



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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Cons. #02ENNM00-2013-F-0065

Rachelle Huddleston-Lorton, District Ranger
Wilderness Ranger District
Gila National Forest
3697 Highway 35, HC 68 Box 50
Mimbres, New Mexico 88049

Dear Ms. Huddleston-Lorton:

Thank you for your request to reinstate the November 7, 2013, formal consultation and conferencing with the U.S. Fish and Wildlife Service (Service) on the National Forest Service Road (NFSR) 150 Bridge Replacement/Rehabilitation Project (Consultation #02ENNM00-2013-F-0065) on the Gila National Forest (Forest Service). On February 8, 2016, we received your request and an addendum to the Biological Assessment (BA) for the narrow-headed gartersnake (*Thamnophis rufipunctatus*) (gartersnake), a species recently listed as threatened under the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.). The Forest Service concluded that the proposed action “may affect, is likely to adversely affect” the gartersnake. The letter also included a request for formal conferencing for the proposed critical habitat for the gartersnake. The Forest Service concluded that the proposed action would not adversely modify or destroy proposed critical habitat. The Forest Service also determined that the proposed action “may affect, is likely to adversely affect” the gartersnake critical habitat if designated.

The project description for the proposed action, action area, or other conclusions of the 2013 BA, although not explicitly stated in the addendum, does not appear to have any material changes. The addendum specifically addresses potential effects to the gartersnake, its proposed critical habitat, and incorporates conservation measures for the gartersnake and its habitat into the action.

This reinstated consultation hereby incorporates by reference the 2013 BA and the final November 7, 2013 Biological Opinion (BO), the February 5, 2016, BA Addendum, and your letter dated February 5, 2016 with your effects determinations. This BO is in addition to, and supplemental to, the November 7, 2013 BO.

This BO relies on the revised regulatory definition of “destruction or adverse modification” of designated or proposed critical habitat from 50 Code of Federal Regulations (CFR) 402.02. As of February 11, 2016, the definition of “destruction or adverse modification” has been revised to align it with the conservation purposes of the Endangered Species Act of 1976, as amended (Act), and the Act’s definition of “critical habitat” (81 FR 7214). Specifically the rule states: “Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.” The revised definition continues to focus on the role that critical habitat plays for the conservation of listed species and acknowledges that the development of physical and biological features may be necessary to enable the critical habitat to support the species recovery.

Consultation History

The U.S. Forest Service (Forest Service) submitted a BA for the NFSR 150 Road Project on March 15, 2013. We determined that the information in the BA was insufficient and requested additional information on April 12, 2013. The Forest Service provided a BA addendum on April 15, 2013, which provided sufficient and adequate information to initiate formal consultation. The Service issued a final BO to the Forest Service on November 7, 2013. We initially received a request for reinitiation for informal consultation on Dec 16, 2015. After discussions between the Forest Service and the Service on Feb 5, 2016, we received a revised request for reinitiation for formal consultation for the gartersnake and proposed critical habitat. The Service bases this BO on information provided in the BA, BA addendums, subsequent emails and telephone conversations between our staffs, and data in our files. A complete administrative record of this consultation is on file at this office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Forest Service proposes to replace, construct, or rehabilitate eight historical Civilian Conservation Corps era existing bridges along NFSR 150. The purpose of this Project is to improve safety by replacing three bridges on NFSR 150 with pipe arch structures in Terry Canyon, reroute and construct two pipe arch structures in the vicinity of the Terry Canyon #2 and Terry Canyon #5 bridges (leaving the existing bridges intact, as a basis for historical interpretation, but no longer in service), replace two bridges on NFSR 150 with new bridges in East Indian Creek and a tributary to Black Canyon, and rehabilitate one bridge in Black Canyon (Figure 1). This Project is approximately 2.4 hectare (ha) (6 acres (ac)) in size centered at latitude 33.238 and longitude -108.061 in Grant and Catron Counties, New Mexico. Implementation of the project will occur outside of the rainy season, which typically occurs in August and September, but prior to the end of 2016.

