United States Department of the Interior

Fish and Wildlife Service

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In Reply Refer To:
AESO/SE
02EAAZOO-2012-F-0170-R001

July 13, 2016

Mr. Paul Enriquez, Acting Division Director
Real Estate and Environmental Services Division
Border Patrol Facilities and Tactical Infrastructure
Program Management Office
U.S. Customs and Border Protection
1300 Pennsylvania Avenue NW
Washington, DC 20229

RE: Reinitiation of Formal Section 7 Consultation and Conference on the Tactical Infrastructure Maintenance and Repair Program (TIMR), including TIMR on the Tohono O'odham Nation, along the U.S./Mexico international border in Arizona

Dear Mr. Enriquez:

Thank you for your February 3, 2015 request for consultation (for TIMR on the Tohono O'odham Nation), and March 9, 2015 request for reinitiation of formal consultation (for TIMR) 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 (ESA). Your requests were received by us on February 3 and March 18, 2015, respectively, and were supplemented with additional information in the form of electronic mail. At issue are possible effects of the proposed TIMR along the U.S./Mexico international border in Arizona, including the Tohono O'odham Nation. Since the issuance of our November 6, 2012 Biological Opinion on TIMR (02EAAZOO-2012-F-0170) several additional species have been listed and additional critical habitat has been designated or proposed within the action area. Additionally, U.S. Customs and Border Protection (CBP) has proposed additions to the description of the proposed action, specifically addressing Pozo Nuevo and Bates Wells roads within Organ Pipe Cactus National Monument (OPCNM), and is proposing to expand TIMR to the Tohono O'odham Nation (TON). Accordingly, CBP has requested reinitiation of consultation to address the effects to newly listed species and critical habitat and proposed critical habitat, as well as effects of the proposed project additions.

With regard to newly listed species and proposed or designated critical habitat, CBP determined that the ongoing TIMR project "may affect and is likely to adversely affect" the threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat. This species and proposed critical habitat are the subject of this biological and conference opinion (in addition to Sonoran pronghorn – see below). CBP additionally determined that the proposed project "may affect, but is not likely to adversely affect" the threatened yellow-billed cuckoo (*Coccyzus americanus*) and its proposed critical habitat; acuña cactus (*Echinomastus erectocentrus* var. *acunensis*) and its proposed critical habitat; as well as designated critical habitat for the endangered jaguar (*Panthera onca*). We concur with your determination on these species and provide our rationale in Appendix A.

For proposed project additions within OPCNM, CBP determined that the proposed project "may affect, and is likely to adversely affect" the endangered Sonoran pronghorn (*Antilocapra americana sonoriensis*) and "may affect, but is not likely to adversely affect" endangered lesser long-nosed bat (*Leptonycteris yerbabuenae*). Your determination for Sonoran pronghorn is the same as in the 2012 biological opinion and Sonoran pronghorn are the subject of this biological opinion (in addition to the northern Mexican gartersnake – see above). Your determination for the lesser long-nosed bat is the same as in the 2012 biological opinion and we concur with your new determination on this species and provide our rationale in Appendix A.

With regard to expanding TIMR to the TON, CBP determined that the proposed project "may affect, but is not likely to adversely affect" the threatened yellow-billed cuckoo and its proposed critical habitat, the endangered jaguar and its critical habitat, and the endangered lesser long-nosed bat. We concur with your determination on these species and provide our rationale in Appendix A.

Apart from the species addressed in the 2012 Biological Opinion and those mentioned above, CBP has determined that there would be no effect to all other listed species and their designated or proposed critical habitats that occur within the action area for TIMR.

This biological and conference opinion is based on information provided in CBP's 2012 Biological Assessment addressing the proposed TIMR along the U.S./Mexico international border in Arizona; CBP's February 3, 2015 letter proposing to expand TIMR to the TON; CBP's March 9, 2015 Analysis of Effects on Listed Species and Critical Habitat Related to Re-initiation of Section 7 Consultation on the CBP TIMR along the U.S./Mexico Border in Arizona; emails; telephone conversations and meetings between our staffs; and other sources of information found in the administrative record supporting this biological opinion. Literature cited in this biological opinion is not a complete bibliography of all literature available on the types of activities included in TIMR or the species addressed in this consultation. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

Prior to 2015: See Consultation History in the Biological Opinion on TIMR (#02EAAZOO-2012-F-0170, dated November 6, 2012).

February 3: FWS received CBP's February 3, 2015 letter requesting our concurrence that the proposed expansion of TIMR to TON lands may affect, but is not likely to adversely affect the yellow-billed cuckoo.

March 18, 2015: FWS received CBP's March 9, 2015 letter requesting reinitiation of consultation on the TIMR Program.

August 2015 to June 2016: FWS and CBP communicate numerous times via electronic mail and teleconference to clarify the description of the proposed action and clarify and, in some cases, change species effects determinations. FWS and CBP also mutually agreed to address all three components of TIMR in one reinitiated consultation, including improvements to Pozo Nuevo and Bates Well roads in OPCNM and expanding TIMR to the TON.

June 30: FWS provided the draft biological and conference opinion to CBP for review and comment.

BIOLOGICAL and CONFERENCE OPINION

DESCRIPTION OF THE PROPOSED ACTION

CBP is requesting this reinitiation of section 7 consultation for two reasons: **1)** to address the effects of TIMR on several additional species that have been listed and additional critical habitat has been designated or proposed within the action area since the issuance of the November 6, 2012 Biological Opinion on TIMR (02EAAZOO-2012-F-0170); **2)** to address the effects of proposed additions to TIMR, specifically within OPCNM; and **3)** to address the expansion of TIMR to the TON. The description of the proposed action to address the first project component listed above is the same as that included in the 2012 TIMR Biological Opinion and supporting documents, with minor changes described below. The description of the proposed action to address the second project component listed above is included in CBP's March 9, 2015 letter. The description of the proposed action to address the third project component listed above is included in CBP's February 3, 2015 letter. The complete description of the proposed action from these documents is incorporated herein by reference, and summarized below.

Brief Summary of Project Component #1 (additional listed species and critical habitat):

As stated above, the description of the proposed action to address this project component listed is the same as that included in the 2012 TIMR Biological Opinion and supporting documents, with minor changes. A brief summary of the 2012 description of the proposed action with the minor changes follows. The purpose of this project is to ensure that the physical integrity of the existing tactical infrastructure and associated supporting elements continue to perform as intended and assist the United States Border Patrol (USBP) in securing the U.S./Mexico international border in Arizona. Tactical infrastructure will be maintained to ensure USBP agent safety by preventing potential vehicular accidents by minimizing and eliminating hazardous driving conditions. The scope of TIMR includes reactive maintenance and repair activities (e.g., resolving damage from intentional sabotage or severe weather events) and preventative/scheduled maintenance and repair activities designed to ensure environmental sustainability (e.g., culvert replacement, drainage and grate cleaning, preventative measures to prevent soil erosion) over the functional life of the covered infrastructure. All maintenance and repair activities will be coordinated by the CBP Facilities Management and Engineering (FM&E) Sector Coordinator and managed by the Project Management Office's Maintenance and Repair Supervisor.

The tactical infrastructure proposed to be maintained and repaired consists of fences and gates, roads and bridges/crossovers, drainage structures and grates, lighting and ancillary power systems, and communication and surveillance tower components (including, but not limited to Remote Video Surveillance System [RVSS] and Secure Border Initiative (SBI*net*) towers, which shall hereafter be referred to as towers). Figures 1, 2a, and 2b depict the general area where the existing tactical infrastructure components covered in this biological opinion are found. The tactical infrastructure occurs in both USBP sectors in Arizona: Tucson and Yuma. The Tucson Sector is entirely within Arizona, and a portion of the Yuma Sector is in Arizona (see Figures 1, 2a, 2b).

CBP currently uses approximately 1,100 miles of road within the region of analysis. This represents an estimated 17.5 percent of all local roads within the area, although the exact number of miles of roads used within Arizona could change over time to accommodate CBP needs. Approximately **500** miles (8 percent) of local roadways within 25 miles of the U.S./Mexico international border in Arizona are covered under this BO. These roads have not been subject to previous NEPA analysis or waived from analysis. The remaining 600 miles of roads used by CBP are not covered under the BO because CBP does not have rights to maintain them, they are covered under previous NEPA analysis and/or section 7 consultations, or they have been waived from analysis. Major changes to roadway networks and major upgrades to existing roadways (i.e., paving of previously unpaved roads or widening of existing roads) would require separate consultation under section 7 of the ESA.

A total of 124 miles of non-waived roads within the designated jaguar critical habitat are proposed to be maintained under the TIMR program. A total of 130 miles of non-waived roads

within northern Mexican gartersnake proposed critical habitat are proposed to be maintained under the TIMR program. A total of 7 miles of non-waived roads within yellow-billed cuckoo proposed critical habitat are proposed to be maintained under the TIMR program. In the 2012 biological opinion, about 100 miles of roads were to be maintained within the range of the endangered Sonoran pronghorn; under the current action, this number is increased to 110 miles of roads.

In the 2012 TIMR Biological Opinion, an estimated 250 low water crossings were to be maintained and repaired. Under the current action, 500 low water crossings will be maintained and repaired as part of the statewide TIMR program. In any given year, a much smaller number of low water crossings will actually be maintained, as many crossings do not require annual maintenance. As described in more detail under the description of project component #2, a total of 65 low water crossings will be maintained within the range of the endangered Sonoran pronghorn (the 2012 TIMR Biological Opinion included 15 low water crossings).

Best Management Practices

All best management practices included in the 2012 TIMR Biological Opinion will continue to be implemented. Some have been revised or added to reflect best management practices (BMPs) suitable for newly listed species. These are included below.

Geology and Soil Resources

1. Silt fencing and floating silt curtains should be installed and maintained to prevent movement of soil and sediment and to minimize turbidity increases in water. Wherever silt fences or floating silt curtains are used in gartersnake proposed critical habitat, mesh sizes should be less than or equal to .25", preferably 1/8" or less to avoid snake entanglement hazards which are becoming increasingly common, as reflected in the literature.

The remaining BMPs under this section (#s 2-4) remain unchanged.

Wildlife

4. Minimize animal collisions during maintenance and repair activities by not exceeding speed limits of 35 miles per hour (mph) on major unpaved roads (i.e., graded with ditches on both sides) and 25 mph on all other unpaved roads. During periods of decreased visibility (e.g., night, poor weather, curves), do not exceed speeds of 25 mph. Speed limits should not exceed 20 mph within gartersnake proposed critical habitat (snakes, especially small snakes are extremely difficult to see while driving, even at slow speeds).

6. To prevent entrapment of wildlife species, ensure excavated, steep-walled holes or trenches are either completely covered by plywood or metal caps at the close of each

work day or provided with one or more escape ramps (at no greater than 1,000-foot intervals and sloped less than 45 degrees) constructed of earth fill or wooden planks. Within proposed critical habitat for the northern Mexican gartersnake, because plywood covers will not prevent snake from falling into trenches, escape ramps should be spaced at 100-foot intervals.

7. Each morning before the start of maintenance activities and before such holes or trenches are filled, ensure they are thoroughly inspected for trapped animals. Ensure that any animals discovered are allowed to escape voluntarily (by escape ramps or temporary structures), without harassment, before maintenance activities resume; or are removed from the trench or hole by a qualified person and allowed to escape unimpeded. Within proposed critical habitat for the northern Mexican gartersnake, inspections should occur at morning, mid-day, and prior to daily work stop to ensure entrapped snakes do not die from prolonged exposure.

The remaining BMPs under this section (#s 1-3, 5) remain unchanged.

Threatened and Endangered Species and Other Protected Species

<u>Species-Specific BMPs</u>

Northern Mexican Gartersnake

1. No in-water work will occur within streams or other waterbodies with known occurrences of northern Mexican gartersnakes or critical habitat[1] without further consultation with the FWS.

Chiricahua Leopard Frog

1. During the mid-to late part of the active season of the species (May through October), Chiricahua leopard frog monitoring will be conducted by a qualified biologist within designated critical habitat or other locations where this species might occur and within dispersal range of these sites (one mile overland of critical habitat or other locations where this species might occur, 3 miles of that habitat along ephemeral drainages in that habitat, and 5 miles of that habitat along perennial streams in that habitat) immediately prior to and during ground-disturbing maintenance activities and use of heavy equipment. If a Chiricahua leopard frog is found in the project area and is in danger of being harmed (e.g. in the path of vehicles or foot traffic), work will cease in the area of the frog until either the qualified biological monitor can safely move the individual to a

[1] As of June 2016, critical habitat for the northern Mexican gartersnake is proposed and therefore this BMP applies to proposed critical habitat. However, once critical habitat is designated, this BMP will apply to designated critical habitat.

nearby location in accordance with FWS Endangered Species Permit requirements, or it moves away on its own.

2. To minimize frog mortality, in-water work within occupied and critical habitat of the species will occur in the early part of the active season, prior to the monsoon (March through May) (active season for this species is March through October) so that frogs can escape to the best of their ability. (This BMP may conflict with Sonoran tiger salamander BMP #2. In areas where there is overlap between Sonoran tiger salamander and Chiricahua leopard frog ranges, CBP will base TIMR Program activity implementation on the species most likely to occur in the area and on the potential for effects to either species. Currently, as of June 2016, the only location where the two species overlap is Peterson Ranch Pond in Scotia Canyon). In addition, maintenance will be designed and implemented so that the hydrology of streams, ponds, and other habitat is not altered.

4. To prevent the spread of amphibian diseases among drainages via water or mud on maintenance vehicles and equipment, all maintenance work within Chiricahua leopard frog critical habitat or any potentially occupied habitat, shall conform to amphibian disease prevention protocols as described in the Recovery Plan for the Chiricahua leopard frog. Equipment would either be disinfected between uses at different sites or rinsed and air dried.

Chiricahua leopard frog BMPs 3 and 5-8 remain unchanged.

New Mexico Ridge-nosed Rattlesnake

1. Maintenance vehicles will not exceed a speed of 15 to 20 mph during periods of elevated roaming and foraging activities from July through August within New Mexico ridge-nosed rattlesnake habitat (i.e., pine-oak woodlands at elevations above 5,000 feet). In the U.S., the species only occurs in the Peloncillo and Animas Mountains. Because the Animas Mountains are privately owned, this BMP only applies to habitat in the Peloncillos.

Birds: Masked bobwhite, Mexican spotted owl, Southwestern willow flycatcher, Yuma clapper rail, and Yellow-billed cuckoo.

1. No maintenance and repair activities will be conducted within areas classified as protected activity centers of Mexican spotted owls during the nesting season.

2. CBP will avoid TIMR activities during the yellow-billed cuckoo migration/nesting season in Arizona, May 15 - September 30, in suitable yellow-billed cuckoo habitat. If emergency TIMR activities must occur during the migration/nesting season, see BMP #4 below.

3. Vegetation control in suitable habitat of threatened or endangered bird species (see Table 1 for a description of suitable habitat and nesting season for each species) will be limited to the minimum necessary to maintain drivable access roads and to maintain the functionality of other tactical infrastructure. This limited vegetation control will be conducted outside of the nesting season (see Table 1). With the exception of yellow-billed cuckoo, this restriction does not apply to areas where protocol surveys have been conducted and it has been determined that the area is not occupied and does not contain primary constituent elements (PCEs).

4. For all other maintenance activities to be conducted within suitable habitat of a threatened or endangered bird species during the nesting season (see Table 1), the following avoidance measures will apply. A qualified biologist will conduct a survey for threatened and endangered birds prior to initiating maintenance activities. If a threatened or endangered bird is present, a qualified biologist will survey for nests approximately once per week within 1,300 feet (Mexican spotted owl) or 500 feet (all other species, except for yellow-billed cuckoos) of the maintenance area for the duration of the activity. If an active nest is found, no maintenance will be conducted within 1,300 feet (Mexican spotted owl) or 300 feet (all other species, except for yellow-billed cuckoos) of the nest until the young have fledged. For yellow-billed cuckoos, surveys must be conducted within one week of the scheduled maintenance because cuckoos can move into habitat throughout the breeding season. If cuckoos are found within 1,300 feet of proposed maintenance activities, no work will be conducted.

Sonoran Pronghorn

2. During maintenance activities, if a Sonoran pronghorn is observed by a maintenance crew upon arrival at the work site and within 1 mile of the work site, delay beginning use of heavy mobile equipment (road grader, dump trucks, etc) until the animal(s) moves greater than one mile from the work site. Adhere to speed limits of 25 miles per hour or less for all project vehicles. If, however, pronghorn are detected along or near the access roads or roads to be maintained, vehicles will slow to 5 to 15 mph until they are a safe distance from the pronghorn (a safe distance is generally considered one at which pronghorn are not at risk of being struck by a vehicle and fleeing from a vehicle).

Sonoran pronghorn BMPs 1 and 3 remain unchanged.

Acuna cactus

1. Within or adjacent to acuña cactus critical habitat, to minimize fugitive dust generation, monitor dust during construction and conduct abatement of fugitive dust when there is a visible plume of dust extending more than 30 feet from the dust source. Abatement would include reducing travel speeds and/or applying dust suppressants, such as water.

All other species-specific BMPs remain unchanged.

Conservation Measures

All conservation measures included in the 2012 TIMR Biological Opinion will continue to be implemented.

CBP will continue to provide an annual report to FWS within three months of the end of the calendar year for all TIMR activities that took place within the range of listed species. The report will include the Conservation Measures and Best Management Practices that were implemented, any federally-listed species observed at or near project sites, any monitoring of endangered species for which the biological opinion determines there will be an adverse effect, and any take as outlined within the incidental take statements below. CBP and the FWS Arizona Ecological Services Office will meet annually either in person or via teleconference to discuss this report.

Description of Project Component #2 (proposed additions within OPCNM):

As stated above, the description of the proposed action to address this project component is included in CBP's March 9, 2015 letter, and is described below. CBP proposes to improve 29.04 miles of road within OPCNM, including the 15.55 mile long Pozo Nuevo Road and the 13.49 mile long Bates Well Road (improvements to Bates Well Road are limited to low water crossings only) (Figure 3). Because the proposed improvements are beyond the scope of work addressed in the 2012 Biological Opinion, they are included in this reinitiation of formal consultation.

Improvements to Pozo Nuevo and Bates Well roads will likely be executed in phases over several years subject to the availability of funding. OPCNM will conduct the work and each phase may roughly last several months. Standard vehicles and heavy equipment will be used for the project, including water trucks, road graders, and dump trucks.

Pozo Nuevo Road Improvements:

The condition of the 15.55 mile long Pozo Nuevo Road is poor to very bad, and it is currently the most degraded of all the roads proposed for improvement within OPCNM. The entire length of the Pozo Nuevo Road is open to the public. Improvements of the Pozo Nuevo Road are split into three segments, as described below.

Segment 1: From the intersection of Pozo Nuevo Road with the border road to the foot of the junction of the Quitobaquito Hills and Cipriano Hills, the road is incised up to 2 feet and approximately 14 feet wide. A significant portion of this road segment is located within the Aguajita Wash. Elsewhere in this segment there is severe wash-boarding.

Segment 2: From the junction of the Quitobaquito Hills and Cipriano Hills north to the foothills of the Bates Mountains the road is rough, narrow, and rocky. The road width is typically 12 feet wide, with short sections as narrow as 8 feet wide.

Segment 3: From the foothills of the Bates Mountains north to the intersection with Bates Well Road, the road is approximately 12 feet wide with severe washboard and pothole conditions.

