obligate (restricted to riparian areas when not dispersing) and occurs chiefly in the following habitat types: 1) source-area wetlands (e.g., cienegas or stock tanks); 2) large-river riparian woodlands and forests; and 3) streamside gallery forests (Hendrickson and Minckley 1984, Rosen and Schwalbe 1988). Emmons and Nowak (2013), when surveying in the upper Verde River region, found this subspecies most commonly in protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation that offered cover and foraging opportunities. In the northern-most part of its range, the northern Mexican gartersnake appears to be most active during July and August, followed by June and September. At Bubbling Ponds northern Mexican gartersnakes are active from March to October with peak activity and abundance from June to August (Sprague and Bateman 2018, Boyarski et al. unpublished) but may be visible on the surface any day of the year if the previous night's low is above freezing (Emmons *et al.* 2016).

Northern Mexican gartersnakes forage along vegetated streambanks, searching for prey in water and on land, using different strategies (Alfaro 2002). Generally, its diet consists of amphibians and fishes, such as adult and larval (tadpoles) native leopard frogs, as well as juvenile and adult native fish (Rosen and Schwalbe 1988). The northern Mexican gartersnake is an active predator and is thought to heavily depend upon a native prey base (Rosen and Schwalbe 1988). But, in situations where native prey species are rare or absent, this snake's diet includes nonnative species, including larval and juvenile bullfrogs, western mosquitofish (Holycross *et al.* 2006, Emmons and Nowak 2013), or other soft-rayed fishes.

Native predators of the northern Mexican gartersnake include birds of prey, other snakes, wading birds, mergansers, belted kingfishers, raccoons, skunks, and coyotes (Rosen and Schwalbe 1988, Brennan *et al.* 2009). Historically, large, highly predatory native fish species such as Colorado pikeminnow and native Chubs may have preyed upon neonate to adult northern Mexican gartersnake where they co-occurred.

Sexual maturity in northern Mexican gartersnakes occurs at two to three years of age in males and at two to three years of age in females (Rosen and Schwalbe 1988, Boyarski et al. unpublished). Northern Mexican gartersnakes are viviparous (bringing forth living young rather than eggs). Mating has been documented in April and May followed by the live birth of between 7 and 38 newborns in July and August (Rosen and Schwalbe 1988, Nowak and Boyarski 2012).

The northern Mexican gartersnake historically occurred in every county and nearly every subbasin within Arizona, from several perennial or intermittent creeks, streams, and rivers as well as lentic wetlands such as cienegas, ponds, or stock tanks (Brennan and Holycross 2006, Cotton *et al.* 2013). In New Mexico, the species had a limited distribution that consisted of scattered locations throughout the Upper Gila River watershed in Grant and western Hidalgo Counties (Price 1980, Fitzgerald 1986, Degenhardt *et al.* 1996, Holycross *et al.* 2006). Within Mexico, northern Mexican gartersnakes historically occurred within the Sierra Madre Occidental and the Mexican Plateau, comprising approximately 85 percent of the total range wide distribution of the subspecies (Rossman *et al.* 1996).

At this time and based upon current survey techniques, the only northern Mexican gartersnake populations in the United States where the subspecies remains reliably detected are all in Arizona at: 1) The Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek; 2) lower Tonto Creek; 3) the upper Santa Cruz River in the San Rafael Valley; and 4) the middle/upper Verde River. In New Mexico, the northern Mexican gartersnake may occur in low population densities within its historical distribution along Mule Creek, Duck Creek, and the Gila River. The status of the northern Mexican gartersnake on tribal lands, such as those owned by the White Mountain or San Carlos Apache Tribes, is poorly known. Less is known about the current distribution of the northern Mexican gartersnake in Mexico due to limited surveys and limited access to information on survey efforts and field data from Mexico.

Nonnative species are a concern in almost every northern Mexican gartersnake locality in the United States and the most significant reason for their decline. These nonnative fish and crayfish species can contribute to starvation of gartersnake populations through competitive mechanisms, and may reduce or eliminate recruitment of young gartersnakes through predation. Other threats include alteration of rivers and streams from dams, diversions, flood-control projects, and groundwater pumping that change flow regimes, reduce or eliminate habitat, and favor nonnative species; and effects from climate change and drought (USFWS 2014).