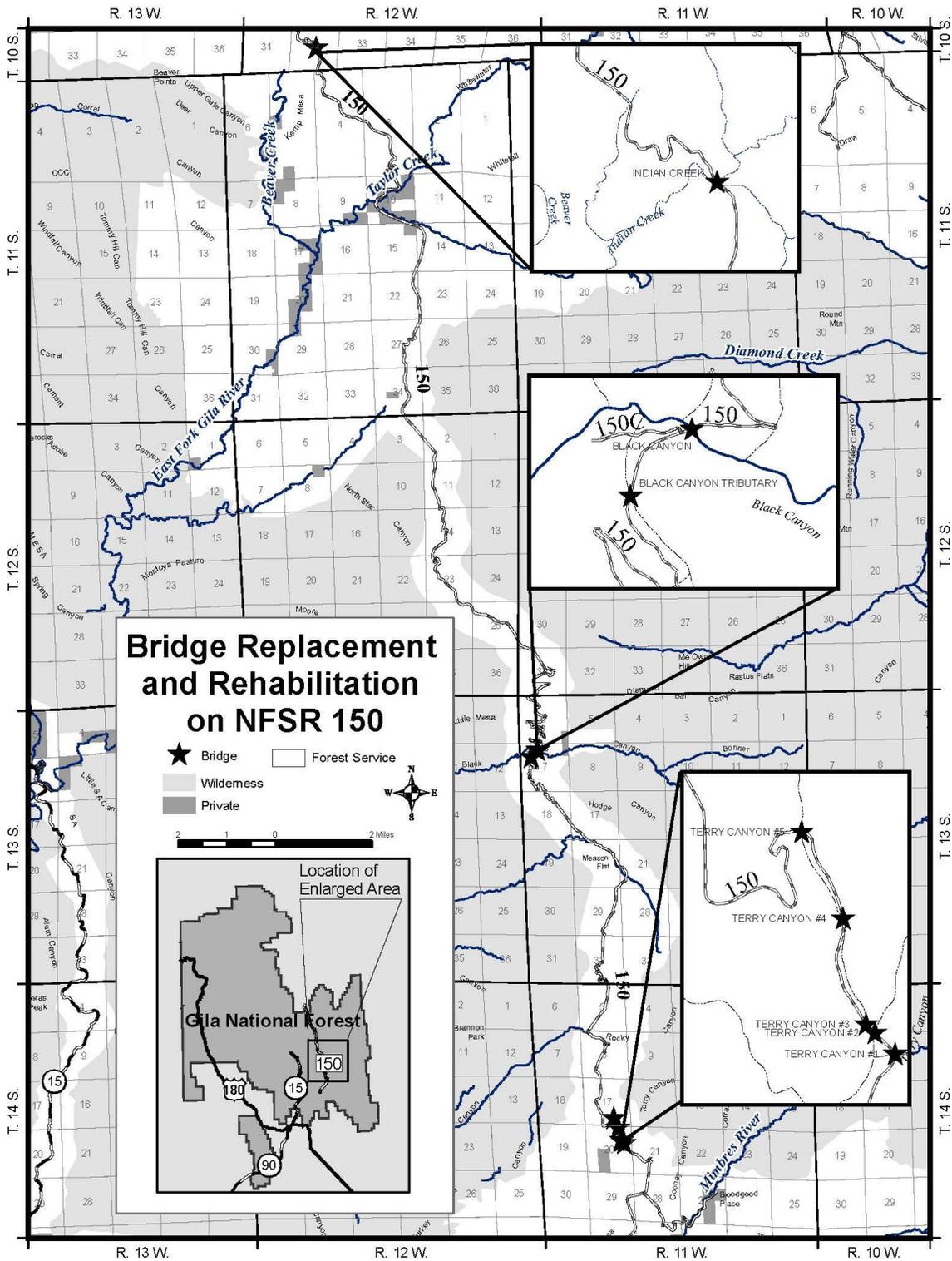


Figure 1. Locations of bridge replacement or rehabilitation along NFSR 150.

The Forest Service proposes to reroute NFSR 150 during construction to allow for traffic flow at Black Canyon, Black Canyon tributary, and Indian Creek construction site. The Forest Service will close Segments of NFSR 150 to traffic during construction of the five pipe arches in Terry Canyon.

East Indian Canyon, Terry Canyon, and Black Canyon Tributary Bridges

The Indian Canyon Bridge is located at NFSR milepost (MP) 44.7 within the Black Range Ranger District. The Forest Service proposes to remove and replace the existing bridge with a new bridge (Figure 1). The Black Canyon Tributary Bridge is located at MP 21.6 within the Wilderness Ranger District. The Forest Service proposes to remove and replace the existing bridge with a new bridge (Figure 1). The five Terry Canyon Bridge sites (Figure 1) are located within the Wilderness Ranger District along NFSR 150 at the following locations: bridge site # 1 at MP 9.0, bridge site #2 at MP 9.1, bridge site #3 at MP 9.2, bridge site #4 at MP 9.4, and bridge site #5 at MP 9.7. Three of the existing concrete bridges (#1,#3,#4) would be removed and replaced with a corrugated steel pipe-arches, and two bridges would be left in place and as slight re-route and new bridge would be constructed (#2,#5). The Forest Service proposes to leave Bridges #2 and #5 intact as a basis for historical interpretation, but no longer in service. East Indian Canyon, Black Canyon Tributary, and Terry Canyon bridge locations span intermittent draws and do not occur in gartersnake suitable habitat or proposed critical habitat. The work will ensure the structures are safe for public travel.

Black Canyon Bridge

Black Canyon is a perennial stream with an associated wetland adjacent to the channel. The proposed action at Black Canyon includes 1) placement and grading of the temporary bypass; 2) placement of additional pipe for the bypass; and 3) temporary riprap placed at end of the pipe to protect against washout. Temporary impacts will be limited to the period of time during construction and rehabilitation. The bridge crossing Black Canyon will remain in place and the deck rehabilitated. The Forest Service proposes to place riprap at bridge abutments and upgrade bridge railings. The riprap pad thickness will be approximately 1.2 meter (m) (4.0 feet (ft.)) in all areas except for the edges, with depth increased to approximate 1.83 m (6.0 ft.). This Black Canyon Project area is less than 0.4 ha (1 ac) in size.

For the rehabilitation of Black Canyon Bridge, the proposed actions include

1. The bridge deck repairs will include a new concrete topping. The removed curbs and the deck crown will improve deck drainage.
2. Riprap designed is in accordance with U.S. Army Corps of Engineers (Corps) standards to prevent stream channel scour and protect bridge foundations long term.
3. Penetrating water repellent specifications will make concrete more resistant to water, which is a cause of delamination.
4. Construction detour design will maintain traffic during rehabilitation of the structure at Black Canyon. The Black Canyon bridge detour culverts design includes the ability to pass the seasonal high water or 2-year flood flow.

The Corps authorized and permitted the Black Canyon Bridge project under Action No. SPA-2009-00607-ELP on June 11, 2010, and subsequently reauthorized on August 2, 2011. The Corps Albuquerque Office has determined that an additional 404 permit will not be required. The Forest Service submitted a Nationwide Permit 3 preconstruction notification to the Corps. This will satisfy the NMED requirement for individual water quality certification. Construction requires the implementation of temporary and permanent erosion control measures in accordance with U.S. Environmental Protection Agency regulations for Stormwater Pollution Protection Plan. A National Pollution Discharge Elimination System permit for storm water discharges from a construction site in excess of 0.4 ha (1 ac) will not be required because the size of the proposed disturbance is approximately 0.13 ha (0.31 ac).

The following are conservation measures proposed and incorporated into the action to minimize the impacts to Gila trout (*Oncorhynchus gilae*):

1. Return all bypass routes for the Black Canyon, Black Canyon Tributary and East Indian Creek bridges construction and rehabilitation sites to the original contours and reseed.
2. Use Best Management Practices (BMPs) to minimize impacts from construction due to erosion and sedimentation. This includes minimizing removal of trees and other vegetation, rehabilitating sites after construction or rehabilitation, and following BMPs to reduce or eliminate impacts from construction itself.
3. Gila Trout occupy Black Canyon. Prior to any construction on Black Canyon bridge site, place block nets outside of the construction zone upstream and downstream of work site. Gila trout will be removed with electroshocking equipment from the section within block nets and released upstream of block netted area.
4. The Forest Service will restore riparian or wetland habitat that is disturbed during reconstruction or rehabilitation to preconstruction conditions. This may include seeding and planting.
5. Acquire and follow requirements of New Mexico Environment Department (NMED) and Clean Water Act (CWA), sections 401 and 404.
6. CWA sections 401 and 404 permits stipulate measures to be taken to ensure that appropriate erosion control measures are taken, materials and chemicals are handled appropriately, and provide other provisions to ensure both water quality and habitat for aquatic species is protected.