For all segments, the existing, disturbed road footprint will be used during the project and the project will not result in any expansion in the length or width of roads. Additionally, no road realignment is proposed. Along the roadway, potholes will be filled, road surfaces will be compacted (as required), and improved water drainage measures will be installed. These water-drainage measures will include restoring the natural contour by infilling down-cut roads and grading the road to ensure it properly sheds water and reestablishes natural sheet flow across the road. The improvement methods used in the project will be similar in nature to the methods currently used for road maintenance and repairs within OPCNM.

Of the 53 wash (low water) crossings on Pozo Nuevo Road, **24** wash crossings meet the threshold standard for improvement. CBP proposes to improve these wash (low water) crossings via a combination of articulated concrete mat and poured concrete. The matting will be bordered by rip rap on the upstream and downstream sides to ensure the mat is retained in place during flood flows and to protect it from scour and erosion. This rip rap will extend several feet from the edge of the road.

To provide a safe driving environment for CBP and the general public, pull-offs are required at regular intervals (several pull-offs per mile). To minimize new disturbance, all pull-offs will be strategically located within previously disturbed areas. Staging areas and construction turn-arounds, approximately 50-foot in diameter, will be identified in coordination with the National Park Service (NPS) and will be located in previously impacted sites.

<u>Bates Well Road Improvements</u>:

The Bates Well Road within OPCNM is 13.49 miles in length and its condition is fair to poor. It is a public road used for both tower access and border patrol operations, and is the access road that will be used during improvements to Pozo Nuevo. Along Bates Well Road, CBP proposes to improve low water crossings. Of the 35 low water crossings along Bates Well Road, **20** low water crossings meet the threshold standard for improvement. These low water crossings will be improved using the same methods described for Pozo Nuevo Road. Standard maintenance and repair along the road will be conducted in accordance with the existing 2012 TIMR Biological Opinion.

Please note while **44** low water crossings (24 on Pozo Nuevo and 20 on Bates Well) are currently identified for improvement, a maximum total of **50** low water crossings may be

improved on these roads. Once improved, these new low water crossings will be maintained under TIMR. Under the 2012 TIMR Biological Opinion, 15 low water crossings were to be maintained within the range of the endangered Sonoran pronghorn. Therefore, with the addition of a maximum of 50 additional crossings, a total of **65** low water crossings will be maintained under TIMR within the range of the endangered Sonoran pronghorn.

Conservation Measures:

In addition to all the conservation measures included in the TIMR Biological Opinion, the following additional conservation measures will be implemented to minimize the effects of the proposed project on Sonoran pronghorn:

3. The number of vehicle trips per day will be minimized to reduce the likelihood of disturbing Sonoran pronghorn along the route. Vehicle convoys, multi-passenger vehicles, and other methods will be used to reduce the number of vehicle trips needed.

4. Speed limits of 25 miles per hour or less for all project vehicles will be adhered to. If, however, pronghorn are detected along or near the access roads or roads to be improved, vehicles will slow to 5 to 15 mph until they are a safe distance from the pronghorn (a safe distance is generally considered one at which pronghorn are not at risk of being struck by a vehicle or fleeing from a vehicle).

5. During road improvement activities, if a Sonoran pronghorn is observed within 1 mile of the activity, any work that could disturb the animal will cease.

6. All motorized equipment will possess properly working mufflers and will be kept properly tuned to reduce backfires. All motorized generators will be in baffle boxes (a sound-resistant box that is placed over or around a generator), will have an attached muffler, or will use other noise-abatement methods in accordance with industry standards.

7. Generally, no improvement activities will occur during the fawning season (March 15 to July 31) within suitable Sonoran pronghorn habitat within the range of this species. However, some flexibility with these dates is possible, depending on forage conditions. If CBP determines that improvement activities are needed in these areas during the fawning season, exceptions to working during the fawning season may be granted through coordination with the FWS and other the relevant Federal land managers, depending on forage conditions.

8. Any fill materials used on site will be certified weed-free.

9. A program to control invasive species will be implemented following construction.

Description of Project Component #3 (expansion of TIMR to the TON):

CBP proposes to expand the TIMR program to include maintenance and repair of 220 miles of existing roads on the TON (Figure 4); however, the number of miles of roads and locations of roads to be maintained within the TON may change over time in response to changing border security considerations. If possible future project changes may affect listed species or critical habitat in a manner or to an extent not considered in this consultation, CBP will reinitiate consultation per 50 CFR 402.16 (see the Reinitiation Notice at the end of this biological opinion). The proposed program, including all best management practices and conservation measures, will be the same as the road maintenance and repair program described in the Biological Assessment Addressing Proposed Tactical Infrastructure Maintenance and Repair Along the U.S./Mexico International Border in Arizona (CBP, April 2012) and resulting 2012 Biological Opinion. Additionally, Best Management Practice #1 for yellow-billed cuckoos added above in the Project Component #1, will also be implemented as part of the proposed expansion of TIMR to the TON; and road maintenance and repair activities will occur only during daylight hours.

ACTION AREA

No changes (see Figures 2a and 2b for maps of the action area provided by CBP in their 2012 biological assessment for TIMR), with the exception of the additions of Pozo Nuevo and Bates Well roads on OPCNM (Figure 3) and the addition of TIMR on the TON (Figure 4).

STATUS OF THE SPECIES - SONORAN PRONGHORN

Herein we update specific paragraphs of some sections of the 2012 Biological Opinion relating to the status and baseline of the Sonoran pronghorn. Paragraphs not revised herein remain as presented in the 2012 Biological Opinion.

Description, Legal Status, and Recovery Planning

The Sonoran subspecies of pronghorn was first described by Goldman (1945) and is the smallest of the four subspecies of pronghorn (Nowak and Paradiso 1983, Brown and Ockenfels 2007). The subspecies was listed throughout its range as endangered on March 11, 1967 (32 FR 4001) under the Endangered Species Preservation Act of October 15, 1966 without critical habitat. Five populations (three in the U.S. and two in Mexico) of the Sonoran pronghorn are extant: 1) a population in southwestern Arizona on CPNWR, OPCNM, Bureau of Land Management (BLM) – Ajo Block, and BMGR (endangered population; known as the "Cabeza" population), 2) a population in southwestern Arizona on Kofa NWR, YPG, and surrounding areas (nonessential experimental 10(j) population; known as the "Kofa population") (established in 2013), 3) a population in southwestern Arizona on BMGR-East, east of Highway 85 (nonessential experimental 10(j) population; known as the "Sauceda" population) (initiated in December 2015); 4) a population in the Pinacate Region of northwestern Sonora

(known as the "Pinacate" population), and 5) a population on the Gulf of California west and north of Caborca, Sonora (known as the "Quitovac" population (see Figures 5 and 6). The five populations are predominantly geographically isolated due to barriers such as roads and fences; however, some animals have crossed highways. In 2014 in Arizona, several individuals (from the endangered Cabeza population) crossed Highway 85 and spent some time on the east side of OPCNM within the nonessential essential experimental range of the species. Although animals that cross Highway 85 into the eastern portion of OPCNM (i.e., within the nonessential experimental boundary) are biologically considered part of the endangered population in Arizona, for section 7 purposes they are treated as part of the nonessential experimental population (USFWS 2011). Additionally, two bucks released in Sauceda unit in December 2015, crossed Highway 85 to the west into the Cabeza unit.

The FWS and the Sonoran Pronghorn Recovery Team recently revised the Sonoran Pronghorn Recovery Plan. The revised plan addresses Sonoran pronghorn populations both in Mexico and the U.S. and will be finalized in 2016.

Life History and Habitat

No changes.

Distribution and Abundance

United States

Endangered Wild Population

The December 2012 and 2014 aerial surveys resulted in an estimated 159 and 202 Sonoran pronghorn in the endangered U.S. population, respectively (Table 2).

10(j) Wild Population

A final Environmental Assessment and final 10(j) rule (USFWS 2011) were published in April and May, 2011, respectively, to establish a nonessential experimental population of Sonoran pronghorn in Arizona. See Figure 6 for a map of 10(j) Nonessential Experimental Population area for Sonoran pronghorn in southwestern Arizona. In 2013, the first wild population was established under the 10(j) rule on Kofa NWR with captive-bred animals from CPNWR. The population continues to be augmented with captive bred animals and additionally, fawns have been born in the wild population. As of January 2016, there are an estimated 70 animals in the 10(j) population on and near Kofa NWR.

To establish a third population in Arizona, in December 2015, 26 Sonoran pronghorn were released on BMGR East, east of Highway 85, under the 10(j) rule.

Semi-captive Breeding Facilities

CPWNR

As part of a comprehensive emergency recovery program, a total of 11 adult pronghorn (10 females and one male) were initially captured (from Sonora and Arizona) and placed into a semi-captive breeding pen at CPNWR in 2004. The breeding program has been very successful and as of January 2016 there were 48 pronghorn in the enclosure at CPNWR (note this number changes frequently with births and releases). Since establishing the program, a number of pronghorn have died in the pen due to various causes, including epizootic hemorrhagic disease, malnutrition (prior to the introduction of alfalfa hay in the pen), bobcat predation, entanglement in the fence, and capture operations. Sonoran pronghorn have been released from the pen every year since 2006, many into the endangered population and others to establish the two nonessential experimental populations.

The objective is to produce at least 20 fawns each year to be released into the endangered U.S. population; supplement 10(j) populations at Kofa NWR and BMGR East, east of Highway 85; and establish any additional populations needed for pronghorn recovery.

Kofa NWR

In December 2011, 13 Sonoran pronghorn were moved from the CPNWR breeding pen to the newly built breeding pen in the King Valley on Kofa NWR to initiate the breeding program on the refuge. As with the CPNWR pen, the Kofa breeding program has been successful and produced pronghorn for release into the wild. As of January 2016, the Kofa pen contains 29 pronghorn (note this number changes frequently with births and releases).

Mexico

In December 2013, surveys could not be conducted for the Sonoran pronghorn population west Mexico Highway 8 (Pinacate population) due to aircraft shortage; however, surveys of the population in the area southeast of Mexico Highway 8 (Quitovac population) indicated pronghorn numbers increased since 2011, with an estimated 2013 total of 434 (372 observed) (Table 2). The December 2014 aerial surveys resulted in an estimated 122 in the area west of Mexico Highway 8 (Pinacate population) (Table 2). The November 2015 aerial surveys resulted in an estimated 979 (845 observed) individuals combined for both populations (including 862 pronghorn [749 observed] in the area southeast of Mexico Highway 8 known or the Quitovac population and 117 [96 observed] to the west of the highway or the Pinacate population) (Table 2).

Threats

Barriers that Limit Distribution and Movement

Since 2008, canals have been the cause of seven pronghorn deaths, including four from the Cabeza Prieta population and three from the Kofa population, all of which were pen-raised. Of the Cabeza Prieta population, three bucks drowned in the Palomas Canal in 2008, and one doe drowned in the Wellton Canal in 2010. Of the Kofa population, two bucks and one doe died as a result of the Wellton Mohawk Canal. More specifically, two of nine pronghorn released in January 2013 died due to canal-related incidents. One male was pulled out of the Wellton Mohawk Canal that runs from the SW to ENE between the southern Kofa boundary and Interstate 8 on May 16, 2013 and was found dead three days later nearby. Another dead buck was pulled out of the same canal 13.7 km (8.5 mi) east on May 17, 2013. A female was rescued alive from the Wellton Mohawk Canal on May 16, 2013 (along with the male that later died), and was rescued alive again from another canal near Texas Hill on June 20, 2013. She was later seen alive north of Dateland (Christa Weise, FWS, personal communication, 2013). On August 19, 2015, a dead Sonoran pronghorn doe was discovered floating by the Texas Hill 3.9 Pump lift gate of the Wellton Mohawk Canal.

Vehicular Collision with Sonoran Pronghorn

Although vehicle collisions with Sonoran pronghorn are rare, they have been documented. An adult male pronghorn was struck and killed by a vehicle near kilometer post 29 on Mexico Highway 8 in July of 1996 (U.S. Fish and Wildlife Service 2002). NPS records include a Sonoran pronghorn found dead just east of SR 85 along Ajo Mountain Drive in 1972. It was suspected to have been struck and killed by a vehicle (electronic mail from Tim Tibbitts, OPCNM, September 1, 2011). In 2003/2004 John Hervert (AGFD) investigated a Sonoran pronghorn mortality found a few hundred feet from Interstate 8. It had a broken leg, and so vehicle collision was suspected. In 2013, a doe was found dead east of Tacna on private property; based on initial examination it appears she may have been hit by a vehicle along a high speed dirt road. A fawn was struck by a vehicle and killed on Highway 85 in April 2015.

Human-caused Disturbance

In more recent studies, staff at OPCNM (2013) documented that during their typical morning activity period (post-sunrise), pronghorn on OPCNM experienced some form of potential disturbance once every 4 hours 10 minutes (even though monitoring was only conducted for 3 hours after sunrise each day, the results were calculated by summing the total number of observation hours and dividing by them by the total number of disturbance events). Actual disturbance responses took place once every 6 hours 15 minutes. Potential disturbance events resulted in the pronghorn running, about once every 8 hours 20 minutes. Helicopter overflights took place once every 6 hours 15 minutes; one out of four overflights resulted in pronghorn running, and one in four resulted in vigilance (standing, alert, watching disturbance source).

Vehicles approaching within one mile occurred once every 12 hours 30 minutes. Half of these resulted in pronghorn running, but for the other half, the driver was contacted by radio and advised to drive slowly (<10 mph) past the observation area. These observations only represent pronghorn and human activity in the first 3 hours after sunrise, in a specific area of OPCNM. Types and intensities of activities likely vary through the 24-hour cycle, and across the landscape. These observations led to speculation that the levels of illegal border-related traffic in the area, and interdiction efforts, may have been sufficient to inhibit use of the area and 3-Jack Water Tank by Sonoran pronghorn.

Preliminary information from an ongoing study on the effects of human disturbance on Sonoran pronghorn indicates that pronghorn consistently exhibit visual responses to human activity, particularly vehicles traveling on a road within several kilometers. Although some instances have been noted where a pronghorn did not exhibit a visual response (for example, one buck did not appear disturbed by three vehicles driving at least 25 miles per hour about 1.5 kilometers away); most observations indicate that pronghorn exhibit a spectrum of responses, from standing vigilant to running from the stimulus. For example, eight Sonoran pronghorn were observed running a short distance and then vigilant towards utility vehicle noise 3.4 kilometers away. Another eight Sonoran pronghorn were observed running from several trucks traveling fast (> 25 mph). Pronghorn were initially vigilant when the vehicles were 1.3 kilometers away but soon started running, travelling over 3.6 kilometers in under five minutes until they were out of sight of the observers (email from Stephanie Doerries, University of Arizona, May 7, 2014).

Habitat Disturbance

A mapping effort conducted by OPCNM documented the following number of miles of unauthorized vehicle routes on each land management unit from 2008 to 2010: 7876.2 on CPNWR, 1209.8 on OPCNM, and 240.9 on the BLM Ajo Block. Unauthorized route creation continues to occur on all three of these important pronghorn areas. The proliferation of unauthorized vehicle routes is a major impact on multiple resources, and provides an index of the level of human activity currently taking place in pronghorn habitat. A cooperative effort was completed recently by CBP, USFWS, NPS, and BLM to map and mark roads within the range of the Sonoran pronghorn to indicate those roads that are open for use by these agencies, and roads that are closed to vehicle traffic.

Fire

No changes.

Drought and Climate Change

No changes.

Disease

No changes.

ENVIRONMENTAL BASELINE – SONORAN PRONGHORN

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the 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 which 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 from which to assess the effects of the action now under consultation. The action area for the proposed action remains nearly[2] the same as described in the 2012 biological opinion on TIMR and includes the area depicted in Figures 2a and 2b and the current range of the endangered pronghorn within the U.S. (Figure 5 – the endangered population range is depicted as the "Cabeza Prieta Range" in the figure).

Status of the Sonoran Pronghorn in the Action Area

Within the U.S. portion of the endangered Sonoran pronghorn's range (i.e., Cabeza population), pronghorn interact to form one population in which interbreeding may occur. The Cabeza population is effectively separated from the Kofa, Sauceda, Pinacate, and Quitovac populations by various highways and interstates. Activities that may affect animals in any portion of the Cabeza population range may affect the size or structure of this population, or habitat use within the Cabeza range. Because of this, the entire Cabeza range of the Sonoran pronghorn is included in the action area for the TIMR Program.

Distribution, Abundance, and Life History

No changes.

Drought

From 2003 to 2016, rainfall and Sonoran pronghorn range conditions have varied, but have improved overall when compared to 2002. The March 2016 short-term drought status map indicates that southwestern Arizona is experiencing conditions of moderate drought and the January 2016 long-term drought status map indicates that southwestern Arizona is experiencing

[2] The only change is that the range of the endangered Sonoran pronghorn population has been updated since 2012.

conditions of no drought to abnormally dry conditions (http://www.azwater.gov/azdwr/StatewidePlanning/drought/DroughtStatus2.htm).

Recovery Actions

A number of critically important recovery projects have been implemented in an attempt to reverse the decline of the U.S. endangered population of the Sonoran pronghorn. Many of these projects are designed to increase availability of green forage and water during dry periods and to offset to some extent the effects of drought and barriers that prevent pronghorn from accessing greenbelts and water, such as the Gila River and Río Sonoyta. As of 2016, 14 stand-alone developed waters and five waters associated with forage enhancement plots (three on Cabeza Prieta NWR and two on BMGR) have been developed for Sonoran pronghorn (within the range of the endangered U.S. population). Additionally, five forage enhancement plots, each consisting of a well, pump, pipelines and irrigation lines, have been developed to irrigate the desert and produce forage for pronghorn (within the range of the endangered U.S. population). As of September 2015, only two are operational due to normal wear and tear and vandalism by cross border violators (CBVs). Currently, there are also five supplemental feeding sites for Sonoran pronghorn within the range of the endangered U.S. population that are not associated with the pen.

Plots and waters located in areas with little human activity and better range conditions appear to be more effective (i.e., contribute to fawn and adult survival to a greater degree) than those located in areas of high human activity and poor range condition (i.e., experiencing drought) (personal communication with John Hervert, AGFD, September 16, 2009). Therefore, to ensure success of these measures, it is critical that human activity is avoided or significantly minimized near the plots and waters.

A semi-captive breeding pen at CPNWR was first stocked with pronghorn in 2004 and has successfully been producing pronghorn for release into the wild. Another semi-captive breeding pen at Kofa NWR was first stocked with animals in December 2011 and has also been successfully producing pronghorn for release.

These crucial projects, which are helping pull the U.S. population back from the brink of extinction, have been cooperative efforts among many agencies and organizations, including FWS, AGFD, MCAS-Yuma, LAFB, OPCNM, BLM, CBP, Arizona Desert Bighorn Sheep Society, Arizona Antelope Foundation, the Yuma Rod and Gun Club, the University of Arizona, the Los Angeles and Phoenix Zoos, and others.

Past and Ongoing Non-Federal Actions in the Action Area

No changes.

Past and Ongoing Federal Actions in the Action Area

Because of the extent of Federal lands in the action area, with the exception of CBV activities, most activities that currently, or have recently, affected the U.S. population or their habitat are Federal actions. The primary Federal agencies involved in activities in the action area include the MCAS-Yuma, Luke Air Force Base, FWS, BLM, OPCNM, and USBP. In the following discussion, we have categorized Federal actions affecting the pronghorn as: 1) those actions that have not yet undergone section 7 consultation (although in some cases consultation has been completed on components of the Federal activity), and 2) Federal actions that have undergone consultation.