Critical Habitat

The FWS proposed critical habitat for this species in Oak Creek at this location; however, because the pipeline corridor does not have any of the PCEs of proposed critical habitat, Reclamation determined that there would be no effect to critical habitat from the proposed action.

Previous Consultations

Given the wide-range of this species, several Federal actions affect this species every year. The formal consultations conducted for the northern Mexican gartersnake in Arizona can be found on our AESO website.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Status of the species within the action area

The AGFD property, which includes Bubbling Ponds Hatchery as well at the Aquatic Research and Conservation Center (ARCC), is occupied by a population of northern Mexican gartersnake that serves as a source population for satellite populations along adjacent Oak Creek, and possibly Spring Creek, where individuals have been recently documented (J. Servoss, U.S. Fish and Wildlife Service, pers. comm.) This is despite the presence of a large bullfrog population as well as other nonnative fishes and crayfishes pond at Bubbling Ponds State Hatchery and in nearby Oak Creek.

Northern Mexican gartersnakes are known to heavily utilize the Bubbling Ponds complex for shelter sites, foraging, and reproductive purposes during the active season which is approximately April to October, or when air temperatures consistently range above 71°F. For the remaining months or when the air temperature is consistently below that threshold, which is considered the dormant season, individuals usually travel to and stay within close proximity to their shelter sites. Many individuals at Bubbling Ponds retreat to shelter sites south and east of the adjacent ARCC complex while others utilize concealed sites around the ponds (Bateman and Sprague 2018).

The location of the pipeline and characteristics of adjacent habitat gives high probability that northern Mexican gartersnakes likely utilize the area during the active and dormant season. The pipeline borders riparian habitat along Oak Creek and there is a modified water channel and a series of pools that parallels a portion of the pipeline. Northern Mexican gartersnakes use rodent burrows and cavities in riparian habitat near aquatic edges, open floodplain, mesquite bosque, and habitat edges as shelter sites. They are also known to share shelter sites (Emmons and Nowak 2013).

Factors affecting species' environment within the action area

The immediate project location is under the management and jurisdiction of the AGFD, with adjacent properties owned privately or managed by the Coconino National Forest. The surrounding area has a long history of private development, agriculture, and livestock grazing;

all of which are ongoing activities. Recreational uses in the area include hunting, fishing, hiking, horseback riding, birding, wildlife observation, and ecotourism. Motorized vehicles are allowed on established paved and unpaved roads.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The project may have localized, short-term adverse effect from construction activities (driving, use of heavy equipment off-road, etc.) that result in displacement of gartersnakes, and potential injury of death to individual northern Mexican gartersnakes. At a minimum, direct impacts through displacement could occur as snakes are driven underground or undercover (rocky piles, coarse woody debris, etc.) where they are likely to stay. This behavior could increase risk to snakes as they would not be visible. Individual gartersnakes not observed or that cannot be captured may be injured or killed as a result of construction activities associated with the construction. There will be extensive efforts made to avoid gartersnakes, but because northern Mexican gartersnakes occur throughout the action area, there is the potential for harm (injury or death) and/or harassment (disturbance). Prior to initiation of construction, contractor personnel would be provided with an environmental awareness program that will cover northern Mexican gartersnake life history, status, identification, and mitigation measures to avoid encounters and impacts. This will ensure that all staff working on the project are aware of the gartersnakes and know what to do if one is seen in order to protect it. Project-related activities are expected to affect suitable gartersnake habitat temporarily.

In addition, in an attempt to avoid, minimize, or mitigate potential negative effects of the project to northern Mexican gartersnake, a permitted biologist would survey the project area for the presence of gartersnakes immediately prior to initiation of construction, and move any gartersnakes encountered away from the project area. All holes or possible hiding locations within the erosion control area that could function as a snake shelter will be marked with a construction flag prior to the application of a geomat or other erosion control material. They will be modified as necessary or displaced a reasonable distance from the flagged locations in order to not bury any potentially dormant snakes.