The Forest Service proposes additional conservation measures and incorporates them into the proposed action to minimize the impacts to the gartersnake and other aquatic or semi-aquatic species:

1. Construction completed during the dry or base flow season (typically prior to or after August and September) to reduce impacts to surface water quality within the work site and downstream locations.
2. The Forest Service will conduct pre-construction surveys for gartersnakes by permitted individuals. The surveys will be coordinated, in writing, with the New Mexico Ecological Services Field Office on recommended survey intensity, duration, and extent. Surveys for gartersnakes could include a combination of visual encounter surveys, both intense, focused (walking both banks, searching in vegetation, moving substrate where

possible) and secondary, incidental (while surveying for other species including fish and frog surveys), and would also include the use of minnow traps placed along water edges. Surveying would extend at least 200 meters up and downstream from the bridge site. Surveyors will deploy minnow traps overnight for at least one night.

3. The Forest Service will install instream block nets upstream and downstream of the construction area with connected drift fencing extending upland (similar to those described and used by Pittenger 2015). The Forest Service will intensively survey the area inside the fencing prior to construction and bridge rehabilitation. If the surveys detect gartersnakes within the fenced area, surveyors will place gartersnakes outside of the construction area into suitable habitat.
4. The Forest Service will monitor the area to determine if gartersnakes are attempting to re-enter the construction site during project implementation. The Forest Service will move gartersnakes away from the construction site if they are detected in the fenced area or adjacent to the block nets or drift fencing.

STATUS OF THE SPECIES

Narrow-headed gartersnake

A summary of the species and its habitat can be found in the final rule for listing published on July 8, 2014 (79 FR 38677) and proposed critical habitat published on July 10, 2013 (78 FR 41549), and the associated Appendix A, “Current Population Status of Northern Mexican and Narrow-headed Gartersnakes in the United States” (Service 2014a). These documents are hereby incorporated by reference.

The gartersnake ranges from north-central Arizona southeastward to southwestern New Mexico, and from northern Chihuahua to northern Durango, Mexico. In New Mexico, the species is confined to Catron, Grant, and Hidalgo counties where it reaches the northern and eastern edge of its overall distribution. It is a habitat specialist, occurring only in shallow, swift-flowing, rocky rivers and streams of the San Francisco and Gila River drainages. It feeds almost exclusively on fish. Within New Mexico, extensive surveys suggest a disappearance of the species from the area of the San Francisco Hot Springs in Catron County near Glenwood, the site of a previously robust population. Surveys from 2009 indicate that populations of gartersnakes under investigation at the Heart Bar Wildlife Management Area in Catron County, and the Gila River Bird Area near Cliff, Grant County, may be persisting at very low numbers or possibly extirpated. Major threats to this species are changes in water-use practices and heavy livestock overgrazing of streamside vegetation that results in alteration of habitat, including heavy siltation, stream channelization, and the elimination of undercut banks. Streambed siltation may cause impaction of streambed rocks and eliminate habitat, as has been speculated in the disappearance of a robust population of the species at San Francisco Hot Springs. In central Arizona, population declines were associated with presence of non-native “spiny-rayed” fishes (e.g., the sunfishes *Micropterus* and *Lepomis*, family Centrarchidae), habitat destruction and modification due to increased recreation and siltation. Loss of native fish species and increases in non-native spiny-rayed fishes are considered a primary threat to the gartersnake. Localized mortality has been observed in association with channel-altering flood events, direct predation by humans, and roadkill. Gartersnakes exhibit highly specialized life history traits, including feeding almost exclusively on fish, use of specific habitats for foraging (clear, rock-boulder strewn streams), evolved mechanisms for increased underwater visual and foraging capabilities,

and low dispersal capacity. These traits render the species to be highly susceptible to environmental change, especially climate change. Critical habitat in New Mexico is proposed for the San Francisco River drainage in Catron County, including the Tularosa River, Saliz Creek, South Fork Negrito Creek, Whitewater Creek, and Dry Blue Creek tributaries; and in the upper Gila River basin downstream to the Arizona state line, including the forks, Gilita Creek, Iron Creek, Little Creek, Diamond Creek, Black Canyon, and Turkey Creek tributaries.

ENVIRONMENTAL BASELINE

Under section 7(a)(2) of the Act, when considering the effects of the action on federally listed species, we are required to take into consideration the environmental baseline. Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone section 7 consultation, and the impacts of State and private actions that are contemporaneous with the consultation in progress. The environmental baseline defines the 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. We are incorporating in large part the environmental baseline for Gila trout from the final BO, dated November 7, 2013, and applying the information to the gartersnake.

Description of the Action Area

The action area for the project includes the area affected by the construction and rehabilitation of bridges where direct or indirect effects to federally listed species may reasonably be expected to occur. The Black Canyon Bridge is located at latitude 33.1853 and longitude -108.0279 in Grant County, New Mexico. The project footprint occurs within the flood plain and channel and the natural and artificial drainage features flow into Black Canyon. The area associated with action includes the 0.4 ha (1 acre) construction footprint as well as areas upstream and downstream of construction site which may be indirectly affected by the project activities. This area encompasses a segment of Black Canyon within proposed critical habitat for the narrow-headed gartersnake and is considered occupied by the Service. Black Canyon is a perennial stream with riparian vegetation such as cottonwoods (*Populus* spp.), willows (*Salix* spp.), and herbaceous plants associated with riparian areas.