Federal Actions For Which Consultation Has Not Been Completed

Examples of Federal actions for which consultation has not been completed include:
1) U.S. Border Patrol Activities in the Tucson and Yuma Sectors, Arizona
2) CBP Hybrid Fence on BMGR and Vehicle Fence on CPNWR
3) CBP Vehicle Fence on CPNWR (another small portion of the fence)

Federal Actions Addressed in Section 7 Consultations

As part of our discussion of all past and present actions affecting pronghorn within the action area, we list below all biological opinions issued to date on actions that may affect the pronghorn; we also explain any incidental take associated with the opinions. All of these formal consultations can be viewed on our website at http://www.fws.gov/arizonaes/Biological.htm.

1. Capture and collaring of pronghorn for research purposes, consultation number 02-21-83-F-0026. No incidental take was anticipated.
2. Capture and collaring of pronghorn for research purposes, consultation number 02-21-88-F-00060. No incidental take was anticipated.
3. Installation of a water source in the Mohawk Valley for pronghorn, consultation number 02-21-88-F-0081. No incidental take was anticipated.
4. Implementation of the CPNWR Comprehensive Conservation Plan, consultation number 22410-2006-F-0416, with reinitiations issued on November 21, 2013 and March 14, 2014. No incidental take was anticipated.
5. Change in aircraft type from the F-15A/B to the F-15E on BMGR-East [F-15E Beddown Project], consultation number 02-21-89-F-0008. Incidental take was anticipated only for the Beddown Project in the form of harassment as a result of aircraft overflights. This project was later incorporated into the biological opinion on Luke Air Force Base's activities on the BMGR, listed below.
6. Widening of North Puerto Blanco Road, consultation number 02-21-01-F-0109, with a reinitiation issued on March 14, 2014. No incidental take was anticipated.

7. Improvements to SR 85 roadway and drainages, consultation 02-21-01-F-0546. No incidental take was anticipated.
8. Construction of a vehicle barrier on OPCNM, consultation number 02-21-02-F-237. No incidental take was anticipated.
9. U.S. Border Patrol Activities in the Yuma Sector, Wellton Station, Yuma, Arizona, consultation number 02-21-96-F-0334, issued September 5, 2000. Incidental take was anticipated in the form of harassment that is likely to injure up to one pronghorn in 10 years.
10. The BLM Lower Gila South Resource Management Plan-Goldwater Amendment, consultation number 02-21-90-F-0042, issued April 25, 1990. No incidental take was anticipated.
11. The BLM Lower Gila South Habitat Management Plan, consultation number 02-21-89-F-0213 issued on May 15, 1990. No incidental take was anticipated.
12. BLM Lower Gila South Resource Management Plan and Amendment, consultation number 02-21-85-F-0069, issued on March 27, 1998. No incidental take was anticipated.
13. BLM grazing allotments in the vicinity of Ajo, Arizona, consultation number 02-21-94-F-0192, issued on December 3, 1997, with reinitiations issued on November 16, 2001, September 30, 2002, June 21, 2004, March 3, 2005, March 8, 2007, and March 14, 2014. No incidental take was anticipated.
14. Organ Pipe Cactus National Monument General Management Plan, consultation number 02-21-89-F-0078, issued June 26, 1997, with reinitiations issued on November 16, 2001, April 7, 2003, March 10 and August 23, 2005, March 8, 2007, December 10, 2009, and March 14, 2014. In the latest versions of the opinion, no incidental take of pronghorn was anticipated.
15. U.S. Marine Corps Air Station-Yuma in the Arizona Portion of the Yuma Training Range Complex (Barry M. Goldwater Range West), consultation number 02-21-95-F-0114, issued on April 17, 1996, with reinitiations issued on November 16, 2001, August 6, 2003, October 21, 2009, and November 3, 2015. In the 2003 and 2009 versions of the biological opinion, no incidental take of pronghorn was anticipated. In the 2015 opinion, we anticipated take of one Sonoran pronghorn every 10 years in the form of direct mortality or injury and one pronghorn every 7 years in the form of harassment.
16. Luke Air Force Base Use of Ground-Surface and Airspace for Military Training on the BMGR, consultation number 02-21-96-F-0094, issued August 27, 1997, with reinitiations issued on November 16, 2001, August 6, 2003, May 3, 2010, and March 2014. In 2010 opinion, we anticipated take of one wild Sonoran pronghorn every 10 years, one pen-raised (free ranging) female pronghorn every 10 years, and four pen-raised (free ranging) male pronghorn every 10 years in the form of direct mortality or injury; and one wild Sonoran pronghorn of either sex, one pen raised (free ranging female) every 10 years, and two pen-raised (free ranging) male pronghorn every 10 years in the form of harassment.
17. Western Army National Guard Aviation Training Site Expansion Project, consultation number 02-21-92-F-0227, issued on September 19, 1997; however, Sonoran pronghorn

was not addressed in formal consultation until reinitiations and revised opinions dated November 16, 2001 and August 6, 2003. No incidental take was anticipated.

18. BMGR Integrated Natural Resources Management Plan, consultation number 22410-2005-F-0492, issued on August 26, 2005, with reinitiations issued on January 7, 2013 and March 14, 2014.
19. CBP and USBP Permanent Vehicle Barrier from Avenue C to OPCNM, Arizona, consultation number 22410-2006-F-0113, issued September 15, 2006. No incidental take was anticipated. Subsequent to issuing the biological opinion, the action was changed to include the installation of a section of hybrid-style fence designed to prevent the passage of pedestrians. Because all environmental laws were waived (as permitted by the Real ID Act of 2005) by Secretary of the Department of Homeland Security, CBP never reinitiated consultation with us regarding this change to their proposed action.
20. CBP and USBP 5.2-Mile Primary Fence near Lukeville, Arizona, consultation number 22410-2008-F-0011, issued February 11, 2008. No incidental take was anticipated.
21. SBI*net* Ajo-1 Tower Project, Ajo Area of Responsibility, USBP Tucson Sector, Arizona, consultation number 22410-F-2009-0089, issued December 10, 2009, with reinitations issued on March 15, 2010, April 29, 2011, September 16, 2011, and December 15, 2011. We anticipated take of three Sonoran pronghorn due to harassment within the first year of towers becoming operational and two every 5 years thereafter; and one due to direct mortality over the life of the project.
22. Tactical Infrastructure Maintenance and Repair Program (TIMR) along the U.S./Mexico international border in Arizona, consultation number 02EAAZOO-2012-F-0170, issued on November 6, 2012. We anticipated incidental take of one Sonoran pronghorn every 10 years for the duration of the TIMR Program in the form of harassment; and one Sonoran pronghorn over the total duration of the TIMR Program in the form of direct mortality.
23. Land Mobile Radio Modernization for Tactical Communications at Buck Peak, Christmas Pass, Granite Mountain (CPNWR), and Cobre along the U.S./Mexico international border in Pima, Santa Cruz, and Yuma counties, Arizona, consultation number 02EAAZOO-2012-F-0200, issued April 23, 2013. No incidental take was anticipated.
24. Activities and Operations at the United States Army Garrison Yuma Proving Ground, Yuma and La Paz Counties, Arizona, consultation number 02EAAZ00-2014-F-0161, issued on September 9, 2014. We anticipated incidental take of four Sonoran pronghorn over the life of the project (10-20 years), including two in the form of direct mortality or injury and two in the form of harm.
25. Implementation of the Ecological Restoration Plan on Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge, and Bureau of Land Management Ajo Block, Pima County, Arizona, consultation number 02EAAZ00-2014-F-0538, issued on October 2, 2014, with a reinitiation issued on August 28, 2015. No incidental take was anticipated.
26. Granting of Wildlife and Sport Fish Restoration (WSFR) Program Funds to the Arizona Game and Fish Department to Implement Aspects of Sonoran Pronghorn Recovery,

consultation number 02EAAZ00-2015-F-0045, issued on November 18, 2014. We anticipated incidental take of 26 Sonoran pronghorn over the life of project (5 years), including: 1) incidental take of a total of 20 pen-raised Sonoran pronghorn over the life of the project in the form of directly mortality or injury due to capture and release operations associated with the captive breeding pens; 2) incidental take of a total of 4 Sonoran pronghorn over the life of the project in the form of directly mortality or injury due to capture and release operations of wild pronghorn; and 3) incidental take of two wild Sonoran pronghorn over the life of the project in the form of harassment from project activities that disturb Sonoran pronghorn (e.g., surveys, monitoring, pen maintenance) and/or direct injury or mortality from collision with a vehicle associated with the project.

In summary, the current biological opinions that anticipate incidental take are:

1) the Yuma Sector opinion, in which we anticipated take in the form of harassment that is likely to injure up to one pronghorn in 10 years;

2) the Ajo 1 Tower opinion, in which we anticipated take of three Sonoran pronghorn due to harassment within the first year of towers becoming operational and two every 5 years thereafter; and one due to direct mortality over the life of the project;

3) the Luke Air Force Base Opinion, in which we anticipated take of one wild Sonoran pronghorn every 10 years, one pen-raised (free ranging) female pronghorn every 10 years, and four pen-raised (free ranging) male pronghorn every 10 years in the form of direct mortality or injury; and one wild Sonoran pronghorn of either sex, one pen raised (free ranging female) every 10 years, and two pen-raised (free ranging) male pronghorn every 10 years in the form of harassment;

4) the TIMR opinion, in which we anticipated take of one Sonoran pronghorn every 10 years for the duration of the TIMR Program in the form of harassment; and one Sonoran pronghorn over the total duration of the TIMR Program in the form of direct mortality;

5) the Yuma Proving Ground opinion, in which we anticipated take of four pronghorn in the form of direct mortality or injury and harm;

6) the WSFR opinion in which we anticipated take of 26 Sonoran pronghorn, including 20 pen-raised and 6 wild animals, over 5 years, and

7) the U.S. Marine Corps Air Station-Yuma opinion, in which we anticipated take of one Sonoran pronghorn every 10 years in the form of direct mortality or injury and one pronghorn every 7 years in the form of harassment.

With the exception of capture-related deaths (which were addressed in 10(a)(1)(A) recovery permits and the WSFR opinion), we are unaware of any confirmed incidental take in the form of direct mortality or injury resulting from the Federal actions described here (although a pronghorn may have been strafed near one of the targets on BMGR-East). That said, we are aware of numerous instances of harassment of Sonoran pronghorn. A study currently being conducted on the effects of human activity will provide details on the origin, amount, and degree of this harassment. Additionally, action agencies, as part of their proposed actions, have committed to implementing or providing funding to implement a variety of recovery projects recommended by the Sonoran Pronghorn Recovery Team. For example, these significant commitments have helped the Team to construct pronghorn waters and forage enhancement plots, build a captive breeding pen at Kofa NWR, collar and monitor pronghorn.

Summary of Activities Affecting Sonoran Pronghorn in the Action Area

The Cabeza population is isolated from other populations by highways and interstates, and access to the greenbelts of the Gila River and Río Sonoyta, which likely were important sources of water and forage during drought periods, has been severed. Since 2002, due to improved drought status and implementation of emergency recovery actions, the Cabeza population increased to 202 in 2014. At 202, however, the wild sub-population is still as risk due to, among other factors, human-caused impacts and drought.

Although major obstacles to recovery remain, since 2002, numerous crucial recovery actions have been implemented in the U.S. endangered range of the species, including pronghorn waters and forage enhancements plot. These projects help to offset the effects of drought and barriers that prevent movement of pronghorn to greenbelts such as the Gila River and Río Sonoyta. Semi-captive breeding facilities on CPNWR and Kofa NWR help provide pronghorn to augment the existing endangered population and establish and augment additional U.S. nonessential experimental (10(j)) populations. Additionally, vehicle barriers on the international border on CPNWR and OPCNM are facilitating recovery of pronghorn by reducing the amount of CBV vehicle traffic in pronghorn habitat.

The current range of the endangered pronghorn in the U.S. is almost entirely comprised of lands under Federal jurisdiction; thus, authorized activities that currently affect the pronghorn in the action area are almost all Federal actions. Action agencies have worked with us to include significant conservation measures that reduce and offset adverse effects to the pronghorn and its habitat. The current opinions that anticipate incidental take are listed above.

We believe the aggregate effects of limitations or barriers to movement of pronghorn and continuing stressors, including habitat degradation and disturbance within the pronghorn's (endangered) current range resulting from a myriad of human activities, exacerbated by periodic dry seasons or years, are responsible for the precarious status of the Sonoran pronghorn. However, collaborative, multi-agency and multi-party efforts to develop forage enhancement plots and waters, reduce human disturbance of pronghorn and their habitat, combined with the

success of the semi-captive breeding facilities at CPNWR and Kofa NWR and recently established 10(j) populations, provide hope that recovery of the Sonoran pronghorn in the U.S. is achievable. Key to achieving recovery in Arizona will be a reduction in human disturbance to pronghorn and their habitat caused by CBV and corresponding enforcement activities.

EFFECTS OF THE ACTION – SONORAN PRONGHORN

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 that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the proposed 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.

Only effects of project component #2 (proposed additions within OPCNM) are addressed below. Because the increased number (65) of low water crossings to be maintained and repaired is addressed under this project component, our effects analysis of the overall TIMR program on Sonoran Pronghorn remains the same as in the Biological Opinion on TIMR (#02EAAZOO-2012-F-0170, dated November 6, 2012). However, the Incidental Take Statement is updated below due to changes in the number of low water crossings proposed in the Sonoran pronghorn range. The number of roads to be maintained within the range of the endangered Sonoran pronghorn increased from about 100 miles (in the 2012 TIMR Biological Opinion) to about 110 miles under the current action; however, this estimated increase in the number of miles does not change our effects analysis or Incidental Take Statement.

Currently, Sonoran pronghorn occasionally occur on the TON; however, these individuals are part of the 10(j) population which is treated as a species proposed to be listed. Therefore consultation is not required for project effects to Sonoran pronghorn on the TON[3]. That said, some BMPs for Sonoran pronghorn included in the TIMR biological opinion also apply to the TON, such as Sonoran pronghorn BMP #2.

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[3] From USFWS 2011 (Final rule for the establishment of a nonessential experimental population of Sonoran Pronghorn in southwestern Arizona): When nonessential experimental populations (NEP) are located outside a NWR or National Park Service unit, for the purposes of section 7 we treat the population as proposed for listing and only two provisions of section 7 apply—section 7(a)(1) and section 7(a)(4). In these instances, NEPs provide additional flexibility because Federal agencies are not required to consult with us under section 7(a)(2). Section 7(a)(4) requires Federal agencies to confer (rather than consult) with the USFWS on actions that are likely to jeopardize the continued existence of a species proposed to be listed. The results of a conference are in the form of conservation recommendations that are optional as the agencies carry out, fund, or authorize activities. Because the nonessential experimental population is, by definition, not essential to the continued existence of the species then the effects of proposed actions on the NEP will generally not rise to the level of jeopardizing the continued existence of the species. As a result, a formal conference will likely never be required for Sonoran pronghorn established within the nonessential experimental population area. Nonetheless, some agencies voluntarily confer with the Service on actions that may affect a proposed species.

Effects of Project Component #2 (proposed additions within OPCNM):

The Sonoran pronghorn is expected to be affected both directly and indirectly by the proposed action. Improvements to Pozo Nuevo and Bates Well Roads will result in the loss of a small amount of pronghorn habitat in the immediate vicinity of the 44 (possibly up to 50) low water crossings proposed for improvement. Additionally, short-term, direct adverse effects include disturbance of Sonoran pronghorn from noise and visual stimuli associated improvement activities and additional maintenance and repair activities associated with the increased number of low water crossings (15 low water crossings were to be maintained under the 2012 TIMR Biological Opinion; however, a total of 65 low water crossings will be maintained and repaired under the current action). There is also some potential for increased risk of collision with vehicles due to increased vehicle use during road improvement activities and increased ongoing maintenance of low water crossings. Long-term, indirect adverse effects to Sonoran pronghorn may include the introduction of nonnative species through project activities. Further, the road improvement projects should result in long-term, beneficial effects to pronghorn habitat by reducing erosion and improving water flow. Improvement and maintenance of low water crossings should also reduce off road impacts resulting from drivers attempting to avoid hydrated soils.

See the 2012 TIMR Biological Opinion for background on the effects of human disturbance on Sonoran pronghorn. In addition to the studies mentioned in that opinion, two more recent studies have assessed the effects of human activities on Sonoran pronghorn. As discussed in more detail in the Status of the Species, in a short-term observational study, OPCNM (2013) found that pronghorn disturbance responses took place every 6 hours 15 minutes on OPCNM. Preliminary information from an ongoing study on the effects of human activities on Sonoran pronghorn indicates that pronghorn exhibit a spectrum of responses, from standing vigilant to running from a stimulus (e.g. vehicles) (email from Stephanie Doerries, University of Arizona, May 7, 2014). Additionally, since the 2012 Biological Opinion, a pronghorn was struck and killed on Highway 85; another pronghorn was possibly struck by a vehicle along a high speed dirt road, however, the cause of death was never confirmed.

We anticipate that improvements to 50 low water crossings will result in a small number of recognized additional impacts to Sonoran pronghorn habitat, compared to that previously analyzed under TIMR. Additionally, work associated with improvements and maintenance of the crossings and improvements to Pozo Nuevo Road may result in somewhat increased risk of disturbance to and vehicle collision with Sonoran pronghorn, as compared to that analyzed in the 2012 TIMR Biological Opinion. The presence of repair crews and equipment, and their associated noise, could cause pronghorn to move away from an area temporarily or otherwise modify their behavior. Road improvements may take several months each year for several years. Therefore, while potential disturbance from maintenance activities will be intermittent over many years, potential disturbance from road improvements will be intermittent over several years. During times of significant drought, which occur about every 7 years within the Sonoran pronghorn range, we anticipate the effects of potential disturbance from TIMR

activities will be more severe because Sonoran pronghorn are under much more physiological stress during times of drought than during periods of normal rainfall. Road improvements may result in increased vehicle travel speeds on Pozo Nuevo and Bates Well roads, which would increase the risk of collision with Sonoran pronghorn. However, 25 mile per hour speed limits, enforced by the National Park Service, should help deter potential speed violations.

See the 2012 Biological Opinion for a full analysis of the direct and indirect effects of habitat loss and degradation; disturbance to Sonoran pronghorn; potential for Sonoran pronghorn injury or mortality due to vehicle collisions; and effects of BMPs and conservation measures; this full analysis remains unchanged. However, since the issuance of that opinion, the status of the species has improved. The endangered Arizona population (i.e., the Cabeza population) has increased from 85 to 202. While the population has still not met the recovery criteria in the 2015 Draft Recovery Plan for Sonoran Pronghorn (USFWS 2015), never-the-less, the population is increasing due to a combination of favorable range conditions and intensive management efforts (e.g., captive breeding, wildlife waters, forage enhancement plots). The increased population size of Sonoran pronghorn increases the chance of interaction with project activities resulting in a higher chance of disturbance to pronghorn. However, as discussed in the 2012 Biological Opinion, management actions such as wildlife waters, help buffer against some of the adverse physiological effects of disturbance.

Effects of Conservation Measures and Best Management Practices

No changes.

Changes in Pronghorn Status with the Proposed Action

The U.S. Sonoran pronghorn population increased from about 21 in 2002 to about 202 in 2014, and pronghorn use of OPCNM has increased. As the population increases, it is more likely that a pronghorn will be adversely affected by TIMR activities, particularly during times when they are stressed by lack of forage and water. Proposed project activities that elicit pronghorn response (such as fleeing behavior) or that lead to reduced use of preferred habitat could contribute to decreased physical condition of individual animals, which could result in increased mortality, particularly during times of drought. Five populations of Sonoran pronghorn exist throughout their range, including two in Mexico and three in Arizona. The smallest populations occur primarily within federally protected lands (in Sonora and Arizona). The largest population occurs primarily outside of protected lands in Mexico and consequently, is at greatest risk (i.e., authorities have much less of an ability to control activities that may harm pronghorn outside of federally-protected lands). The survival of all of these populations is critical to the survival of this species. However, because the largest population occurs outside of a protected area, ensuring the survival of the four populations within federally-protected areas, including the three in Arizona, is even more imperative.