In order to minimize potential disturbance to the greatest extent possible, the first option that will be pursued is to "sleeve" the existing pipeline with a 24-inch HDPE pipe. If the pipeline is successfully sleeved along the entire length, the installation of concrete joint boxes would result in a surface disturbance of approximately 80-square ft (0.001-acre). If sleeving the entire length or a segment is not possible, then the top half section of the pipe will be exposed and opened for direct placement of the replacement pipe. At most, the extent of disturbance may be 9,508 square feet (0.21-acres) due to the temporary removal of soil at the surface to expose the pipe,

the utilization of equipment along a portion or the entire alignment, and improvement of the 2,000 square ft (0.045-acre) erosion control area. The movement of equipment and displacement of soil creates a greater opportunity for the disturbance to or injury of snakes. If permission is denied to work on private land, then the total scale of impact would be reduced by 1,400 square ft (0.03-acre), for a total of 7,330 square ft (0.18-acre).

The greatest potential for adverse effects to individual snakes may be from reinforcing the erosion control site because years of erosion may have created areas that gartersnakes may use for cover. This location also has an electric power pole that provides power to a pump that supplies water to a nearby residential house. Reclamation proposes to install a geomat near the pipeline alignment to stabilize the ground surface and stimulate the growth of grasses and other small plants (or in other words, reduce erosion). The placement of this mat could result in covering holes created by the existing erosion and possibly trapping dormant snakes. As stated above, this area will be identified and checked by the permitted biologist prior to placing the geomat.

Although a permitted biologist will conduct surveys prior to any ground-disturbing activities to reduce the potential for direct impacts to individual snakes, not all direct impacts are avoidable if sleeving the pipe for its entire length is not possible. At a minimum, temporary direct impacts through displacement will occur as snakes leave the area on their own in response to project ground disturbances, or are relocated out of the project area. Individual gartersnakes not observed or that cannot be captured by the permitted biologist may be injured or killed as a result of construction or even vehicle strikes. Since the project will begin in October, it will begin when gartersnakes are likely still active, which may keep snakes from using areas near construction activity when they do enter hibernacula as nighttime temperatures cool between October and January.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

In December 2014, AGFD acquired 31.5 acres of property adjacent to the Bubbling Ponds State Fish Hatchery to conserve northern Mexican gartersnake and increase native fish production capacity of the hatchery. Construction of native fish production ponds and protection of habitat for northern Mexican gartersnake on the newly acquired land is expected to have a beneficial effect for the species. Ultimately, the native fishes propagated by AGFD and repatriated to the wild would enhance prey availability for northern Mexican gartersnake in portions of its range.

Future actions within the action area that are reasonably certain to affect the northern Mexican gartersnake include residential home and commercial development on private lands, which could result in negative impacts to watershed integrity. The continued use of ground and surface water adjacent to the project area could also result in altered hydrologic regimes and increased sedimentation and pollutants to the stream. These events can singularly or cumulatively affect

the northern Mexican gartersnake through adverse effects to individuals (disturbance, injury, and/or fatality) or alterations to habitat.

Demand for outdoor recreation is also expected to grow in Oak Creek concurrently with increasing human population regionally and within Arizona. Aquatic and riparian resources are major attractants for recreational activities, and increased recreation in these areas is likely to result in impacts that remove or alter some stream-side habitat.

JEOPARDY AND ADVERSE MODIFICATION ANALYSIS

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

Jeopardy Analysis Framework

Our jeopardy analysis relies on the following:

"Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). The following analysis relies on four components: (1) Status of the Species, which evaluates the range-wide condition of the listed species addressed, the factors responsible for that condition, and the species' survival and recovery needs; (2) Environmental Baseline, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) Effects of the Action (including those from conservation measures), which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) Cumulative Effects, which evaluates the effects of future, non-federal activities in the action area on the species. The jeopardy analysis in this biological opinion emphasizes the range-wide survival and recovery needs of the listed species and the role of the action area in providing for those needs. We evaluate the significance of the proposed Federal action within this context, taken together with cumulative effects, for the purpose of making the jeopardy determination.