Status of the Species and Status of the Proposed Critical Habitat within the Action Area

The status of the species within the action area is not well understood. The nearest observation of the gartersnake (four individuals) were during survey efforts between 2009 and 2011 approximately 7.2 kilometer (km) (4.5 miles (mi)) downstream of the Black Canyon Bridge site in Black Canyon Creek (Helleckson 2012; Forest Service 2016). The action area was also surveyed during the 2009 -2011 effort, but no narrow-headed gartersnakes were observed. Prior to 2009, the gartersnake was observed in 1985 (Painter 2000) approximately 12 km (7.5 mi) downstream of the action area in Black Canyon near the confluence with the East Fork Gila River. The action area has not been surveyed for gartersnakes since the 2011. Black Canyon is a perennial waterway that supports a montane riparian community and wetlands along its banks. We have proposed to designate 1,418 ha (3,503 a) of critical habitat along 41.5 km (25.8 mi) of Black Canyon from its confluence with East Fork Gila River in Catron County, New Mexico upstream to its headwaters in Catron County, New Mexico. The area in Black

Canyon contains sufficient physical and biological features, including all the primary constituent elements (PCEs), along most of the proposed critical habitat in this subunit. The proposed critical habitat is considered occupied by the species. Special management may be required to maintain or develop the physical and biological features in Black Canyon, including management against the invasion of harmful nonnative species. Within the proposed action area, the amount of proposed critical habitat is approximately 0.4 ha (1.0 ac). The proposed critical habitat is vegetated with upland and riparian trees and willows as described above.

Factors affecting the Species' Environment and Proposed Critical Habitat within the Action Area

On the Forest, past and present Federal, State, private, and other human activities that may affect narrow-headed gartersnakes and their habitat include recreational activities, livestock grazing, timber harvest, wildfire, management activities directed specifically towards native fish (e.g., stream restoration, transplantation, population surveys), nonnatives, and any other habitat alterations. In addition, the stocking of nonnative trout by New Mexico Department of Game & Fish (NMDGF) and private citizens in the early to mid-1900s is also included in the environmental baseline. Factors that have affected the species environment are similar with and likely highly dependent upon those affecting the Gila trout and other aquatics. Therefore, we are incorporating, in large part, the factors affecting the Gila trout from the November 7, 2013, BO.

Recreational activities

It is likely that early settlers or indigenous people harvested native fish for food. The extent to which either group depended on native fish for subsistence is unknown. Prior to the Gila trout listing as a threatened species, NMDGF managed their harvest through fishing regulations. However, most of the streams with trout are remote and enforcement of fishing regulations was difficult. Since the listing of Gila trout in 1967, most stream reaches that contained Gila trout have been closed to sport fishing. While some illegal fishing may have taken place, the amount of poaching loss is most likely small and has had a minimal effect on Gila trout populations because of stream inaccessibility and because most citizens follow fishing regulations. In 2005, the Service published a 4(d) rule, which states that angling for Gila trout may occur in accordance with applicable State fish and wildlife conservation laws and regulations to protect this species in the States of New Mexico or Arizona. Fishing is now allowed in New Mexico in Black Canyon, Mogollon Creek (up to Trail Canyon), and Iron Creek. Recreational fishing in Black Canyon occurs July 1 thru October 31, catch and release, single, barbless hook, artificial fly or lure only.

Livestock grazing

In the late 1800s and early 1900s, livestock grazing was uncontrolled and unmanaged over many of the watersheds that contained native fish, amphibians, and reptiles, and much of the landscape was devoid of vegetation (Rixon 1905; Duce 1918; Leopold 1921; Leopold 1924; Ohnart 1996). Livestock grazing is more carefully managed now, which has resulted in less impact to streams occupied by gartersnakes. However, legacy effects to riparian and aquatic environments can still be affecting the species environment in the action area. Improved management grazing practices (e.g., fencing) have reduced livestock access and impacts to streams. Additionally, Black Canyon is within an inactive grazing allotment and certain areas of the stream are closed to grazing (Monzingo 2011; Monzingo 2013).

Timber harvest

Logging activities in the early to mid-1900s likely caused major changes in watershed characteristics and stream morphology (Chamberlin et al. 1991). Early logging efforts were often concentrated along canyon bottoms with perennial streams. Tree removal along perennial streams within the historical range of the gartersnake likely altered water temperature regimes, sediment loading, bank stability, and availability of woody debris (Chamberlin et al. 1991). Timber harvest is currently not allowed in wilderness or primitive areas and the Gila Wilderness to the west and the Aldo Leopold Wilderness to the east surround the action area.

Wildfire

Severe wildfires capable of extirpating or decimating fish, amphibian, and reptile populations are relatively recent phenomena. They are the result of the cumulative effects of fire suppression, past timber management, and historical or ongoing grazing, which removes the fine fuels needed to carry fire (Madany and West 1983; Swetnam 1990; Savage and Swetnam 1990; Touchan et al. 1995; Swetnam and Baisan 1996; Belsky and Blumenthal 1997; Gresswell 1999). Historical wildfires were primarily cool-burning understory fires with return intervals of three to seven years in ponderosa pine (Swetnam and Dieterich 1985). Cooper (1960) concluded that prior to the 1950s; crown fires were extremely rare or nonexistent in the region.

Effects of fire may be direct and immediate or indirect and sustained over time (Gresswell 1999). The cause of direct fire-related mortalities has not been clearly established. Fatalities are most likely during intense fires in smaller, headwater streams with low flows (Gresswell 1999). In these situations, water temperatures can become elevated or changes in pH may cause immediate death of fish prey species (Cushing and Olson 1963) and possibly gartersnakes. Spencer and Hauer (1991) documented 40-fold increases in ammonium concentrations during an intense fire in Montana. The inadvertent dropping of fire retardant in streams is another source of direct mortality to gartersnake prey species during fires.

Indirect effects of fire include ash and debris flows, increases in water temperature, increased nutrient inputs, and sedimentation (Swanston 1991; Bozek and Young 1994; Gresswell 1999). Ash and debris flows can cause mortality to prey species months after fires occur when barren soils erode during monsoonal rainstorms (Bozek and Young 1994; Brown et al. 2001). Aquatic prey species can suffocate when their gills are coated with fine particulate matter, can be physically injured by rocks and debris, or can be displaced downstream below impassable barriers into habitat occupied by nonnative predators and competitors. Ash and debris flows or severe flash flooding can also decimate aquatic invertebrate populations that prey species may depend on for food (Molles 1985; Rinne 1996; Lytle 2000). In larger streams, refugia are typically available where aquatic species can withstand the short-term adverse conditions; small headwater streams are usually more confined, concentrating the force of water and debris (Pearsons et al. 1992; Brown et al. 2001).