Of these four populations, the three in Arizona, which comprise 23% of the total number of estimated wild pronghorn, are the only ones over which we have management authority. Additionally, critical recovery projects, including the captive breeding pen, forage enhancement plots, and pronghorn waters, are all located in Arizona (with the exception of a few wildlife waters at Pinacate that have not had documented use by pronghorn to this date). Therefore, although the majority (77%) of Sonoran pronghorn occur outside of the U.S. and will not be affected by the proposed action, because of the importance of the U.S. populations, particularly the endangered population (which comprises about 16% of the total number of wild pronghorn), it is critical that project impacts be minimized and offset to the greatest degree possible. Accordingly, as part of its proposed action, CBP will continue to implement or fund the implementation of BMPs and conservation measures that will avoid, minimize and offset the impacts of the proposed project and will help to ensure that these impacts do not significantly affect the reproduction, numbers, and distribution of Sonoran pronghorn in the wild in Arizona.

Implementing priority recovery actions for pronghorn, such as constructing and maintaining wildlife waters or forage enhancement plots, will help improve pronghorn fitness, which should help them better withstand the effects of drought and human disturbance.

CUMULATIVE EFFECTS – SONORAN PRONGHORN

No changes.

CONCLUSION – SONORAN PRONGHORN

No changes.

INCIDENTAL TAKE STATEMENT – SONORAN PRONGHORN

Section 9 of the Act and Federal regulation 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 defined 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 (50 CFR 17.3). "Harass" is defined 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 (50 CFR 17.3). "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 CBP so that they become binding conditions of any grant or permit issued to the any applicant, contractor, or permittee, as appropriate, for the exemption in section 7(o)(2) to apply. CBP has a continuing duty to regulate the activity covered by this incidental take statement. If CBP (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant, contractor, or permittee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the contract, permit, or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, CBP 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

Incidental take of the Sonoran pronghorn is reasonably certain to occur from the continued implementation of the TIMR Program. We anticipate incidental take of Sonoran pronghorn as a result of this proposed action in the form of harassment due to the effects of human disturbance associated with the project, and direct mortality or injury as a result of a collision with a CBP (or contract personnel) vehicle in the project area.

Specifically, incidental take of <u>one</u> Sonoran pronghorn every <u>7 years</u>, from the time the TIMR Program is initiated for the duration of the TIMR Program, in the form of harassment is anticipated from the following activity:

- Disturbance of pronghorn due maintenance and repair activities in the form of vehicles, heavy equipment, and personnel which causes increased energetic stress and curtailment of access to crucial habitat components.

Additionally, incidental take of <u>one</u> pronghorn over the duration of the TIMR Program is also anticipated in the form of direct mortality from the following activity:

- CBP or contract personnel vehicle use in the action area that may result in a collision with, and injury or mortality of, a Sonoran pronghorn over the life of the TIMR Program.

We anticipate that incidental take in the form of harassment will be difficult to detect because the effects of harassment generally cannot be detected outside of a controlled research environment. For example, a doe that flees from a vehicle may temporarily abandon her fawn that is then depredated. However, detecting this death would be nearly impossible. Therefore,

reporting requirements will allow us to assess the effects of TIMR activities. Incidental take will have been exceeded, triggering a requirement for reinitiation (50 CFR 402.16[c]) if:

1) During the life of the proposed action, more than one pronghorn is killed or injured due to a collision with a CBP or contract personnel's vehicle, or

2) Based on the annual reporting and discussions with CBP on status of TIMR:

    a. The proposed action results in the loss or degradation of Sonoran pronghorn habitat within the action area beyond the area immediately adjacent to the existing footprint of tactical infrastructure described and covered in this BO. The Project Description indicates that TIMR activities will occur within or immediately adjacent to tactical infrastructure (2012 TIMR Biological Assessment, pages. 4-20). These effects have been analyzed in this BO and the 2012 TIMR Biological Opinion. However, such actions occurring outside the area immediately adjacent to the existing footprint of the tactical infrastructure have not been evaluated, would likely result in take in the form of harassment, and would trigger the need to reinitiate this consultation; or

    b. TIMR activities within suitable habitat within the range of the endangered Sonoran pronghorn that 1) exceed 150 miles of roads (110 miles are currently anticipated) and 70 low water points (59 [44 + 15] are currently anticipated) within the action area, 2) occur more than four times per year for each road segment or infrastructure facility, or 3) occur between March 15 and July 31 (Sonoran pronghorn fawning season). The Project Description indicates the level and timing of TIMR Program activities (2012 TIMR Biological Assessment, 4-22, A-10, C-16). The above numbers add a buffer of 40 road miles and 11 low water points to the proposed extent and number of project activities to allow some flexibility, and this extent of effects has been analyzed in this BO and the 2012 TIMR Biological Opinion. The effects of actions that exceed the number or timing described above represent potential effects and take of an extent that has not been analyzed and would thus trigger reinitiation of this consultation.

In <u>summary</u>, we anticipate incidental take of <u>one</u> Sonoran pronghorn every <u>7 years</u> in the form of harassment and <u>one</u> Sonoran pronghorn over the duration of the program in the form of direct mortality as the result of implementation of the TIMR program.

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 species. If there is a significant decline in the numbers of free-ranging

pronghorn, the effects of this level of take may need to be reconsidered per the Reinitiation Statement below.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

A comprehensive suite of BMPs and conservation measures has been incorporated into the proposed action for the TIMR Program. These measures generally and specifically require CBP to reduce effects to the Sonoran pronghorn and its habitat. No additional reasonable and prudent measures are necessary to minimize incidental take.

If mortality or injury of Sonoran pronghorn is detected, the instructions provided below under "Disposition of Dead or Injured Listed Species" will be followed. In addition, CBP must report activities implemented under the TIMR Program, including the outcome of any monitoring, as well as any potential take of this species, in its annual report to FWS.

Review requirement: Because FWS has determined that no Reasonable and Prudent Measures or Terms and Condition are required beyond the measures outlined in the Proposed Action, it is imperative that CBP implement the BMPs and conservation measures described above and in the 2012 Biological Opinion, including the required monitoring and reporting. If, during the course of the proposed action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the proposed action, potentially through reinitiation of section 7 consultation as described below in the Reinitiation Notice. CBP must immediately provide and explanation of the causes of the taking and review with the AESO the need for possible inclusion of reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS – SONORAN PRONGHORN

No changes.

STATUS OF THE SPECIES – NORTHERN MEXICAN GARTERSNAKE

Description, Legal Status, and Recovery Planning

The northern Mexican gartersnake, which reaches up to 44 inches total length, 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 similarity of appearance to other native gartersnake species.

The Federal Register notice listing the northern Mexican gartersnake as threatened under the Act was published on July 8, 2014 (USFWS 2014). Please refer to this rule for more in-depth information on the ecology and threats to the species, including references. Critical habitat was proposed on July 10, 2013 (USFWS 2013) and has not yet been designated. We expect to

publish a modified re-proposal for critical habitat and an accompanying Notice of Availability announcing the draft Environmental Assessment and draft Economic Analysis in 2016. Details on critical habitat are provided below. The final listing and proposed critical habitat rules are incorporated herein by reference. A recovery outline for the species is currently being developed.

Life History and Habitat

Sexual maturity in northern Mexican gartersnakes occurs at two years of age in males and at two to three years of age in females (Rosen and Schwalbe 1988). 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).

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 often found in riparian habitat, but has also been found hiding under cover in grassland habitat up to a mile away from any surface water (Cogan 2015). The subspecies has historically been associated with three general 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) 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.

The northern Mexican gartersnake is an active predator and is thought to heavily depend upon a native prey base (Rosen and Schwalbe 1988). Northern Mexican gartersnakes forage along vegetated streambanks, searching for prey in water and on land, using different strategies (Alfaro 2002). Primarily, 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), but earthworms, leeches, lizards, and small mammals are also taken. In situations where native prey species are rare or absent, this snake's diet may include nonnative species, including larval and juvenile bullfrogs, western mosquitofish (Holycross et al. 2006, Emmons and Nowak 2013), or other nonnative fishes. In northern Mexican gartersnake populations where the prey base is skewed heavily towards harmful nonnative species, recruitment of gartersnakes is often diminished or nearly absent.

Natural predators of the northern Mexican gartersnake may 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 may have preyed upon northern Mexican gartersnakes where

they co-occurred. Native chubs in their largest size class may also prey on neonatal gartersnakes, but has not been confirmed in the literature or through field observation.

Distribution and Abundance

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 (Rosen and Schwalbe 1988, Rosen et al. 2001; Holycross et al. 2006). In New Mexico, the gartersnake 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 rangewide distribution of the subspecies (Rossman et al. 1996).

The only viable northern Mexican gartersnake populations in the United States where the subspecies remains reliably detected are all in Arizona: 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; 4) the Bill Williams River; and, 5) the middle/upper Verde River. In New Mexico and elsewhere in Arizona, the northern Mexican gartersnake may occur in extremely low population densities within its historical distribution; limited survey effort is inconclusive to determine extirpation of this highly secretive species. 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 understood. 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.

We have concluded that in as many as 23 of 33 known localities in the United States (70 percent), the northern Mexican gartersnake population is likely not viable and may exist at low population densities that could be threatened with extirpation or may already be extirpated. Only five populations of northern Mexican gartersnakes in the United States are considered likely viable where the species remains reliably detected. See Table 3 for a summary of the current population status for the northern Mexican gartersnakes in the U.S.

Threats

Harmful nonnative species are a significant concern in almost every northern Mexican gartersnake locality in the United States and the most significant reason for their decline. We consider harmful nonnative species to include, but not be limited to, fish in the families Centrarchidae and Ictaluridae, American bullfrogs (*Lithobates catesbeiana*), and any species of crayfish. Harmful nonnative 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 harmful nonnative species; and effects from climate change and drought (U.S. Fish and Wildlife Service 2014).

Additionally, road construction, use, and maintenance could cause injury or death to individuals of this species. The section below (including the citations) describing how roads could affect the northern Mexican gartersnake is excerpted from U.S. Fish and Wildlife Service (2014).

> "Roads can pose unique threats to herpetofauna, and specifically to species like the northern Mexican gartersnake, its prey base, and the habitat where it occurs. Roads fragment occupied habitat and can result in diminished genetic variability in populations from increased fatality from vehicle strikes and adverse human encounters as supported by current research on eastern indigo snakes (Breininger et al. 2012). Roads often track along streams and present a fatality risk to gartersnakes seeking more upland, terrestrial habitat for brumation and gestation. Roads may impact the species through the following mechanisms: (1) fragmentation, modification, and destruction of habitat; (2) increase in genetic isolation; (3) alteration of movement patterns and behaviors; (4) facilitation of the spread of nonnative species via human vectors; (5) an increase in recreational access and the likelihood of subsequent, decentralized urbanization; (6) interference with or inhibition of reproduction; (7) contributions of pollutants to riparian and aquatic communities; (8) reduction of prey communities; and (9) acting as population sinks (when population death rates from vehicle strikes exceed birth rates in a given area) (Rosen and Lowe 1994; Waters 1995; Foreman and Alexander 1998; Trombulak and Frissell 2000; Carr and Fahrig 2001; Hels and Buchwald 2001; Smith and Dodd 2003; Angermeier et al. 2004; Shine et al. 2004; Andrews and Gibbons 2005; Wheeler et al. 2005; Roe et al. 2006; Sacco 2007, pers. comm.; Ouren et al. 2007; Jones et al. 2011; Hellekson 2012a, pers. comm.). Perhaps the most common factor in road fatality of snakes is the propensity for drivers to unintentionally and intentionally run them over, both because people often dislike snakes (Rosen and Schwalbe 1988, p. 43; Ernst and Zug 1996, p. 75; Green 1997, pp. 285–286; Nowak and Santana-Bendix 2002, p. 39) and because they can be difficult to avoid when crossing roads at perpendicular angles (Klauber 1956, p. 1026; Langley et al. 1989, p. 47; Shine et al. 2004, p. 11). Fatality data for northern Mexican gartersnakes have been collected at the Bubbling Ponds Hatchery since 2006. Of the 15 dead specimens, 8 were struck by vehicles on roads within or adjacent to the hatchery ponds, perhaps while crossing between ponds to forage (Boyarski 2011). Van Devender and Lowe (1977), however, observed several northern Mexican gartersnakes crossing the road at night after the commencement of the summer monsoon (rainy season), which highlights the seasonal variability in surface activity of this snake. Wallace et al. (2008) documented a vehicle-related fatality of a northern Mexican

gartersnake on Arizona State Route 188 near Tonto Creek that occurred in 1995."

Critical Habitat

Critical habitat for the northern Mexican gartersnake has been proposed in 14 units in portions of Arizona and New Mexico totaling 421,423 acres (Figure 7). See Table 4 for land ownership and size (in acres) for proposed critical habitat units for the northern Mexican gartersnake in the U.S. Within these areas, the primary constituent elements (PCEs) of the physical and biological features essential to northern Mexican gartersnake conservation are:

1. Aquatic or riparian habitat that includes:
   a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess 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; or
   b. Lentic wetlands such as livestock tanks, springs, and Cienegas; and
   c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and
   d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the gartersnake or the maintenance of prey populations.

2. Adequate terrestrial space (600 feet 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.

3. A prey base consisting of viable populations of native amphibian and native fish species.

4. An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis, P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

Conservation

Although a recovery plan for the northern Mexican gartersnake has not been developed, a number of conservation actions for the snake are ongoing. These include management actions

to improve habitat and prey communities, as well as researching the efficacy of gartersnake translocations and captive propagation, head-starting, and release in meeting recovery objectives.

ENVIRONMENTAL BASELINE - NORTHERN MEXICAN GARTERSNAKE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the 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 which 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 from which to assess the effects of the action now under consultation. The action area for the proposed action remains nearly[4] the same as described in the 2012 biological opinion on TIMR and includes the area depicted in Figures 2a and 2b and the current range of the endangered pronghorn within the U.S. (Figure 5 – the endangered population range is depicted as the "Cabeza Prieta Range" in the figure).

Status of the Northern Mexican Gartersnake in the Action Area

Distribution, Abundance, and Life History

Life history for the snake in the action area is the same as that described in the Status of the Species. Distribution and abundance of the species in the action area are described below by subbasin (Santa Cruz River Subbasin, San Pedro River Subbasin, and Rio Yaqui Subbasin). Areas proposed for designation as critical habitat for the northern Mexican gartersnake are considered occupied by the species based on reliable or verified observation or museum records. However, the species may be present outside of these areas but within the project's action area, where adequate prey communities exist.

<u>Santa Cruz River Subbasin (Arizona)</u>

Upper Santa Cruz River/San Rafael Valley Subbasin— Several recent and historical records document the northern Mexican gartersnake (neonates and adults) from tanks and springs within the San Rafael Valley, as well as the upper Santa Cruz River, confirming that the northern Mexican gartersnake is using various wetland habitats in the San Rafael Valley, and that reproduction is occurring. Recruitment rates within the population appear to be low and more study is required to confirm. In 2012, the capture rate was one snake every 378.75 trap hours (Lashway 2012). Green sunfish and mosquitofish dominated fish sampling results in 2014 (Timmons 2014). Native fish, bullfrogs, and nonnative fish inhabit several wetland areas in the San Rafael Valley, including the upper Santa Cruz River (Rosen et al. 2001). Sonoran

[4] The only change is that the range of the endangered Sonoran pronghorn population has been updated since 2012.

tiger salamanders (*Ambystoma mavortium stebbinsi*) also contribute to the prey base of northern Mexican gartersnakes in this area. Photo-documentation from the years 1999, 2001, and 2005 from several photo points along the upper Santa Cruz River depicted in Stingelin et al. (2006, Figure 3.1) reflect a trend of less water and more vegetation along the upper Santa Cruz River in recent years.

The foraging ecology of northern Mexican gartersnakes and past records suggest individuals move throughout the San Rafael Valley as they seek to explore regional wetland habitats for prey. The upper Santa Cruz River likely serves as a source for these individuals. We consider the upper Santa Cruz River, as well as tanks, springs, and wetlands with physically suitable northern Mexican gartersnake habitat, within the greater San Rafael Valley to be occupied by the northern Mexican gartersnake based on historical and recent records, as well as our understanding of the subspecies' foraging ecology. This population is considered likely viable.

Redrock Canyon/Cott Drainage—There is a single photo voucher from Redrock Canyon, found while conducting fish surveys (L. Jones 2008a, pers. comm.) surveys in 2008. Redrock Canyon and Cott Drainage (Redrock headwaters) have never been formally surveyed for northern Mexican gartersnakes according to our files. Perennial water sources are located throughout Redrock Canyon in the form of streams, springs, tanks, and cienegas (U.S. Bureau of Reclamation 2008). Redrock Canyon supports four species of native fish, and Chiricahua leopard frogs and Sonora tiger salamanders have been reported (U.S. Bureau of Reclamation 2008). Gila topminnow may have been a historically important prey species for neonatal northern Mexican gartersnakes in the Redrock and Cott drainages; Stefferud and Stefferud (2007, 2008a, 2009, 2011, 2012, 2013) provide the most recent survey data for Gila topminnow in this area, and other native fish as observed. Other native fish species that have historically been reported from Redrock Canyon include longfin dace, speckled dace, desert sucker, and Gila chub (Stefferud and Stefferud 2008b). Redrock Canyon has also been occupied historically by several species of nonnative, predatory fish (the origin of which was traced to illegal releases into local stock tanks) and bullfrogs, but the most recent observations suggest only bullfrogs remain conspicuous throughout the subbasin (U.S. Bureau of Reclamation 2008). Recent records confirm the northern Mexican gartersnake remains extant in Redrock Canyon (and Cott Drainage), likely as a low density population which may have individuals immigrating from Sonoita Creek to the west or from the San Rafael Valley to the south which are both connected via Redrock Canyon.

Sonoita Creek—Three records of northern Mexican gartersnakes from 1954 to 2013 document the the northern Mexican gartersnake in Sonoita Creek (Rosen and Schwalbe 1988, Appendix I; Holycross et al. 2006, Appendix A; Bookwalter 2013, pers. comm.). Turner (2007) found no northern Mexican gartersnakes in a 204 person-search-hour, 5,472 trap-hour survey effort in the Sonoita Creek State Natural Area. Crayfish, bullfrogs, and nonnative fish were observed by Turner (2007) which likely emigrate from Patagonia Lake from which Sonoita Creek feeds. The length of time since the last records for northern Mexican gartersnakes as well as the persistent influence of harmful nonnative species supported by Patagonia Lake suggest the

subspecies likely occurs at a very low density in Sonoita Creek.

Scotia Canyon—There are numerous records of the northern Mexican gartersnake from the Peterson Ranch Pond site in Scotia Canyon in the Huachuca Mountains from 1981 to 2009 (Rosen and Schwalbe 1988; Holm and Lowe 1995; Rosen et al. 2001; Holycross et al. 2006; Frederick 2008b pers. comm.; J. Servoss 2009, pers. obs.). Data generated from comparative trapping and survey efforts from 1980-1982, 1993, and 2008 suggest a marked decline in this population over the last 30 years. In 2008, a multi-agency, multi-year effort was initiated within a five mi (8 km) radius of Scotia Canyon, including the Peterson Ranch Ponds and vicinity, to eradicate bullfrogs and reestablish Chiricahua leopard frogs (Frederick 2008, pers. comm.; 2008b, pers. comm.). This effort included many surveys of herpetofauna (reptiles and amphibians) to identify the presence of bullfrogs for eradication and monitor the status of reintroduced Chiricahua leopard frogs. With the reintroduction of Chiricahua leopard frogs to the Peterson Ranch Ponds in 2009 and their subsequent reproduction in 2010, we expect the northern Mexican gartersnake population will persist, and possibly improve, due to improved availability of prey and reduced predation by harmful nonnative species.