Conclusion

After reviewing the current status of the northern Mexican gartersnake, the environmental baseline for the action area, the effects of the proposed Bubbling Ponds Pipeline Replacement and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern Mexican gartersnake. We base this conclusion on the following:

- The project area is occupied by northern Mexican gartersnakes. However, the proposed action will occur within a 1,500 ft long pipeline alignment that includes habitat and previously disturbed areas. Although a small number of individual gartersnakes may be affected by the proposed action, this project will not result in population level impacts to northern Mexican gartersnakes within the Oak Creek Watershed.

- Implementation of the conservation measures included in the proposed action will aid in reducing the potential for injury and fatality to gartersnakes within and immediately adjacent to the project area.

- The project will not affect the long-term suitability of northern Mexican gartersnake habitat or gartersnakes ability to use the area on which this proposed project will occur.

The conclusions of this biological opinion are based on full implementation of the project as presented in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Reclamation so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (1) fails to assume and implement the terms and conditions or (2) fails to require AGFD to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Reclamation must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

We anticipate that the proposed action is reasonably certain to result in incidental take of northern Mexican gartersnakes. We anticipate that the actual number of northern Mexican gartersnakes taken as a result of this action will be difficult to predict because finding a dead or impaired specimen will be difficult because northern Mexican gartersnakes are secretive, silent, and difficult to detect. However the level of incidental take can be anticipated by the information we have regarding the potential for northern Mexican gartersnakes to be harassed as snakes are captured and moved to new locations, or are injured or killed as a result of the proposed action.

We anticipate the incidental take of an unlimited number of northern Mexican gartersnakes in the form of short-term harassment as snakes are safely captured and moved out of the project footprint or out of the way of vehicles; and two northern Mexican gartersnakes in the form of direct fatality or injury as a result of the construction-related activities in and adjacent to occupied habitat. We do not think that there should be a limit on the number of northern Mexican gartersnakes that can be taken to safety, as ensuring these snakes are not injured or killed as a result of the action is positive. However, if more than two northern Mexican gartersnakes are injured or killed as a result of the project, then as provided in 50 CFR Section 402.16, reinitiation of formal consultation would be required as the amount or extent of incidental take would be exceeded.

EFFECT OF THE TAKE

In this biological opinion, the FWS determines that this level of anticipated take is not likely to result in jeopardy to the northern Mexican gartersnake for the reasons stated in the Conclusions section.

REASONABLE AND PRUDENT MEASURES

Northern Mexican gartersnake

No reasonable and prudent measures are included in this incidental take statement as there are no additional reasonable measures, beyond what Reclamation and AGFD have proposed to implement as part of the proposed action, by which we think that incidental take may be minimized. In addition, Reclamation has already agreed in the proposed action to report any fatality or harassment of northern Mexican gartersnakes within the project area to the FWS.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, NM 87113; 505-248-7889) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if

possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that AGFD monitor the status of northern Mexican gartersnakes at Bubbling Ponds and ARCC in order to ensure that ongoing management of the facilities does not negatively affect the persistence or distribution of the gartersnake.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on for the Bubbling Ponds Pipeline Replacement Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In keeping with our trust responsibilities to American Indian Tribes, we encourage you to continue to coordinate with the Bureau of Indian Affairs in the implementation of this consultation and, by copy of this biological opinion, are notifying the following Tribes of its completion [list Tribes]. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

We appreciate Reclamation's efforts to identify and minimize effects to listed species from this project. Please refer to the consultation number, 02EAAZ00-201X-F-0921 in future correspondence concerning this project. Should you require further assistance or if you have any questions, please contact Shaula Hedwall at 928-556-2118.