Increases in water temperature occur when the riparian canopy is eliminated by fire and the stream is directly exposed to the sun. After fires in Yellowstone National Park, Minshall et al. (1997) reported that maximum water temperatures were significantly greater in headwater streams affected by fire than in reference (unburned) streams and subsequent water temperatures often surpassed tolerance levels of salmonids. Warm water is stressful for salmonids, can lead to increases in disease, and lowered reproductive potential (Bjornn and Reiser 1991), thereby decreasing the prey base for gartersnakes.

Salmonids need clean, loose gravel for spawning sites (Bjornn and Reiser 1991). Ash and fine particulate matter created by fire can fill the interstitial spaces between gravel particles eliminating spawning habitat or, depending on the timing, suffocating eggs that are in the gravel. Increases in water temperature and sedimentation can also affect aquatic invertebrates changing species composition and reducing population numbers (Minshall 1984; Wiederholm 1984; Roy et al. 2003), consequently affecting the food supply of trout and decreasing the supply of prey items for gartersnakes.

In the last ten years, over 6,800 ha (16,800 acres) burned within or near the Black Canyon watershed, which encompasses the proposed action on the Forest (Forest Service 2013), and affected the area with subsequent ash flows. Ash flows were documented in Black Canyon in 2011 and 2012 (Myers 2011, 2012). In June 2013, the Silver Fire burned approximately 6,595 acres of the Headwaters Black Canyon watershed. Significant ash flow occurred during two rain events during July 2013. Flows were estimated greater than 2,000 cubic feet per second for both rain events. Significant ash was deposited on banks after both of these events and the stream was still running black with ash several days after each event.

Management activities

Due to declining native fish populations, the NMDGF propagated and stocked Gila trout, rainbow trout, cutthroat trout, and brown trout during the early 1900s to improve angler success. After early stocking programs were discontinued, the nonnative trout species persisted providing both prey for gartersnakes, but also providing competitors and predators of gartersnakes. Recent efforts to recover the Gila trout have included eliminating nonnative salmonids from the species historical habitat through piscicide treatment and mechanical removal and building waterfall barriers to prevent their reinvasion. This likely has affected the gartersnake through the reduction of abundance of prey species. A barrier to prevent the movement of nonnative salmonids was constructed in 1999 and reconstructed in 2010. Brown trout were discovered in Black Canyon in 2006 and nonnative removal efforts have been occurring for the last few years in Black Canyon.

Additional management activities that occur near or at this Black Canyon site consist of campground maintenance, installation of picnic tables and outhouses, annual road maintenance, and willow planting and stream enhancement project over the last 10 years along 3.2 km (2 mi) of Black Canyon. This enhancement project constructed rock and log drop structures to create pool habitat for Gila trout. The willows planted are intended to increase shade and potentially lower water temperatures.

Nonnative species

Nonnative trout (brown trout) within the project area may affect gartersnakes through predation and competition. A naturalized population of brown trout is present in the action area. There are no other nonnative fish species, bullfrogs, or crayfish known in the action area.

Climate change

Climate change predicts four major effects on the gartersnake habitat:

1. increased water temperature;
2. decreased streamflow;
3. a change in the hydrograph; and
4. an increased occurrence of extreme events (fire, drought, and floods).

Increased water temperature: Kundzewicz et al. (2007) state that freshwater ecosystems will have the highest proportion of species threatened with extinction due to climate change. Species with narrow temperature tolerances will likely experience the greatest effects from climate change and it is anticipated that populations located at the margins of species hydrologic and geographic distributions will be affected first (Meisner 1990). Water temperature influences the survival of salmonids at all stages of their life cycle. Alterations in the temperature regime from natural background conditions negatively affect population viability, when considered at the scale of the watershed or individual stream (McCullough 1999). Salmonids are classified as coldwater fish with thermal preferences centered on 15 °C (59 °F) (Shuter and Meisner 1992). High temperatures suppress appetite and growth, foster disease, can influence behavioral interactions with other fish (Schrank et al. 2003), or be lethal (McCullough 1999). Salmonids inhabiting warm stream segments have higher probabilities of dying from stress (McCullough 1999). The temperature preferences and tolerances of Gila trout have not yet been determined. However, increased stress from elevated temperatures could lead to greater susceptibility to disease and reduced reproductive success.

Gila trout are found within small ranges with limited dispersal capabilities and narrow physiological tolerance (i.e., temperature) making them susceptible to extinction as the climate changes (Kennedy et al. 2009). Because Gila trout occur in the upper reaches of the watershed, there is no suitable habitat to move to with increasing temperature. Based on the documented loss of occupied habitat, downstream temperatures may already be marginally suitable and in the future, they may become too warm to be suitable for Gila trout (Miller 1950). For example, by 1950, water temperature in the Gila River at Sapillo Creek was considered too warm to support any trout species (Miller 1950). Kennedy et al. (2009) determined that warm season habitat for Gila trout will be reduced by 70 percent, due to warmer temperature in combination with decrease precipitation in the summer, leading to increase in intensity and frequency of wildfires. Loss of suitable habitat for trout will likely be offset by increased suitability for native warmwater species.

Decreased stream flow: Current models suggest a decrease in precipitation in the Southwest (Kundzewicz et al. 2007; Seager et al. 2007) which would lead to reduced stream flows and a reduced amount of habitat for Gila trout. Stream flow is predicted to decrease in the Southwest even if precipitation were to increase moderately (Nash and Gleick 1993; New Mexico Office of the State Engineer 2005; Hoerling and Eischeid 2007). Winter and spring warming causes an

increased fraction of precipitation to fall as rain, resulting in a reduced snow pack, an earlier snowmelt, and decreased summer base flow (Christensen et al. 2004; Stewart et al. 2004; Regonda et al. 2005). Earlier snowmelt and warmer air temperatures can lead to a longer dry season. Warmer air temperatures lead to increased evaporation, increased evapotranspiration, and decreased soil moisture. These three factors could lead to decreased stream flow even if precipitation increased moderately.