Parker Canyon—Historical records for the northern Mexican gartersnake in Parker Canyon were from Parker Canyon Lake in 1967 (Holycross et al. 2006) and 1986 (Rosen and Schwalbe 1988) and from Parker Canyon in 1968 and 1979 (Holycross et al. 2006). We are not aware of any dedicated northern Mexican gartersnake survey effort in Parker Canyon. The only survey known for Parker Canyon Lake was the Rosen and Schwalbe (1988) effort in 1986 that consisted of 3 person-search hours. Parker Canyon Lake is managed as a put-and-take fishery for rainbow trout and channel catfish and also supports a self-sustaining warm water fishery including harmful predatory species such as largemouth bass, bluegill, redear sunfish, green sunfish, black bullhead, and northern pike (USFWS 2011b). These nonnative species may spill into the canyon proper below the dam or move up into pools above the lake where they contribute to the extant nonnative fish population. Parker Canyon below Parker Canyon Lake dam is best described as a spatially intermittent stream with several pools. There is approximately one river mi (1.6 km) of permanent water below the dam, and then the channel is ephemeral for approximately 4.5 river mi (7.2 km) to another perennial reach approximately 0.25 river mi (0.4 km) in length. It then, once again, becomes ephemeral until it joins the upper Santa Cruz River in the San Rafael Valley. The perennial reach below the Parker Canyon dam contains bullfrogs, crayfish, and nonnative, predatory fish species. Lower Parker Canyon also maintained longfin dace as of 2003 (Stefferud and Stefferud 2004). Individual northern Mexican gartersnakes may migrate into Parker Canyon from populations that occur in Scotia Canyon or the San Rafael Valley which suggests the subspecies could be extant in Parker Canyon, likely as a low density population.

Lower Santa Cruz River—Numerous historical records dating to the 1890s document the northern Mexican gartersnake from the lower Santa Cruz River (downstream of the International Border) and (possibly) several tributaries in the Tucson area (Rillito River, Sabino Canyon, Tanque Verde Creek, Pantano Wash) labeled as "Tucson" (Rosen and Schwalbe 1988;

Holycross et al. 2006). Significant reaches, and in some cases the entire length, of these streams in the Tucson area no longer have reliable surface flow and are largely ephemeral. The Santa Cruz River headwaters are located in the San Rafael Valley where the river flows south into Mexico, bends to the west, and then flows due north, back into the United States just east of Nogales, Arizona. There are no obvious barriers to northern Mexican gartersnake movement along its course from the San Rafael Valley to the International Border and downstream of there. Rosen and Schwalbe (1988) performed northern Mexican gartersnake surveys of the lower Santa Cruz on three different days spanning the years of 1985 and 1986; no northern Mexican gartersnakes were found, but bullfrogs were noted as "super abundant." Abbate et al. (2007) spent 90 person-search hours and approximately 935 trap-hours surveying for northern Mexican gartersnakes along the lower Santa Cruz River from the Trico-Marana Road Bridge downstream to the Arizona Army National Guard Training facility, but no northern Mexican gartersnakes were detected.

Prior to the mid-1800s, the lower Santa Cruz was characterized as having a narrow, meandering channel within an active floodplain with cienegas present along its course (Lacher 1996), likely providing excellent habitat for northern Mexican gartersnakes along its entire course. Currently, the lower Santa Cruz River upstream of (south of) Tucson only maintains perennial (effluent dependent) flow for approximately 14 river miles (22.5 km), from the Nogales International Wastewater Treatment Plant downstream to the Chavez Siding Road crossing, as a result of discharges from the plant at a rate of 23 cubic feet per second (cfs), supporting an aquatic vertebrate community that consists of longfin dace, mosquitofish, and bullfrogs (AGFD 2011). Research suggests that treated effluent from the plant contributes to hydrologic "clogging" (reduced hydraulic conductivity of the streambed) in this reach from the creation of a schmutzdecke (a nearly impermeable, anaerobic layer of organic material) that reduces aquifer recharge (Lacher 1996; Treese et al. 2009). Ultimately, such hydrologic clogging adversely affects the recruitment and maintenance of riparian plant species that are dependent on proper functioning of the hyporheic zone (zone where mixing of shallow groundwater and surface water occurs) and does not allow for the development of habitat for prey species. We consider the northern Mexican gartersnake as likely extirpated in the lower Santa Cruz River, downstream of the International Border.

Buenos Aires National Wildlife Refuge—Historical records from 1970 and 2000, document the persistence of the northern Mexican gartersnake at the Arivaca Cienega on the Buenos Aires National Wildlife Refuge (BANWR). A June 13, 1985, survey failed to detect the subspecies there, but noted that bullfrogs were "extremely abundant" at this location (Rosen and Schwalbe 1988). A significant survey effort consisting of trapping and visual searches occurred at the Arivaca Cienega in both 1993 and 2000 (the last surveys that we know of in the area) which confirmed bullfrogs remained abundant (Rosen et al. 2001). The presence of dense cover probably helps any remaining northern Mexican gartersnakes to avoid predation. Arivaca Cienega is found within the eastern-most portion of the BANWR and, in terms of northern Mexican gartersnake movement, Arivaca Cienega is connected, via Arivaca Creek and nearby associated drainages, to the larger, more contiguous block of BANWR lands and associated

wetlands in the Altar Valley to the west. In recent years, there has been a concerted management effort on the BANWR to recover the Chiricahua leopard frog in an array of tanks (known as the "central tanks" which include Carpenter, Rock, State, Triangle, New Round Hill, Banado, Choffo, Barrel Cactus, Sufrido, Hito, Morley, McKay, and Chongo Tanks) and their associated drainages, all of which have been designated as critical habitat for the Chiricahua leopard frog. As a result, it is likely that any northern Mexican gartersnakes that successfully immigrate into the central tanks area of the BANWR have an increased chance of persistence because of improved available habitat and a stable prey base in an area that is likely free of nonnative predators. However, Arivaca Lake, associated with Arivaca Creek and Arivaca Cienega, is a naturally reproducing warm water fishery consisting harmful nonnative species including largemouth bass, channel catfish, bluegill, and redear sunfish (USFWS 2011b). When the lake spills, these species may influence other aquatic habitats, on- or off-Refuge in the area. Slightly off-refuge to the west, a single record for a northern Mexican gartersnake was reported by an Arizona Game and Fish Department amphibian biologist from 2001 in a stock tank in Los Encinos Wash in the Pozo Verde Mountains (Tonn 2013, pers. comm.) indicates the subspecies may occur in low densities, outside of the Refuge boundary. Based on historical and recent records, and the abundance of available habitat in the vicinity of the most recent record, we consider the northern Mexican gartersnake to be extant as a low density population on the BANWR, which may remain depressed as a result of negative interactions with a regional harmful nonnative species community.

San Pedro River Subbasin (Arizona)

Bear Creek—Three records appear to be incidental observations as we are not aware of any formal surveys for northern Mexican gartersnakes that have occurred along Bear Creek. Stefferud and Stefferud (2004) documented a native aquatic community based on their 2003 surveys, specifically noting longfin dace as abundant. They suggested this drainage as a place where native fish recovery projects are desirable based on the abundance of suitable habitat and absence of nonnative species. In 2013, a brief visit to Bear Canyon by a Service employee (J. Servoss, pers. obs.) confirmed the presence of longfin dace. However, crayfish were also seen in large numbers in some pools, but bullfrogs were not observed in the drainage. Bear Creek is somewhat isolated from major perennial sources of nonnative species, which may indicate why a largely native community persists. Based on 1) historical records; 2) the absence of any substantial, targeted survey effort; 3) the presence of a native fish community; and 4) the abundance of physically suitable habitat, we consider Bear Creek to be occupied by northern Mexican gartersnakes, possibly as a low density population that remains threatened by crayfish.

Brown Canyon (Barchas Ranch; Huachuca Mtns)—Both House pond and Wild Duck Pond provide suitable habitat for northern Mexican gartersnakes. It is uncertain where northern Mexican gartersnakes may be immigrating from; the next closest populations are known from the San Pedro River to the east, the Babocomari River to the north, O'Donnell Canyon/Turkey Creek to the west, and Scotia and Bear Canyons to the south. However, none of those localities are within an obvious dispersal distance. It's possible the species is using an unidentified water

body in the area from which to colonize new habitat, perhaps a private pond. The Brown Canyon Ranch has been an active site for Chiricahua leopard frog recovery which provides an obvious prey source and an attraction for northern Mexican gartersnakes. However, these ponds are vulnerable to repeated invasion from dispersing bullfrogs which have been documented in the past. In 2014, southern leopard frogs (nonnative; *L. sphenocephala*) were detected in the main House Pond. Actions were subsequently taken to remove the nonnative leopard frogs. The ponds are no longer vulnerable to drying due to supplied well water and a new liner, and are actively monitored and managed for Chiricahua leopard frogs which should provide added resiliency to the gartersnake's continued occupation there, provided recruitment occurs. The 2014 record verifies northern Mexican gartersnakes remain extant in Brown Canyon but the sparse amount records over time from this closely observed locale suggest the population exists as a low density population.

Fort Huachuca– Aquatic herpetofauna surveys occurred on- and off-Fort from 1995-1998 which documented a single northern Mexican gartersnake adjacent to, but off the Fort, in Brown Canyon (Sredl et al. 2000). We are not aware of any species-specific surveys that have occurred on the Fort since that time. There are several wetland habitats on Fort Huachuca but bullfrogs occur in many of them. Several possible source populations for northern Mexican gartersnakes occur within possible dispersal distance of Fort Huachuca, including Sonoita-Elgin grasslands to the northeast, the Babocomari River to the north, the San Pedro River to the east, Brown Canyon to the east, and Scotia Canyon over a ridgeline to the southwest. Leopard frogs are not currently known to occur on the Fort but toads and bullfrogs in larval and sub-adult age classes may offer prey. Northern Mexican gartersnakes may persist on Fort Huachuca as a low density population supported by occasional immigration from area source populations.

San Pedro River— All known records for northern Mexican gartersnakes along the San Pedro River in the Arizona have occurred upstream of the I-10 crossing, largely as a direct result of minimal survey efforts downstream of I-10. Rosen et al. (2001) surveyed the upper San Pedro River in 1996, 1998, and 2000 at the Arizona State Highway 90 crossing, in 1998 at Lewis Springs, and 1996 at Curtis Flat, and documented crayfish, bullfrogs, nonnative, predatory fish, as well as two species of native fish, all occurring at various densities along their survey routes. However, they did not detect any northern Mexican gartersnakes. Kesner and Marsh (2010, Table 3) also found both native fish, as well as nonnative, predatory fish, in the upper San Pedro River, although native fish or nonnative, soft-rayed fish outnumbered harmful nonnative fish species significantly. Jakle (1992) and Minckley (1987) also reported nonnative, predatory species such as channel catfish, flathead catfish, and smallmouth basin the San Pedro River. Stefferud et al. (2009) report that at least 15 species of nonnative fish have been introduced into the San Pedro River which has had profoundly negative impacts on native fish populations. These survey efforts included approximately 12 cumulative person-search hours at Highway 90, five person-search hours at Lewis Springs, and three person-search hours at Curtis Flat (Rosen et al. 2001). Inman et al. (1998) reported crayfish from the San Pedro River.

The lower San Pedro River (north of I-10) was surveyed for northern Mexican gartersnakes from 1996–2000. Rosen et al. (2001) surveyed four locations along the lower San Pedro River: at Cascabel in 1996 (three person-search hours), at the San Manuel crossing in 1999 (45 minutes), at the Dudleyville crossing in 2000 (four person-search hours), and in the Bingham Cienega area, adjacent to and within the lower San Pedro River, in 1999 (20 minutes) and 2000 (three person-search hours). One bullfrog was seen at Cascabel and another at Bingham Cienega; one crayfish and one channel catfish were seen at the Dudleyville crossing (Rosen et al. 2001). Otherwise, robust populations of lowland leopard frogs and longfin dace were seen at nearly all survey locations (Rosen et al. 2001) which document a largely native prey species community for northern Mexican gartersnakes. Lowland leopard frogs and their tadpoles were also confirmed in a 2012 survey effort; also noted were beaver ponds and dense streamside vegetation along with perennial flow (Hall 2013). Lowland leopard frogs, long-finned dace and desert suckers are considered common in numerous tributaries to the middle and lower San Pedro River as well as in its perennial reaches downstream of Interstate 10 (Cascabel Working Group 2010). Kesner and Marsh (2010) found native fish generally dominate over nonnative, predatory fish in the lower San Pedro River. In total, approximately 11 person-search hours have been invested in surveying for gartersnakes along the entire lower San Pedro River, a large and structurally complex system, since 1996. The northern Mexican gartersnake is likely extant in low density populations along the San Pedro River from the International Border to its confluence with the Gila River.

Babocomari River and Cienega—In the past, the Babocomari River and Cienega was considered by Rosen and Schwalbe (1988) as a possible regional stronghold for northern Mexican gartersnakes, based on personal communications with past investigators (Rosen et al. 2001). Several surveys, of varying effort, of both the cienega and the river conducted in 2000 failed to detect the northern Mexican gartersnake (Rosen et al. 2001). The cienega was surveyed intensively in 2000, consisting of visual searches and trapping, which documented bullfrogs and nonnative, predatory fish as abundant and crayfish as common. Surveys from the mid-1980s did not detect bullfrogs at the cienega, but did detect harmful nonnative fish. This suggests that bullfrogs colonized the area during the late 1980s or later, either naturally or through artificial introduction. Despite the influence of harmful nonnative predators in the Babocomari system, the resident northern Mexican gartersnake population may be influenced by migrants from the San Pedro River to the east, the Appleton-Whittel Research Ranch to the south, or the Cienega Creek headwaters to the north.

Canelo Hills-Sonoita Grasslands Area— The Canelo Hills-Sonoita grasslands area encompasses several streams, cienegas, and wetlands owned or managed by the Appleton-Whittell Research Ranch, the Nature Conservancy (Canelo Hills Cienega Preserve), and the Coronado National Forest. Most of the records came from sampling the area in 1985-86 that pertained to Rosen and Schwalbe (1988). Survey effort in 1996 and 2000 for northern Mexican gartersnakes from this region is documented in Rosen et al. (2001) and suggests the population may have already been in decline. Information on prey and predator communities is found in several reports. In 2000, Rosen et al. (2001) documented Chiricahua leopard frogs, crayfish,

and harmful nonnative fish in O'Donnell Creek and Stefferud and Stefferud (2004) reported three species of native fish there. Also in 2000, bullfrogs were documented in Findley Tank (Rosen et al. 2001). Chiricahua and lowland leopard frogs were documented from Post Canyon in 2000 (Stefferud 2004). The next major survey gartersnake effort for the Appleton-Whittel Research Ranch is documented in d'Orgeix (2011) who conducted a three-year field study (2007–2009) at Findley Tank, Southwest Spring (immediately above Findley Tank), Post Canyon, O'Donnell Creek, and at two nearby tanks (Telles and Pronghorn) using visual searches, coverboard arrays, and trapping techniques. Northern Mexican gartersnakes were found at all sites with the exception of Telles and Pronghorn tanks (d'Orgeix 2011). In 2012 (d'Orgeix et al. 2013) and 2014 (Roger Cogan, 2014b, pers. comm.), northern Mexican gartersnakes were observed exploiting a Mexican spadefoot breeding colony both during the day and night, at an ephemeral depression in the lower reach of O'Donnell Canyon. Northern Mexican gartersnake are likely extant throughout this greater area as low density populations, exploiting seasonally available habitat and foraging opportunities, immigrating and emigrating from site to site throughout this grassland.

Rio Yaqui Subbasin (Arizona)

San Bernardino National Wildlife Refuge—Numerous historical records for the northern Mexican gartersnake at the San Bernardino National Wildlife Refuge (SBNWR) is evidence that it formerly maintained a robust population there (Rosen and Schwalbe 1988, pp. 23, Appendix I; Rosen et al. 2001, pp. 6-11; Holycross *et al.* 2006, Appendix A). Major sampling events occurred on the SBNWR occurred from 1985-1989 and 1992-1999, with the last known record occurring in 2005 (USFWS 2012, p. 109). USFWS (2012, Table G2b), an annual report compiled by the SBNWR, lists the northern Mexican gartersnake as a resident of the refuge. Approximately nine days (person-search hours not reported) were spent surveying the SBNWR in 1985 and 1986 (Rosen and Schwalbe 1988, Appendix I) resulting the capture of 10 large adults. Gartersnakes in general were studied at the SBNWR from 1985–1986 and 1992–1999 in a survey effort that totaled 58,560 trap-hours, resulting in the detection of 148 northern Mexican gartersnakes, collectively between all years (Rosen *et al.* 2001, p. 6). Although vast amounts of physically suitable northern Mexican gartersnake habitat exists within the SBNWR, bullfrog populations have remained dense from the 1980s through current times (Rosen and Schwalbe 1988, Appendix I; 1995, p. 452; 1996, pp. 1–3; 1997, p. 1; 2002b, pp. 223–227; 2002c, pp. 31, 70; Rosen *et al.* 1995, p. 254; 1996b, pp. 8–9; 2001, Appendix I; USFWS 2012, p. 125). However, five species of native fish persist on the refuge and are likely important prey for northern Mexican gartersnakes. There is also the possibility that northern Mexican gartersnakes may immigrate from Mexico, immediately adjacent to the SBNWR. We consider the northern Mexican gartersnake as extant on the San Bernardino National Wildlife Refuge, likely as a very low density population.

Status of Critical Habitat in the Action Area

The action area for this project physically overlaps 3 proposed critical habitat units: 1) BANWR Unit; 2) Upper Santa Cruz River Subbasin Unit; and 3) San Pedro River Subbasin Unit (see Table 4 for land ownership and size of these units, and Figure 7 for a map of these units)[5]. See U.S. Fish and Wildlife Service 2013 for a description of each unit.

Past and Ongoing Federal Actions in the Action Area

Only one biological opinion has been issued to date on an action that may affect the gartersnake in the action area (see summary below). This formal consultation can be viewed on our website at http://www.fws.gov/arizonaes/Biological.htm.

1. Rosemont Copper Mine, Pima County, Arizona, consultation number 22410-2009-F-0389R1, issued April 22, 2016. Incidental take of an unspecified amount (a surrogate measure of take was used) of snakes was anticipated in the form of harm.

EFFECTS OF THE ACTION – NORTHERN MEXICAN GARTERSNAKE

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 that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the proposed 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.

There are no interrelated or interdependent actions that are part of the TIMR Program and that are dependent upon the TIMR Program for justification or have no independent utility apart from the Program. Ongoing and planned CBP activities in southern Arizona to secure the international border have independent utility from the TIMR Program and would continue, although in many cases less efficiently, regardless of implementation of the TIMR Program. Ongoing maintenance activities that are not considered in this BO, including operation of existing maintenance facilities and equipment used for those activities, also has independent utility from the TIMR Program and are not dependent upon it for justification. Thus, this BO only considers the direct, indirect, and cumulative impacts of TIMR Program activities in the description of the proposed action.