Digitally signed by KRISTINE RANDALL
Date: 2018.08.30 15:26:28 -07'00'

Field Supervisor

cc (electronic):
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ
Assistant Field Supervisor, Fish and Wildlife Service, Tucson
(Attn: Jeff Servoss, Susan Sferra)

Director, Hopi Cultural Preservation Office, Kykotsmovi, AZ
Director, Zuni Heritage and Historic Preservation Office, Zuni, NM
Director, Historic Preservation Department, Navajo Nation, Window Rock, AZ
Director, Apache Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Yavapai Cultural Program, Yavapai-Apache Nation, Camp Verde, AZ
Director, Cultural Research Program, Yavapai-Prescott Indian Tribe, Prescott, AZ
Director, Environmental Programs, Bureau of Indian Affairs, Phoenix, AZ

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TABLES AND FIGURES

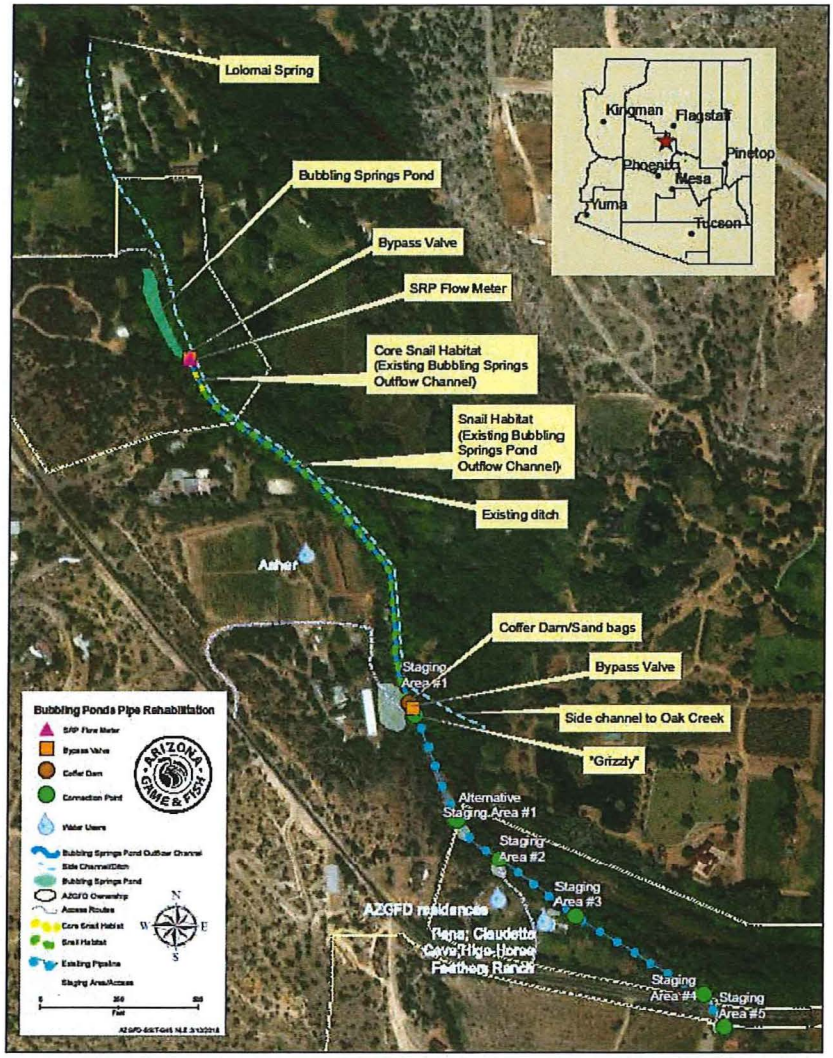

Figure 1. Aerial imagery of the action area and pipeline alignment.

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APPENDIX A: CONCURRENCE

This appendix contains our concurrence with your "may affect, not likely to adversely affect" determination for the threatened yellow-billed cuckoo (*Coccyzus americanus*).

- Project activities are scheduled to begin in October 2018 and be completed by early January 2019. Typically, cuckoos leave Arizona by the end of September; therefore, we do not expect yellow-billed cuckoos to be present during the proposed action, so there will be no disturbance to breeding cuckoos.

- Trimming branches will be kept to a minimum and will occur only along the outer western edge to the riparian corridor along the historic pipeline alignment. The trimming of these branches will result in insignificant and discountable effects to cuckoo habitat.