The effect of decreased stream flow is that streams become smaller, intermittent or dry, and thereby reduce the amount of habitat available for aquatic species. A smaller stream is affected more by air temperature than a larger one, exacerbating the effects of warm and cold air temperatures (Smith and Lavis 1975). In addition, fish, amphibians, and reptiles isolated in pools may be subject to increased predation from terrestrial predators.

Change in the hydrograph: Another documented effect of climate change is a shift of the timing of spring snowmelt. Stewart et al. (2004) show that timing of spring streamflow in the southwestern United States during the last 5 decades has shifted so that the major peak now arrives 1 to 3 weeks earlier, resulting in less flow in the spring and summer. They conclude that almost everywhere in North America, a 10 to 50 percent decrease in spring-summer streamflow fractions will accentuate the seasonal summer dry period with important consequences for warm-season water supplies, ecosystems, and wildfire risks (Stewart et al. 2004). Stewart et al. (2004) suggest that with climate model projected air temperature increases, snowmelt driven runoff in the western United States could occur as much as 30-40 days earlier than present. The life history of salmonids is tied to the timing of runoff (Fausch et al. 2001). A change in timing or magnitude of floods can scour the streambed destroying eggs, or displace recently emerged fry downstream (Erman et al. 1988; Montgomery et al. 1999; Fausch et al. 2001).

Increased occurrence in extreme events: Extreme events such as drought, fires, and floods are predicted to occur more frequently because of climate change (IPCC 2007). It is anticipated that an increase in extreme events will most likely affect populations living at the edge of their physiological tolerances. The predicted increases in extreme temperature and precipitation events may lead to dramatic changes in the distribution of species or to their extirpation or extinction (Parmesan and Matthews 2006).

Drought

Although aquatic and semi-aquatic species evolved in the Southwest and have survived drought in the past, it is anticipated that a prolonged, intense drought would affect many populations, in particular those occupying small headwater streams that are likely to dry or become intermittent.

Downstream reaches are larger streams that historically could have provided refugia for populations threatened by stream drying. These reaches are now occupied by nonnative, spiny-rayed fish species. The loss of fish populations, e.g., the Sheep Corral Creek population, is likely the consequence of the widespread drought the region was experiencing. In addition to stream drying, there is a clear association between severe droughts and large fires in the Southwest (Swetnam and Baisan 1996).

Fire

Since the mid-1980s, wildfire frequency in western forests has nearly quadrupled compared to the average of the period 1970 to 1986. The total area burned is more than six and a half times the previous level (Westerling et al. 2006). In addition, the average length of the fire season during 1987 to 2003 was 78 days longer compared to 1970 to 1986 and the average time between fire discovery and control increased from about eight to 37 days for the same periods (Westerling et al. 2006). McKenzie et al. (2004) suggest, based on models, that the length of the fire season will likely increase and fires in the western United States will be more frequent and severe. In particular, they found that fire in New Mexico appears to be acutely sensitive to summer climate and temperature changes and may respond dramatically to climate warming (McKenzie et al. 2004).

Floods

Floods that occur after intense wildfires that have denuded the watershed are also a threat. As described above, several streams occupied by fish and gartersnakes have had populations extirpated because of ash flows after fire (Rinne 1996; Brown et al. 2001). Consequently, intense precipitation that is unseasonable that occurs after fire, could extirpate affected fish populations and gartersnakes.

Summary

Habitat modification and loss due to past management and the proliferation of nonnative species has caused a significant decline in abundance and distribution of the narrow-headed gartersnake throughout its range. Wildfire effects can be significant and larger and more intense fires are expected to occur at a higher frequency in the future. Legacy effects associated with past management are present and will continue into the foreseeable future. This is compounded by current and future effects associated with climate change affecting habitat and ecosystem function and resiliency.

EFFECTS OF THE ACTION

Direct Effects of the Action

The narrow-headed gartersnake has been observed in Black Canyon approximately 7.2 km (4.5 miles) downstream of the action area and near the confluence with the East Fork Gila River (Painter 2000; Hellekson 2012; Forest Service 2016). Perennial water exists between observation sites in Black Canyon at the confluence of the East Fork Gila River and the action area as well as upstream of the action area. Suitable habitat also exists above the action area with adequate prey populations. It is unknown if the gartersnake is present upstream of the action area. The Forest Service will also complete as much construction activity as possible during low flow months, which typically is outside the months of August and September, in an effort to minimize impacts to young gartersnake dispersal.

Because the action area occurs in proposed critical habitat, Black Canyon is considered occupied. However, the species has not been observed in the immediate area during past survey efforts, and the action will occur at low water, reducing the likelihood that prey fish will be in the action area, there is an overall reduced likelihood that narrow-headed gartersnakes will be in action area. Nonetheless, the Forest Service will conduct pre-implementation surveys in and around the action area to ensure that gartersnakes are not in the action area or in close proximity to the action area. Prior to the implementation of the project, the Forest will install terrestrial drift fences and aquatic block nets upstream and downstream to the action area similarly to those implemented during the NM 15 Road Bridge Replacement project (Service 2014b) and as described in Pittenger (2015). The block nets and the streamside drift fencing will remain in place until the construction, bridge rehabilitation, and site rehabilitation are complete.

The Forest Service will also intensively survey the area within the block netting and drift fencing just prior to construction. It is still possible that one or more gartersnakes could be missed or could move into the action area. In the event that gartersnakes are present in the action area during construction, they could be killed or injured due to rehabilitation of the existing bridge; placement and grading of the temporary bypass; placement of additional pipe for the bypass; and temporary riprap that will be placed at the end of the pipe and bridge to protect against washout. It is possible that the heavy equipment could crush gartersnakes, although the likelihood of this occurring is very low. Heavy equipment use in the Project area will be minimized as much as possible, we expect that healthy gartersnakes would detect the approach of large, slow-moving equipment, and flee the area. However, the possibility that a gartersnake could be caught and crushed during heavy equipment use cannot be ruled out.

The Forest Service will monitor the construction area during project implementation to determine if any individuals attempt to re-enter the area. If any gartersnakes are found within the project construction area, they will be moved outside the immediate project area. Implementation of the proposed conservation measures will significantly minimize the potential effects to the species.