[5] Note that the action area polygon depicted in Figure 2a encompasses more than the 3 proposed critical habitat units, but not all areas within the polygon will be affected by the proposed project.

Effects of Project Component #1 (additional listed species and critical habitat):

Effects to Northern Mexican Gartersnakes

The northern Mexican gartersnake is expected to be affected both directly and indirectly by the proposed action, implementation of TIMR. A total of 130 miles of existing, non-waived roads within northern Mexican gartersnake proposed critical habitat are proposed to be maintained under the TIMR program within the Buenos Aires NWR, the Upper Santa Cruz River Subbasin, and San Pedro River Subbasin Critical Habitat Units. Over 75 percent of these roads to be maintained under TIMR are within the Buenos Aires NWR Unit. Maintenance and repair activities will be conducted within and immediately adjacent to the footprint of existing tactical infrastructure and BMPs will be implemented to minimize the potential for adverse effects to the species.

Mortality and Injury of Northern Mexican Gartersnakes

Direct injury or mortality could occur if northern Mexican gartersnakes are in areas with roads being maintained or repaired. Northern Mexican gartersnake are generally active from March through October in southern Arizona, although they may be active any day of the year when the daily low temperature is above freezing. The species may be active in upland areas (typically within about 600 feet of ephemeral or perennial water sources, but up to at least one mile from a given water body) or in and along drainages and streams. Northern Mexican gartersnakes are likely to be killed on roadways used by maintenance or repair vehicles where such vehicles are traveling through or near occupied habitat, particularly during the time of the year when gartersnakes are most active. Death due to being struck by vehicles on roads is an extremely common and well-known source of mortality among snakes and has been documented for this species as well, as described in the Status of the Species. Speed limits of 20 mph within gartersnake proposed critical habitat should help reduce the risk of vehicle strikes. Additionally, maintenance and repair activities will be infrequent (1 to 4 times a year) and short in duration (lasting only a few days along any road segment), thereby limiting the exposure of snakes to the risk of vehicle strikes with maintenance vehicles. However, road maintenance and repair may result in smoother road surfaces and therefore higher travel speeds (of the public or agency personnel) on maintained roads, leading to increased snake injury or mortality risk from vehicles.

Northern Mexican gartersnakes may also be killed or injured during other standard maintenance activities, such as when silt fences or trenches/holes are used in project implementation. BMPs to help reduce potential mortality associated with these activities are incorporated into the project design. For example, small mesh size on silt fencing will be used to avoid snake entanglement and minimally-spaced escape ramps will be placed within any temporary trenches necessary for project implementation to avoid prolonged entrapment and the risk of injury or death of snakes from exposure.

Habitat Loss and Degradation

Minor and temporary alteration of northern Mexican gartersnake habitat will likely occur during some maintenance and repair activities, particularly where roads intersect aquatic habitat. That said, because maintenance of roads, culverts, and low water points will occur within or immediately adjacent to existing tactical infrastructure, little direct loss of habitat is anticipated. Furthermore, to avoid direct habitat impacts, riparian vegetation within 100 feet of aquatic habitats will not be cleared (Wildlife BMP #3 and Vegetation BMP #13); vegetation control will not occur if a threatened or endangered species, primary constituent element (PCE), or other indicators of suitable habitat occur within the project area without further consultation with FWS (General BMP #3); and surface water from aquatic or marsh habitats for maintenance and repair projects will not be used if that site supports aquatic federally-listed species or if it contains nonnative invasive species or disease vectors based on the best available information provided by FWS (General BMP #8).

Potential indirect effects to the northern Mexican gartersnake include increased sedimentation of aquatic habitat and introduction of nonnative invasive plant species. Maintenance and repair of access roads, low water crossings, and culverts near currently or future occupied northern Mexican gartersnake habitat may result in erosion and sedimentation into those habitats, or improve access for the public or others who may interact adversely with gartersnakes, introduce harmful nonnative predators, start fires, or otherwise degrade habitats (NPS 2012, Watson 2005). Adverse interactions refers to the act of humans directly injuring or killing snakes out of a sense of fear or anxiety (ophidiophobia), or for no apparent purpose (see discussion in the final listing rule; USFWS 2014).

In cases where TIMR road density is highest within occupied habitat, northern Mexican gartersnakes could be indirectly affected by increased road mortality of prey species such as salamanders, frogs, and particularly toads. The monsoon marks a period of amphibian reproduction and movement across regional landscapes; most notably explosive breeding in terrestrial anurans like toads. Where roads occur near or adjacent to breeding habitat, conspicuously high numbers of metamorphosed, juvenile, and adult toads are lost to vehicle strikes (J. Servoss, personal observation). This level of mortality associated with road use does not eliminate toads as part of the prey base for northern Mexican gartersnakes but does reduce their density on the landscape, thus reducing foraging success of resident gartersnakes. Prey species may also be affected indirectly by the proposed project through the spread of disease (such as Chytrid fungus) and damage to their habitat.

Nonnative plants often thrive in disturbed areas (Tellman 2002); hence, TIMR activities could encourage the spread and establishment of these plants. Many nonnative plants, such as Lehmann's lovegrass, carry fire better and often burn hotter than the native plants (Bock and Bock 2002, Esque and Schwalbe 2002). As a result, the proposed action has the potential to increase fire frequency and intensity via spread of nonnative plants. Fire can result in

temporary watershed degradation and increased sedimentation and ash flow into northern Mexican gartersnake habitats. Sediments can fill in prey (e.g., frog) habitats (Wallace 2003) and ash flow can create toxic conditions in streams (Spencer and Hauer 1991). However, we believe that impacts to northern Mexican gartersnakes from invasive species and fire as a result of the TIMR Program are unlikely, due to the implementation of BMPs and conservation measures discussed below.

The potential for indirect effects to habitat is much reduced by implementing the numerous BMPs incorporated into the proposed action. To reduce direct mortality of amphibian prey items by maintenance vehicles, speed limits of 20 mph within gartersnake proposed critical habitat and prohibition on work during heavy rains will be implemented (Wildlife BMP #4). To prevent the spread of amphibian diseases (that can affect prey of northern Mexican gartersnakes) among drainages via water or mud on maintenance vehicles and equipment, all maintenance work within Chiricahua leopard frog critical habitat or any potentially occupied habitat, shall conform to amphibian disease prevention protocols (Chiricahua Leopard Frog BMP #4); CBP will not use surface water from aquatic or marsh habitats for maintenance and repair projects, if that site supports aquatic federally-listed species or if it contains nonnative invasive species or disease vectors based on the best available information provided by FWS (General BMP #8); and coordination will occur with the CBP environmental subject matter expert (SME) to determine if maintenance activities occur in a highly sensitive area or an area that poses an unacceptable risk of transmitting diseases and invasive species and follow the CBP cleaning protocol for all equipment used, as needed (General BMP #6).

Other BMPs that minimize potential effects to northern Mexican gartersnake and prey habitat include avoiding the spread of nonnative invasive species (Vegetation BMPs #2 and 10 and General BMP #6), and conducting periodic inspection and maintenance to minimize erosion and other adverse conditions (Vegetation BMP #12). Clearing of riparian vegetation will not occur within 100 feet of aquatic habitats to provide a buffer area to protect the habitat from sedimentation (Wildlife BMP #3). To minimize impacts from habitat degradation due to sedimentation and effects on water quality and quantity, a site-specific SWPPP and a spill protection plan will be prepared and regulatory approval will be sought as required by regulations, for maintenance and repair activities that could result in sedimentation and that occur within 0.3 miles of suitable habitat (Chiricahua Leopard Frog BMP #3). Furthermore, no in-water work will occur within streams or other waterbodies with known occurrences of listed fish or designated critical habitat without further consultation with the FWS (Northern Mexican gartersnake BMP #1and Fishes BMP #1).

General BMPs to protect water resources, as listed in the description of the proposed action, will also be implemented (General BMPs #7-9, Water Resources BMPs #1-25, Geology and Soil Resources BMPs #1-4, Chiricahua Leopard Frog BMPs #5 and 7). By implementing BMPs to avoid sedimentation, the potential for adverse indirect effects to northern Mexican gartersnake habitat should be minimized.

TIMR activities should help reduce some impacts to northern Mexican gartersnake habitat. For example, maintaining roads should reduce off-road vehicle incursions (or drive arounds) (and subsequent habitat damage) caused by poor road conditions and maintaining water crossings and culverts should help retain more natural water flow conditions.

Effects to Northern Mexican Gartersnake Proposed Critical Habitat

In our analysis of the effects of the action on critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. 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.

Based upon the project description for the TIMR Program, implementation of the proposed action may result in adverse effects to critical habitat. Below, we describe the primary constituent elements (PCEs) related to northern Mexican gartersnake critical habitat and the potential effects from implementation of the proposed action. PCEs are elements of physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

A total of 130 miles of non-waived roads within northern Mexican gartersnake proposed critical habitat are proposed to be maintained under the TIMR program specifically occur within the Buenos Aires NWR, the Upper Santa Cruz River Subbasin, and San Pedro River Subbasin Critical Habitat Units. Over 75 percent of these roads to be maintained under TIMR are within the Buenos Aires NWR Unit. No area of impact to proposed critical habitat was provided by CBP; however, assuming roads to be maintained average 12 feet in width, about 189 acres [12 feet x 130 miles] within northern Mexican gartersnake proposed critical habitat will be directly affected by the TIMR project.

1. Aquatic or riparian habitat that includes:
    a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess 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; or

Effect: Activities implemented under TIMR are expected to retain this PCE for the northern Mexican gartersnake. BMPs require that maintenance be designed and implemented so that the hydrology of streams, ponds, and other habitat is not altered. CBP will not use surface water

from aquatic or marsh habitats for maintenance and repair projects, if that site supports aquatic federally-listed species or if it contains nonnative invasive species or disease vectors based on the best available information provided by FWS. Furthermore, no in-water work will occur within streams or other waterbodies with known occurrences of northern Mexican gartersnakes or critical habitat without further consultation with the FWS.

b. Lentic wetlands such as livestock tanks, springs, and Cienegas; and

Effect: Same as above.

c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and

Effect: Although some activities implemented under TIMR may result in small reductions in organic debris as a result of road maintenance, these impacts are not likely to significantly modify this PCE because they are expected to occur infrequently and affect a negligible area. BMPs should help minimize impacts to shoreline habitat. For example, clearing of riparian vegetation will not occur within 100 feet of aquatic habitats to provide a buffer area to protect the habitat from sedimentation. Vegetation control outside the immediate footprint of the tactical infrastructure within suitable habitat and within the range or designated critical habitat of threatened and endangered species will be limited. If a threatened or endangered species, PCE, or other indicators of suitable habitat occur within the project area, then further consultation with FWS will be required.

d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the gartersnake or the maintenance of prey populations.

Effect: Maintenance activities conducted within and near proposed northern Mexican gartersnake critical habitat could temporarily increase turbidity of surface water within and downstream of the maintenance area. However, impacts on water quality should be localized and temporary, and BMPs will be implemented to reduce sedimentation and runoff from roads and other infrastructure. With the exception of these potential effects to water quality, activities implemented under the proposed action are expected to retain this PCE for the northern Mexican gartersnake as explained under 1.a. and 1.b.

2. Adequate terrestrial space (600 feet 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.

Effect: Activities implemented under TIMR are not expected to significantly modify this PCE. Vegetation control actions may result in reduced vegetative habitat immediately adjacent to the footprint of existing tactical infrastructure. However, vegetation control outside the immediate footprint of the tactical infrastructure within suitable habitat and within the range or designated critical habitat of threatened and endangered species will be limited. If a threatened or endangered species, PCE, or other indicators of suitable habitat occur within the project area, then further consultation with FWS will be required. Additionally, riparian vegetation within 100 feet of critical habitat will not be cleared.

3. A prey base consisting of viable populations of native amphibian and native fish species.

Effect: Effects to northern Mexican gartersnake prey base are expected primarily through direct mortality of prey from maintenance vehicles and indirectly through increased vehicle speed and use of maintained and/or improved roads via the public and agency personnel. There is potential for prey to be killed on roadways used by maintenance or repair vehicles where such vehicles are traveling through or near habitats that support native amphibians. BMPs, however, will help reduce vehicle strikes with prey items, including speed limits of 20 mph within gartersnake proposed critical habitat and prohibition on work during heavy rains. Additionally, prey may also be affected indirectly by the proposed project such as through spread of disease and alterations in habitat. That said, a number of BMPs designed to protect listed fish and amphibians will help also help reduce mortality of northern Mexican gartersnake prey. For example, no in-water work will occur within streams or other waterbodies with known occurrences of listed fish or designated critical habitat without further consultation with the FWS and measures will be taken to prevent the spread of amphibian diseases among drainages. While some prey mortality is expected as a result of TIMR activities, the level of mortality is not expected to significantly modify this PCE.

4. An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis, P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

Effect: There is very little potential for the proposed action to introduce or transfer nonnative fish, bullfrogs, and/or crayfish into proposed critical habitat, and no in-water work will occur within streams or other waterbodies with known occurrences of northern Mexican gartersnakes or critical habitat without further consultation with the FWS. CBP will not use surface water from aquatic or marsh habitats for maintenance and repair projects, if that site supports aquatic federally-listed species or if it contains nonnative invasive species or disease vectors based on the best available information provided by FWS. Additionally, conservation measures CBP is implementing to ensure that the proposed action does not spread amphibian diseases among

drainages via water or mud on maintenance vehicles and equipment will also prevent the spread of nonnative predators.

Summary

TIMR activities may adversely affect northern Mexican gartersnake proposed critical habitat in a number of ways. For example, water quality may be affected maintenance activities conducted within and near proposed northern Mexican gartersnake critical habitat could alter the quality of surface water within and downstream of the maintenance area. Impacts on water quality should be localized and temporary, and BMPs will be implemented to reduce sedimentation and runoff from roads and other infrastructure and minimize other potential indirect effects on this species. TIMR Program activities within critical habitat will occur within and immediately adjacent to the footprint of existing tactical infrastructure, and BMPs designed to avoid impacts to this species and its habitat will be implemented. For example, no in-water work will occur within streams or other waterbodies with known occurrences or designated critical habitat without further consultation with the FWS (Northern Mexican Gartersnake BMP 1). Riparian vegetation within 100 feet of aquatic habitats will not be cleared (Wildlife BMP #3 and Vegetation BMP #13), and vegetation control will not occur if a threatened or endangered species, primary constituent element (PCE), or other indicators of suitable habitat occur within the project area without further consultation with FWS (General BMP #3). There is a risk that maintenance vehicles may kill northern Mexican gartersnake prey; however, BMPs are also in place to reduce this risk. Therefore, while northern Mexican gartersnake proposed critical habitat may be adversely affected, BMPs are in place that will considerably reduce impacts to PCEs and ensure PCEs are retained without significant modification. Furthermore, TIMR activities should help reduce some impacts to northern Mexican gartersnake proposed critical habitat. For example, maintaining roads should reduce off-road vehicle incursions (or drive arounds) (and subsequent habitat damage) caused by poor road conditions and maintaining water crossings and culverts should help retain more natural water flow conditions.

Effects of Project Component #2 (proposed additions within OPCNM):

The proposed additions within OPCNM will have no effect on northern Mexican gartersnakes because the species does not occur within or near OPCNM.

Effects of Project Component #3 (expansion of TIMR to TON):

The proposed expansion of TIMR to the TON will have no effect on northern Mexican gartersnakes because the species does not occur within the TON as far as we currently know.

CUMULATIVE EFFECTS – NORTHERN MEXICAN GARTERSNAKE

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. Federal agencies manage much of the northern Mexican gartersnake proposed critical habitat in the action area, particularly the Coronado National Forest and Buenos Aires NWR. Thus, most of the actions that are reasonably expected to occur in the project area that may adversely affect the northern Mexican gartersnake would be subject to future section 7 consultations. However, some occupied habitat in the action area occurs on private or state lands.

Unregulated activities on non-Federal lands, such as trespass livestock, inappropriate use of off-highway vehicles, and illegal introduction of nonnative aquatic species are cumulative effects and can adversely affect the species through a variety of avenues. Illegal introductions of nonnative fishes and other aquatic invasive species are routinely made by the public.

Cumulative effects to native aquatic animals include ongoing activities in the watersheds in which the species occurs such as livestock grazing and associated activities outside of Federal allotments, irrigated agriculture, groundwater pumping, stream diversion, bank stabilization, channelization, and recreation without a Federal nexus. Some of these activities, such as irrigated agriculture, are declining and are not expected to contribute substantially to cumulative long-term adverse effects to native aquatic animals. Other activities, such as recreation, are increasing. Increasing recreational, residential, or commercial use of the non-Federal lands adjacent to occupied habitat on Federal lands could result in increased cumulative adverse effects such as increased water use, increased pollution, and modification of streamside habitat.

CBV activity may also impact northern Mexican gartersnakes and their habitat. CBV activity in the border region has resulted in route proliferation, off-highway vehicle activity, increased human presence in backcountry areas, discarded trash, abandoned vehicles, cutting of firewood, illegal campfires, and increased chance of wildfire; all of which can degrade northern Mexican gartersnake habitat. Although it has not been documented, CBVs could also intentionally kill snakes.

CONCLUSION – NORTHERN MEXICAN GARTERSNAKE

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any BMPs and conservation measures that are incorporated into the project design. After reviewing the current status of the northern Mexican gartersnake and its proposed critical habitat, the environmental baseline for the action area, the effects of the proposed TIMR Project, 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 nor destroy or adversely modify its proposed critical habitat. Our conclusion is based on our discussion in this document found in the "Effects of the Action" section above, and the following:

1. The affected northern Mexican gartersnake populations in southern Arizona (14 populations) represent a relatively small portion of the range of the species' rangewide distribution in the United States and Mexico (this subspecies has a range that extends significantly into Mexico), thus the project is not expected to significantly affect the distribution, numbers, and reproduction of northern Mexican gartersnakes. We estimate that approximately 10-15 percent of occupied habitat for the northern Mexican gartersnake occurs in the United States (Arizona and New Mexico) (with an even smaller percent in the southern Arizona action area) with the remainder occurring in Mexico. Although the action area encompasses all (14) known extant populations in southern Arizona, importantly, the effects to each of these populations will be minimal. While individuals are anticipated to be impacted by the proposed project, the impacts are not likely to result in population level effects.
2. Only a small portion of proposed critical habitat will be directly affected by the project. About 189 acres within proposed critical habitat in three units may be affected by TIMR activities; this represents about 0.04 percent of all proposed critical habitat (a total of 421,423 acres is proposed as critical habitat for the northern Mexican gartersnake). According to CBP, about 75 percent of the roads with northern Mexican gartersnake proposed critical habitat to be maintained under TIMR (about 97 miles or about 142 acres) occur in the Buenos Aires NWR Unit (this unit totals 117,313 acres in size). Therefore, these roads represent a very small percent (about 0.12 percent) of the overall Buenos Aires NWR unit, the unit expected to be most impacted by TIMR. According to our GIS calculations, about 0.5 mile of roads (or less than one acre assuming 12-feet wide roads) will be maintained in the San Pedro River Subbasin unit (this unit totals 6,973 acres). Again, this road represents a very small percent (about 0.01 percent) of the overall San Pedro River Subbasin. The remaining estimated 46 acres of roads to be maintained occur in the Upper Santa Cruz River Subbasin unit (this unit totals 77,387 acres) and represent a small portion (about 0.06 percent) of the overall unit.
3. TIMR Program activities will primarily occur within the existing footprint of the tactical infrastructure and, as a result, minimal habitat degradation will occur.
4. BMPs will help avoid and minimize many potential adverse effects to the northern Mexican gartersnake and its proposed critical habitat.
5. CBP will provide project implementation information in an annual report to the FWS indicating that the activities completed under the proposed action were implemented as proposed.