Indirect Effects of the Action and Effects of the Action on Proposed Critical Habitat

All indirect effects of the action are related to effects to the Primary Constituent Elements (PCEs) of proposed critical habitat; therefore, we have combined the indirect effects of the action and the effects of the action on proposed critical habitat. In general, individuals may be indirectly affected by the project through temporary or permanent alteration of habitat, including removal or modification of adjacent riparian habitat; alterations to cobble and gravel substrate; alteration of aquatic habitat, and potential for sediment and erosion to alter habitat or by affecting fish prey species. Proposed critical habitat could be affected by impacts to stream habitat which includes stream substrate (PCE 1a.), temporary modification of stream flow (PCE 1b.), shoreline habitat (PCE1c.), pollutants entering the stream (PCE1d.), temporary disruption of movement (PCE 2), and related impacts to the prey base (PCE 3)(See Table 1 below).

This species is strongly associated with clear, rocky streams, using predominantly pool and riffle habitat that includes cobbles and boulders (Rosen and Schwalbe 1988; Degenhardt et al. 1996; Rossman et al. 1996; Ernst and Ernst 2003); however, bankline vegetation is also important. Gartersnakes prefer to use shrub and sapling-sized plants for thermoregulating (basking) at the waters' edge (Degenhardt et al. 1996,). The action area includes riffle and run habitat with an average depth of 15.2 centimeter (cm)(0.5 ft.), and pool habitat with an average depth of 76.2 cm (2.5 ft.). The action area generally does not contain the greater depth pool habitat (deeper than 101.6 cm (3.33 ft.)) that has been associated with higher densities of gartersnakes (Rosen and Schwalbe 1988). Bankline vegetation is present in the project area and may be disturbed in the immediate bridge area and the area where the bypass route will be installed. Adequate erosion and sediment control will also be used throughout construction, and revegetation of disturbed areas with native vegetation will occur following construction. The project itself is expected to reduce impacts over the long term by providing a bridge structure of increased stability to prevent failure, which should result in a reduction in the loss of the roadway embankment and delivery of sediment to the creek. This increased stability and revegetation will likely reduce impacts to the species in the long-term, and will have short-term, temporary negative impacts.

The potential impacts to gartersnake proposed critical habitat and PCEs are listed in Table 1. There will be temporary impacts to approximately 0.4 ha (1 ac) in size of proposed critical habitat; this will constitute approximately 0.002% of proposed designated critical habitat in the Upper Gila River Sub-basin unit and 0.0005% of the overall proposed designated critical habitat. In the long term, the Forest Service anticipates that habitat conditions will improve over the existing conditions and that any effects to PCEs and habitat will be small in scale and temporary in duration.

Table 1. Impacts to PCEs of proposed gartersnake critical habitat within the project area.

PCE	Impact
<p>1) Stream habitat, which includes:</p> <ul style="list-style-type: none"> a) Perennial or spatially intermittent streams with sand, cobble, and boulder substrate and low or moderate amounts of fine sediment and substrate embeddedness, and that possess appropriate amounts of pool, riffle, and run habitat to sustain native fish populations; b) A natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads; c) Shoreline habitat with adequate organic and inorganic structural complexity (e.g., boulders, cobble bars, vegetation, and organic debris such as downed trees or logs, debris jams), with appropriate amounts of shrub- and sapling-sized plants to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities; and d) Aquatic habitat with no pollutants or, if pollutants are present, levels that do not affect survival of any age class of the gartersnake or the maintenance of prey populations. 	<p>Temporary modification of 0.4 ha (1 acre) proposed designated critical habitat.</p> <p>Temporary alteration of microhabitat will occur from construction activities within the stream channel. No permanent change to stream gradient will occur. In stream construction activities may result in short-term, temporary increase in substrate and embeddedness downstream. Long-term beneficial impact by reduction of sediment and embeddedness in the action area.</p> <p>Temporary effect to stream flows will occur from diversion of primary base flows during construction. The project will not permanently alter the base flows of Black Canyon Creek.</p> <p>Removal of vegetation along the Black Canyon Creek banks which may affect shelter and foraging habitat, habitat for egg deposition, thermoregulation or basking areas, and habitat for prey. Revegetation of the shoreline along an increased length of bridge will provide long-term benefits.</p> <p>Temporary increase in pollutant levels from construction equipment.</p>
<p>(2) Adequate terrestrial space (182.9 m (600 ft) lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation.</p>	<p>Removal of vegetation along the Black Canyon Creek banks which may affect shelter and foraging habitat, and habitat for prey. Revegetation of the shoreline along an increased length of bridge will provide long-term benefits.</p>
<p>(3) A prey base consisting of viable populations of native fish species or soft-rayed, nonnative fish species.</p>	<p>Short-term loss or reduction of food sources due to in-stream construction activities.</p>
<p>(4) An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs (<i>Lithobates catesbeianus</i>), and/or crayfish (<i>Orconectes virilis</i>, <i>Procambarus clarki</i>, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.</p>	<p>Project will have no effect on non-native aquatic species levels.</p>

The proposed critical habitat is expected to recover once the project is complete. Bankside vegetation will be returned to preconstruction contours and reseeded. Effects to PCEs instream and downstream of the action area may include a reduction in the flow rate, substrate embeddedness, and increases in fine sediment. These downstream changes are expected to be temporary during project implementation, and are expected to return to preconstruction conditions. Impacts to prey base will be significant within the project area, but will provide an increased amount above the project area where they will be placed. Temporary modification of prey habitat will also contribute to short-term effects to proposed critical habitat. But, suitable

conditions are expected to return for prey species and the gartersnake. This project area would most likely maintain the proposed PCEs for the gartersnake now and in the future. Recurring effects to PCEs that may occur in the action area include changes to the flow, amount of fine sediment and substrate embeddedness, impediments to movement, contaminants, and the aquatic food base. These effects would not measurably reduce the ability of the proposed designated critical habitat to contribute to the recovery for gartersnakes.

In summary, the Service anticipates that the local population of gartersnakes occupying that portion of the stream within and immediately downstream of the action may be indirectly affected by the Project. These potential adverse effects may include the temporary loss of habitat due to the placement, construction, and grading of the temporary bypass; placement of additional pipe for the bypass; and temporary riprap that will be placed at the end of the pipe to protect against washout in the action area and following construction activities.

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 BO. 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 ESA.

Unregulated activities on Federal and non-Federal lands, such as livestock trespassing, inappropriate use of Off Highway Vehicles, introduction of bait and sport fishes, and residential and commercial development on inholdings, are cumulative effects and can adversely affect aquatic species through a variety of avenues.

CONCLUSION

Jeopardize the continued existence of, is defined as, 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).

Recovery calls for improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act (50 CFR § 402.02).

Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features (50 CFR § 402.02).

Narrow-headed Gartersnake and Proposed Critical Habitat

After reviewing the current status of the gartersnake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the narrow-headed gartersnake. Critical habitat has been proposed for the species and is within the action area. It is the Service's conference opinion that

the proposed action is not likely to destroy or adversely modify the proposed designated critical habitat for the gartersnake. We reached these conclusions because the action will only affect gartersnakes and proposed critical habitat in the Black Canyon Project area, which is small in scale (~1 acre) relative to the occupied range of the species and proposed critical habitat. Rehabilitation of the Black Canyon Bridge and related activities may result in the incidental take of gartersnake as described below.

After reviewing the current status for the narrow-headed gartersnake, the environmental baseline for the action area, the effects of the project, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the narrow-headed gartersnake and is not likely to destroy or adversely modify proposed critical habitat. However, the project may result in the incidental take of gartersnakes and temporary negative impacts to proposed critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting 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, and 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 a 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 nondiscretionary, and must be implemented by the Forest Service so that they become binding conditions of any grant or permit issued to an applicant/permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to adhere to the terms and conditions or (2) fails to require the applicant 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, the Forest Service must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [see 50 CFR 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

Based on the best available information for the gartersnake, the habitat needs of this species, the project description, and information provided by the Forest Service, take is considered likely for the gartersnake during the proposed action. Take of the gartersnake is expected in the forms of harm and harass due to trapping, capture, and translocation of gartersnakes out of the action area. Injury, harm, or death due to heavy equipment is expected to be rare, but may occur if gartersnakes avoid detection or capture during pre-construction surveys and trapping, or if gartersnakes evade the fencing barriers and enter the construction area. We anticipate that some individuals will be harassed and may occur through displacement from optimal habitat, reduction in prey base, and potential disruption of reproductive activities. We do not anticipate the number of gartersnakes to be harassed as a result of removal from the action area to be more than 10 individuals. We do not anticipate any gartersnakes that are trapped, captured, or relocated will be injured or killed from those activities. Furthermore, because gartersnakes are difficult to detect because they are secretive, well-camouflaged, and small-bodied, it will be difficult to estimate the number of snakes that remain in action area and may be injured or killed by the action. However, because the best practicable and reasonable measures are being undertaken by the Forest Service to reduce the potential for gartersnakes to be present in the action area during construction and thus in harm's way, the number of gartersnakes remaining in the action area and susceptible to injury or mortality will be greatly reduced. Nevertheless, the number is not quantifiable, and thus we quantify the take in terms of habitat impacted. The Service estimates that harm to gartersnakes will occur over approximately 0.4 hectares (1 acre) within the project area.

EFFECT OF THE TAKE

We have determined that the level of anticipated take described above is not likely to jeopardize the continued existence of the narrow-headed gartersnake or to result in destruction or adverse modification of its proposed critical habitat.

REASONABLE AND PRUDENT MEASURES

No additional reasonable and prudent measures are necessary for the action addressed in this biological opinion because the stated conservation measures in your BA and BA Addendum; and the reasonable and prudent measures, and non-discretionary terms and conditions found in the November 7, 2013 biological opinion to minimize incidental take that might otherwise result from the proposed action. The effort to capture and keep gartersnakes out of harm's way will minimize take from construction activities, and the gartersnake should benefit in the long-term from the proposed project.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA 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. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility.

Narrow-headed Gartersnake

The Service recommends the Forest Service implement the following for the narrow-headed gartersnake:

1. The Forest Service should continue to cooperate with New Mexico Department of Game and Fish (NMDGF), the Service, and other parties, in efforts to remove all nonnative species affecting the gartersnake and take measures to prevent reoccurrence of nonnative species from identified recovery stream segments.
2. The Forest Service should continue to cooperate with NMDGF, the Service, and other parties to secure, renovate, and maintain streams in order to provide additional habitat for native fish prey species and gartersnakes.
3. Continue to participate in surveys for gartersnakes and participate in renovation of streams within the historic range of the gartersnake to restore streams to a native fish and amphibian fauna.
4. Implement other actions that contribute to recovery and conservation of gartersnakes on the Gila National Forest.

Reporting Requirements Disposition of Dead or Injured Listed Animals

All reports should be electronically submitted via email to NMESFO@fws.gov. Contact the project biologist, Michelle Christman, at 505-761-4715; or by electronic mail at Michelle_Christman@fws.gov. If not available, contact the front desk at 505-346-2525 for immediate help.

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to the Service's Division of Law Enforcement, 4901 Paseo Del Norte NE, Suite D, Albuquerque, New Mexico, 87113 (505-346-7828) 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, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to the nearest Service or NMDGF office, educational, or research institutions (e. g., University of New Mexico) holding appropriate state and Federal permits.

CLOSING STATEMENT

This concludes formal consultation on the National Forest Service Road (NFSR) 150 Bridge Replacement/Rehabilitation Project (Consultation #02ENNM00-2013-F-0065) on the Gila National Forest. 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 maintained (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 adversely affect listed species or designated critical habitat in a manner or to an extent not considered in this BO; 3) the action is subsequently modified in a manner that causes an effect to a listed species or designated critical habitat that was not considered in this BO; or 4) a new species is listed or critical habitat designated that may be affected by this action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation with the Service.

We appreciate the Gila National Forest's efforts to identify and minimize effects to federally listed species from this project. In future communications regarding this bridge replacement/rehabilitation project please refer to consultation number 02ENNM00-2013-F-0065. If you have any questions or would like to discuss any part of this BO, please contact Michelle Christman of my staff at (505) 761-4715 or michelle_christman@fws.gov. Alternatively, you may also contact Ron Maes at (505)761-4710, or ronald_maes@fws.gov.

Sincerely,

Wally Murphy
Field Supervisor

Enclosure

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, NM (electronic copy)
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division,
Santa Fe, NM (electronic copy)

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