INCIDENTAL TAKE STATEMENT – Northern Mexican Gartersnake

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 in the regulations as ``an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). "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 the CBP so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. CBP has a continuing duty to regulate the activity covered by this incidental take statement. If CBP (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant, contractor, or permittee 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, CBP 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 - Northern Mexican Gartersnake

The FWS anticipates northern Mexican gartersnakes will be taken as a result of this proposed action. The incidental take is expected to be in the form of 1) direct injury or mortality from vehicle strikes from maintenance vehicles and subsequent road use, and 2) harm due to adverse effects to prey species. The FWS anticipates incidental take of the northern Mexican gartersnakes will be difficult to detect because these snakes are difficult to find, particularly if they are dead or injured, and the northern Mexican gartersnake is difficult to see due to its size, cryptic coloring, and complex habitat. However, because we anticipate effects occurring mostly on roads, the extent of take of this species can be extrapolated using the number of dead-on-road (DOR) northern Mexican gartersnakes detected by CBP. Because these snakes are so difficult to detect, especially young age classes on uneven dirt roads, we anticipate that for every DOR snake detected, several more have been injured or killed. We consider that take will have been exceeded if more than <u>three</u> northern Mexican gartersnakes <u>per decade</u> are reported via photo documentation to the FWS.

Effect of the Take – Northern Mexican Gartersnake

In this biological opinion, we determine that these levels of anticipated take are not likely to result in jeopardy to the species nor result in destruction or adverse modification of its proposed critical habitat for the reasons stated in the Conclusions section.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS – NORTHERN MEXICAN GARTERSNAKE

The following reasonable and prudent measure is necessary and appropriate to minimize take of the northern Mexican gartersnake:

1. CBP shall document and report all potential northern Mexican gartersnake detections (live or dead) to the FWS.

TERMS AND CONDITIONS - NORTHERN MEXICAN GARTERSNAKE

In order to be exempt from the prohibitions of section 9 of the Act, CBP and any of its contractors or agents shall comply with the following terms and conditions, which implement the reasonable and prudent measure described above. This term and condition is non-discretionary.

The following terms and conditions implement reasonable and prudent measure #1:

1.1 CBP shall train agents and contractors on general snake identification of northern Mexican gartersnakes. The training will include information on how to identify snakes in the family Colubridae and how to properly photo document them.

1.2 During the course of project implementation, CBP shall photo-document, from close range, any live or dead colubrid snake with a linear striped pattern using the photo documentation protocol provided in Term and Condition 1.1. CBP shall submit the photo documentation, with corresponding approximate locality data, and other relevant information to AESO in the required annual TIMR report.

Review requirement: The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. CBP must immediately provide an explanation of the causes of the taking and review with the AESO the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS – NORTHERN MEXICAN GARTERSNAKE

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.

We recommend that the CBP support recovery of the northern Mexican gartersnake through implementing recovery actions that are relatively easily implemented through the normal course of field duties, seeking funding to support recovery implementation, and ensuring one or more CBP representatives attend the annual meeting of the Gartersnake Conservation Working Group.

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.

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, New Mexico 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.

REINITIATION NOTICE

This concludes formal consultation and conference on the actions outlined in your request. 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.

With regard to proposed critical habitat for the northern Mexican gartersnake, you may ask us to confirm the conference opinion as a biological opinion issued through formal consultation if the proposed critical habitat is designated. The request must be in writing. If we review the proposed action and find there have been no significant changes in the action as planned or in the information used during the conference, we will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary.

Certain project activities may also affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (Eagle Act). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the FWS. The Eagle Act prohibits anyone, without a FWS permit, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you think migratory birds and/or eagles will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project.

For more information regarding the MBTA and Eagle Act, please visit the following websites. More information on the MBTA and available permits can be retrieved from http://www.fws.gov/migratorybirds and http://www.fws.gov/migratorybirds/mbpermits.html. For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, 2007 (http://www.fws.gov/southwest/es/arizona/BaldEagle.htm), as well at the Conservation Assessment and Strategy for the Bald Eagle in Arizona (SWBEMC.org).

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 Tohono O'odham Nation of its completion. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

We appreciate CBP's efforts to identify and minimize effects to listed species from this project. Please refer to the consultation number, 02EAAZOO-2012-F-0170-R001 in future correspondence concerning this project. Should you require further assistance or if you have any questions, please contact Erin Fernandez (520) 670-6150 (x238) or Jean Calhoun (x223) of our Tucson Suboffice.

Sincerely,

for Jean A Calhoun

Steven L. Spangle
Field Supervisor

cc (hard copy):
Steve Spangle, Field Supervisor, Fish and Wildlife Service, Phoenix, AZ (2 copies)
Jean Calhoun, Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

cc (electronic copy):
Sid Slone, Refuge Manager, Cabeza Prieta National Wildlife Refuge, Ajo, AZ
Sally Flatland, Refuge Manager, Buenos Aires National Wildlife Refuge, Sasabe, AZ
Bill Radke, Refuge Manager, San Bernardino and Leslie Canyon National Wildlife Refuges Douglas, AZ
Brent Range, Superintendent, Organ Pipe Cactus National Monument, Ajo, AZ
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TABLES AND FIGURES

Table 1. Threatened and endangered bird species suitable habitat and nesting season for the Arizona TIMR project.

Common Name	Suitable Habitat	Nesting Season
Masked bobwhite quail	Savannah grassland within Buenos Aires NWR	Jul 1-Nov 30
Mexican spotted owl	Closed-canopy forests [riparian, mixed conifer, pine- oak, and pinyon juniper woodland] and steep, narrow, entrenched, rocky canyons and cliffs within designated critical habitat	Mar 1-Jun 30
Southwestern willow flycatcher	Dense riparian habitat along streams, rivers, lakesides, and other wetland	Mar 15-Sep 15
Yellow-billed cuckoo	Riparian woodlands, Madrean evergreen woodlands, mesquite woodlands, or semi-desert grassland interspersed with Madrean evergreen woodland. Wide to narrow riparian reaches in drainages from low to high gradient. Permanent, intermittent, and ephemeral drainages. Hydro- to xeroriparian habitat. Drainages with continuous or patchy habitat, narrow stringers of trees or scattered trees. Habitat is generally willow-, mesquite-, or oak-dominated, but other	May 15-Sep 30

	species may be mixed in. Trees in ephemeral drainages may include narrow to wide reaches of one or more of the following species: willow, cottonwood, mesquite, oak, sycamore, hackberry, alder, ash, walnut, acacia, elderberry, soapberry, tamarisk, juniper, and desert willow.	
Yuma clapper rail	Freshwater marshes generally dominated by cattail [*Typha* spp.] and bulrush [*Scirpus* ssp.] with a mix of riparian trees and shrubs	Mar 15-Jul 15

Table 2. Wild and captive Sonoran pronghorn estimates after adoption of standard field surveys and sightability model for wild population estimations. Numbers in parentheses are 95% confidence intervals.

Year	Sonora, Mexico (Pinacate)	Sonora, Mexico (Quitovac)	Arizona, U.S. (Cabeza wild)	Arizona, U.S. (Nonessential Experimental Population wild)	Arizona, U.S. (Captive)[a]
1992	-	-	179 (147-234)[b]		-
1994	-	-	282 (205-489)[b]		-
1996	-	-	130 (114-154)[b]		-
1998	-	-	142 (125-167)[b]		-
2000	34 (27-48)[c]	311 (261-397)[c]	99 (69-392)[b]		-
2001	-	-	-		-
2002	25 (21-33)[c]	260 (216-335) [c]	21 (18-33)[b]		-
2003	-	-	-		-
2004	59 (32-171) [c]	624 (454-2079)[c]	58 (40-175)[b]		7[d]
2005	-	-	-		15[d]
2006	67 (54-195)[c]	567 (445-1530)[c]	68 (52-117)[b]		25[d]
2007	50 (36-162)[c]	354 (327-852)[c]	-		37[d]
2008	-	-	68[b]		51[d]
2009	101 (57-321)[c]	381 (268-1158)[c]	-		73[d]
2010	-	-	76 (58-210)[b]		70[e]
2011	52 (32-183)[f]	189 (168-435)[f]	-		75[g]
2012	-	-	159 (111-432)[h]		98[i]
2013	No survey[f]	434 (376-1105)[f]	-	9[j]	117[k]
2014	122 (79-464) [f]		202 (171-334)[h]	30[j]	119[l]
2015	117 (98-224)[f]	862 (759-2129)[f]			130[m]
2016				70 at Kofa[n] 26 at Sauceda	

[a] including Cabeza Prieta NWR pen 2004-present; and Kofa NWR pen 2011- present; [b]Bright and Hervert (2011); [c]Bright et al. (2011); [d] U.S. Fish and Wildlife Service (2010b);[e] Sonoran Pronghorn Recovery Team (2010); [f] J. Bright, AGFD, personal communication, 2016; [g] Sonoran Pronghorn Recovery Team (2011);[h]J. Bright, AGFD,

personal communication, 2016; [i]Sonoran Pronghorn Recovery Team (2012); [j] Sonoran Pronghorn Recovery Team (2015a); [k] Sonoran Pronghorn Recovery Team (2013); [l] Sonoran Pronghorn Recovery Team (2014); [m]Sonoran Pronghorn Recovery Team (2015b). [n] Jim Atkinson, AGFD personal communication, 2016.

Table 3. Current population status of the northern Mexican gartersnake in the United States.

Current population status of the northern Mexican gartersnake in the United States						
Row	**Location**	**Last Record**	**Suitable Physical Habitat Present**	**Native Prey Species Present**	**Harmful Nonnative Species Present**	**Predicted Population Status**
1	Gila River (NM, AZ)	2013	Yes	Yes	Yes	Likely low density
2	Spring Canyon (NM)	1937	Yes	Possible	Likely	Likely extirpated
3	Mule Creek (NM)	1983	Yes	Yes	Yes	Likely low density
4	Mimbres River (NM)	Likely early 1900s	Yes	Yes	Yes	Likely extirpated
5	Lower Colorado River (AZ)	2015	Yes	Yes	Yes	Likely low density
6	Bill Williams River (AZ)	2012	Yes	Yes	Yes	Likely viable
7	Big Sandy River (AZ)	2015	Yes	Yes	Likely	Likely low density
8	Santa Maria River (AZ)	2015	Yes	Yes	Likely	Likely low density
9	Agua Fria River (AZ)	1986	Yes	Yes	Yes	Likely low density
10	Little Ash Creek (AZ)	1992	Yes	Yes	Yes	Likely low density
11	Lower Salt River (AZ)	1964	Yes	Yes	Yes	Likely extirpated
12	Black River (AZ)	1982	Yes	Yes	Yes	Likely low density
13	Big Bonito Creek (AZ)	1986	Yes	Yes	Yes	Likely low density
14	Tonto Creek (AZ)	2005	Yes	Yes	Yes	Likely viable
15	Upper /Middle Verde River (AZ)	2012	Yes	Yes	Yes	Likely viable
16	Oak Creek (AZ) (Page Springs and Bubbling Ponds State Fish Hatcheries)	2015	Yes	Yes	Yes	Likely viable
17	Spring Creek (AZ)	2014	Yes	Yes	Yes	Likely low density

18	Sycamore Creek (Yavapai/Coconino Co., AZ)	1954	Yes	Possible	Yes	Likely extirpated
19	Upper Santa Cruz River/San Rafael Valley (AZ)	2015	Yes	Yes	Yes	Likely viable
20	Redrock Canyon/Cott Drainage (AZ)	2008	Yes	Yes	Yes	Likely low density
21	Sonoita Creek (AZ)	2013	Yes	Possible	Yes	Likely low density
22	Scotia Canyon (AZ)	2009	Yes	Yes	No	Likely low density
23	Parker Canyon (AZ)	1986	Yes	Possible	Yes	Likely low density
24	Las Cienegas National Conservation Area and Cienega Creek Natural Preserve (AZ)	2015	Yes	Yes	No	Likely low density
25	Lower Santa Cruz River (AZ)	1956	Yes	Yes	Yes	Likely extirpated
26	Buenos Aires National Wildlife Refuge (AZ)	2000	Yes	Yes	Yes	Likely low density
27	Brown Canyon (AZ)	2014	Yes	Yes	No	Likely low density
28	Fort Huachuca (AZ)	1994	Yes	Yes	Yes	Likely low density
29	Bear Creek (AZ)	1987	Yes	Yes	Yes	Likely low density
30	San Pedro River (AZ)	1996	Yes	Yes	Yes	Likely low density
31	Babocomari River and Cienega (AZ)	1986	Yes	Possible	Yes	Likely low density
32	Canelo Hills-Sonoita Grasslands Area (AZ)	2014	Yes	Yes	Yes	Likely low density
33	San Bernardino National Wildlife Refuge (AZ)	2005	Yes	Yes	Yes	Likely low density

Notes: "Possible" means there were no conclusive data found. "Likely extirpated" means the last record for an area pre-dated 1980, and existing threats suggest the species is likely extirpated. "Likely low density" means there is a post-1980 record for the species, it is not reliably found with minimal to moderate survey effort, and threats exist which suggest the population may be low density or could be extirpated, but there is insufficient evidence to support extirpation. "Likely viable" means that the species is reliably found with minimal to moderate survey effort, and the population is generally considered to be somewhat resilient.
Last updated: 2-2016

Table 4. Land ownership for proposed critical habitat units for the northern Mexican gartersnake in the U.S. [Area estimates reflect all land within critical habitat unit boundaries. County-owned lands are considered as private lands.]

Unit	Subunit	Land Ownership by Type				Size of Unit
		Federal	State	Tribal	Private	
Upper Gila River		10,845 ac (4,389 ha)	467 ac (189 ha)		9,822 ac (3,975 ha)	21,135 ac (8,553 ha)
Unit Total		10,845 ac (4,389 ha)	467 ac (189 ha)		9,822 ac (3,975 ha)	21,135 ac (8,553 ha)
Mule Creek		1,327 ac (537 ha)			1,253 ac (507 ha)	2,579 ac (1044 ha)
Unit Total		1,327 ac (537 ha)			1,253 ac (507 ha)	2,579 ac (1044 ha)
Bill Williams River		3,820 ac (1,546 ha)	516 ac (209 ha)		1,076 ac (435 ha)	5,412 ac (2,190 ha)
Unit Total		3,820 ac (1,546 ha)	516 ac (209 ha)		1,076 ac (435 ha)	5,412 ac (2,190 ha)
Agua Fria River Subbasin	Agua Fria River Mainstem	3,313 ac (1,341 ha)	918 ac (372 ha)		2,758 ac (1,116 ha)	6,989 ac (2,828 ha)
	Little Ash Creek	877 ac (355 ha)			80 ac (32 ha)	957 ac (387 ha)
Unit Total		4,010 ac (1,696 ha)	918 ac (372 ha)		2,838 ac (1,148 ha)	7,946 ac (3,215 ha)
Upper Salt River Subbasin	Black River	2,632 ac (1,065 ha)		13,760 ac (5,569 ha)		16,392 ac (6,634 ha)
	Big Bonito Creek			5,826 ac (2358 ha)		5,826 ac (2358 ha)
Unit Total		2,632 ac		19,586		22,218 ac

		(1,065 ha)		ac (7,927 ha)		(8,991 ha)
Tonto Creek		7,766 ac (3,143 ha)			1,170 ac (474 ha)	8,936 ac (3,616 ha)
Unit Total		7,766 ac (3,143 ha)			1,170 ac (474 ha)	8,936 ac (3,616 ha)
Verde River Subbasin	Upper Verde River	13,903 ac (5,626 ha)	1,209 ac (489 ha)	192 ac (78 ha)	5,223 ac (2,114 ha)	20,526 ac (8,307 ha)
	Oak Creek	1,873 ac (758 ha)	274 ac (111 ha)		3,386 ac (1,370 ha)	5,533 ac (2,239 ha)
	Spring Creek	2,572 ac (1,041 ha)	188 ac (76 ha)		371 ac (150 ha)	3,131 ac (1,267 ha)
Unit Total		18,348 ac (7,425 ha)	1,671 ac (676 ha)	192 ac (78 ha)	8,980 ac (3,634 ha)	29,191 ac (11,813 ha)
Upper Santa Cruz River Subbasin		77,387 ac (31,318 ha)	3,969 ac (1,606 ha)		32,538 ac (13,168 ha)	113,895 ac (46,092 ha)
Unit Total		77,387 ac (31,318 ha)	3,969 ac (1,606 ha)		32,538 ac (13,168 ha)	113,895 ac (46,092 ha)
Redrock Canyon		1,423 ac (576 ha)			549 ac (222 ha)	1,972 ac (798 ha)
Unit Total		1,423 ac (576 ha)			549 ac (222 ha)	1,972 ac (798 ha)
Buenos Aires National Wildlife Refuge		117,313 ac (47,475 ha)				117,313 ac (47,475 ha)
Unit Total		117,313 ac (47,475 ha)				117,313 ac (47,475 ha)
Cienega Creek	Cienega Creek	24 ac	1,078 ac		11 ac	1,113 ac

Subbasin		(10 ha)	(436 ha)		(4 ha)	(450 ha)
	Las Cienegas National Conservation Area	39,913 ac (16,152 ha)	5,105 ac (2,066 ha)		1 ac (<1 ha)	45,020 ac (18,219 ha)
	Cienega Creek Natural Preserve				4,260 ac (1,724 ha)	4,260 ac (1,724 ha)
Unit Total		39,937 ac (16,162 ha)	6,183 ac (2,502 ha)		4,272 ac (1,728 ha)	50,393 ac (20,393 ha)
San Pedro River Subbasin	San Pedro River	6,973 ac (2,822 ha)	1,163 ac (470 ha)	76 ac (31 ha)	14,456 ac (5,850 ha)	22,669 ac (9,174 ha)
	Bear Canyon Creek	639 ac (259 ha)			383 ac (155 ha)	1,022 ac (414 ha)
Unit Total		7,612 ac (3,081 ha)	1,163 ac (470 ha)	76 ac (31 ha)	14,839 ac (6,005 ha)	23,690 ac (9,587 ha)
Babocomari River Subbasin	Babocomari River/Cienega	625 ac (253 ha)	56 ac (23 ha)		2,773 ac (1,122 ha)	3,454 ac (1,398 ha)
	Post Canyon	431 ac (175 ha)			363 ac (147 ha)	795 ac (322 ha)
	O'Donnell Canyon	124 ac (50 ha)			274 ac (111 ha)	398 ac (161 ha)
	Turkey Creek	888 ac (359 ha)	2 ac (1 ha)		788 ac (319 ha)	1,678 ac (679 ha)
	Appleton-Whittell Research Ranch	5,283 ac (2,138 ha)			2,515 ac (1,018 ha)	7,798 ac (3,156 ha)
	Canelo Hills Cienega Preserve				213 ac (86 ha)	213 ac (86 ha)
Unit Total		7,351 ac	58 ac		6,926 ac	14,334 ac

		(2,975 ha)	(24 ha)		(2,803 ha)	(5,801 ha)
San Bernardino National Wildlife Refuge		2,387 ac (966 ha)				2,387 ac (966 ha)
Total		302,338 ac (122,352 ha)	14,966 ac (6,057 ha)	19,855 ac (8,035 ha)	84,263 ac (34,100 ha)	421,423 ac (170,544 ha)

Note: Numbers may not sum due to rounding.

Figure 1. TIMR Project Area, Arizona (map provided by CBP).

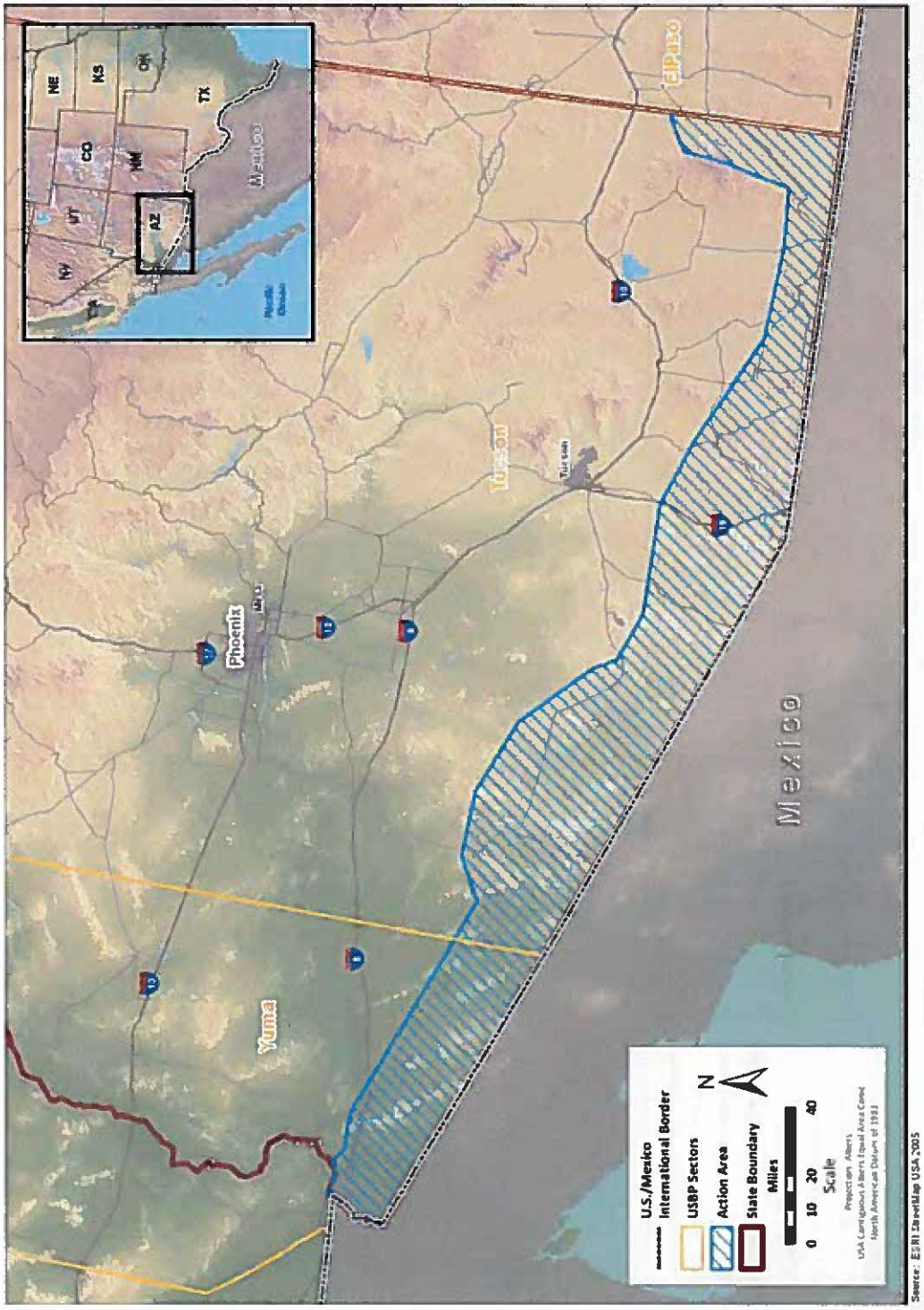


Figure 2a. Action area for TIMR in Central and Eastern Arizona (map provided by CBP).

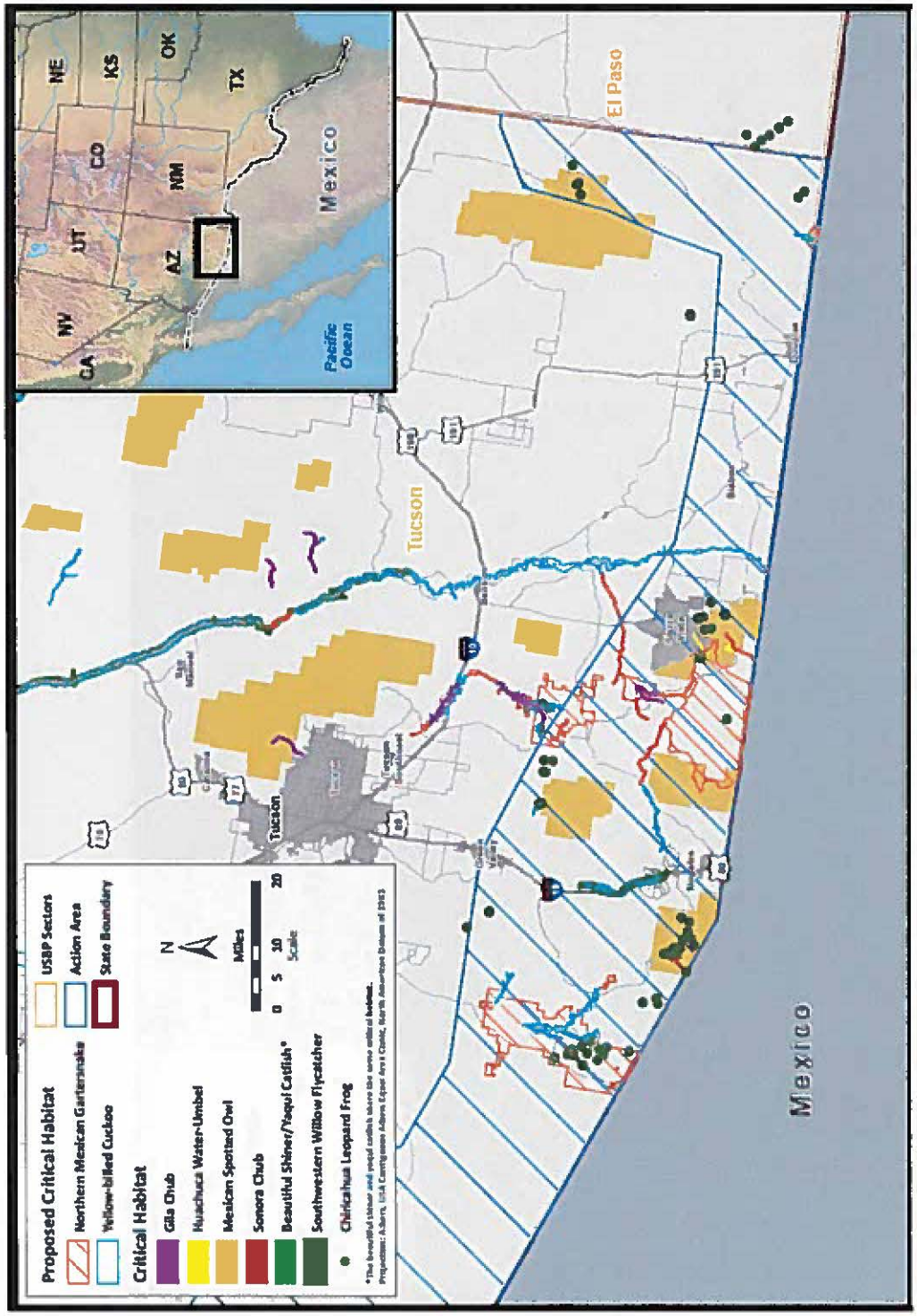


Figure 2b. Action area for TIMR in Western Arizona (map provided by CBP). Note, this map does not include proposed critical habitat for the acuña cactus.

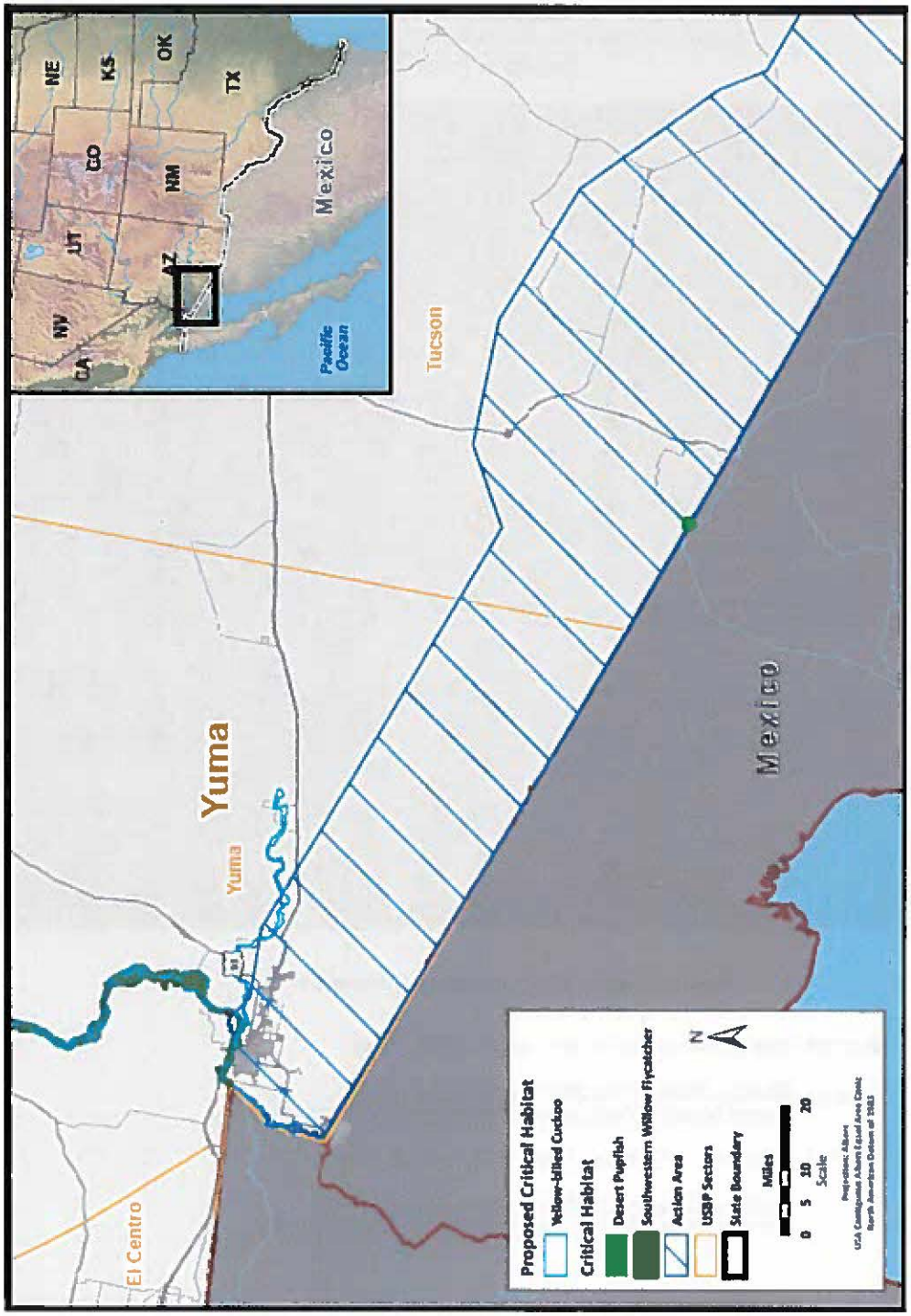


Figure 3. Project Area for TIMR Project Additions on Organ Pipe Cactus National Monument, Arizona (map provided by CBP).

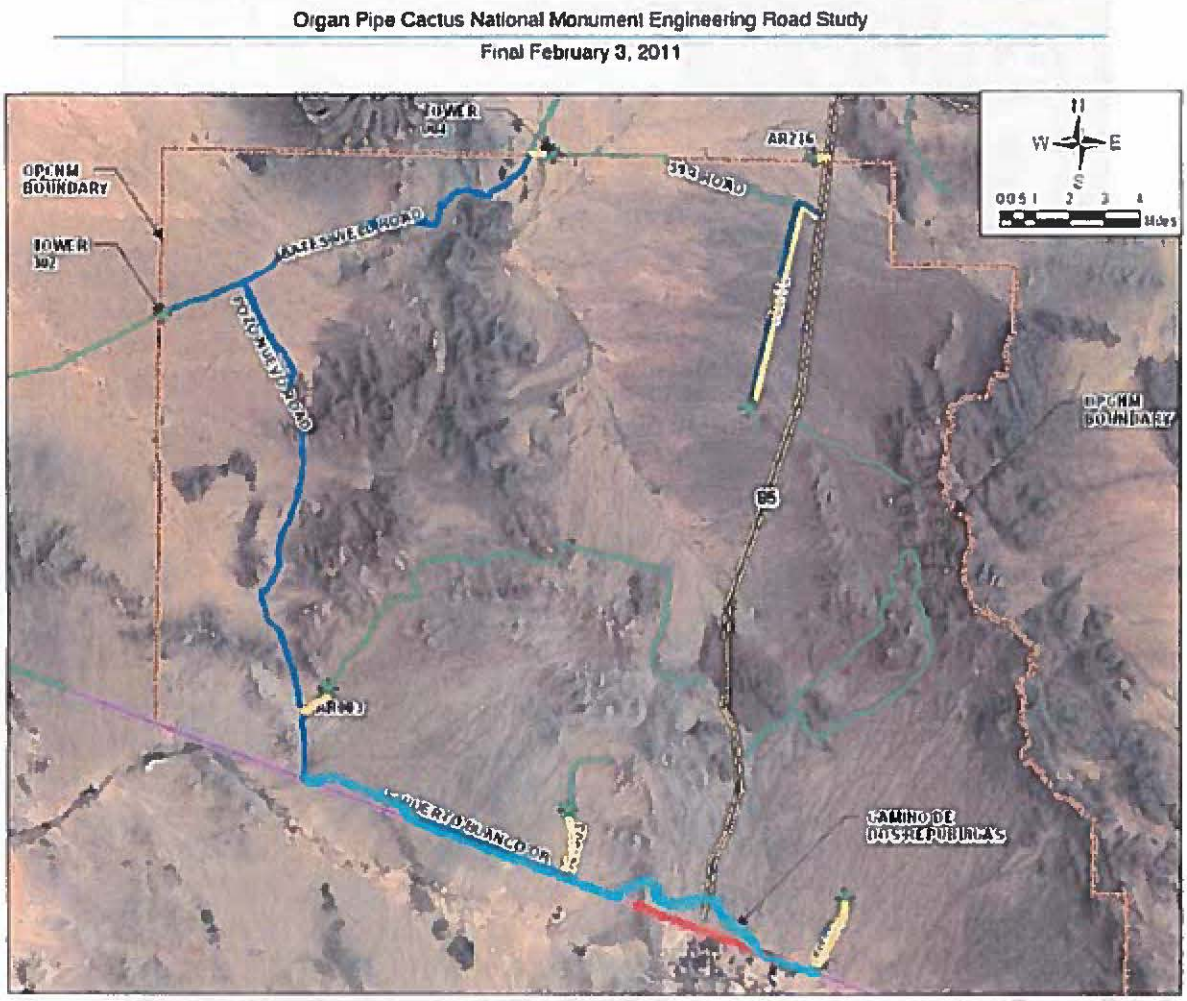


Figure 2- Organ Pipe National Monument Site Map

Roads addressed in 2011 engineering study

Roads addressed in 2011 engineering study where improvements are covered under 2008 waiver

Roads not addressed in the engineering road study

Roads addressed in 2011 engineering study where improvements are covered under 2009 Ajo 1 EA

Figure 4. TIMR on the Tohono O'odham Nation, Arizona (map from CBP's February 3, 2015 letter).

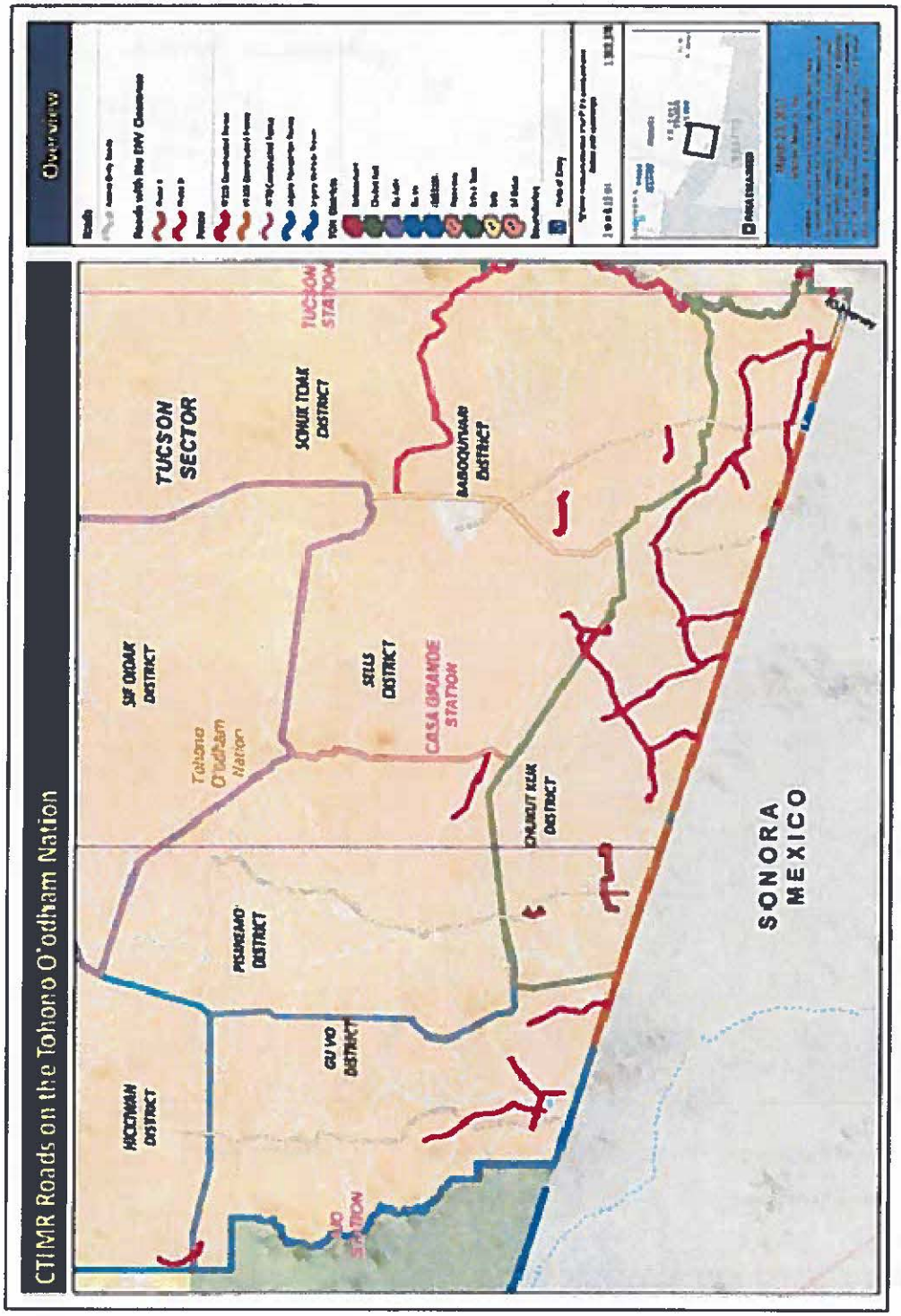
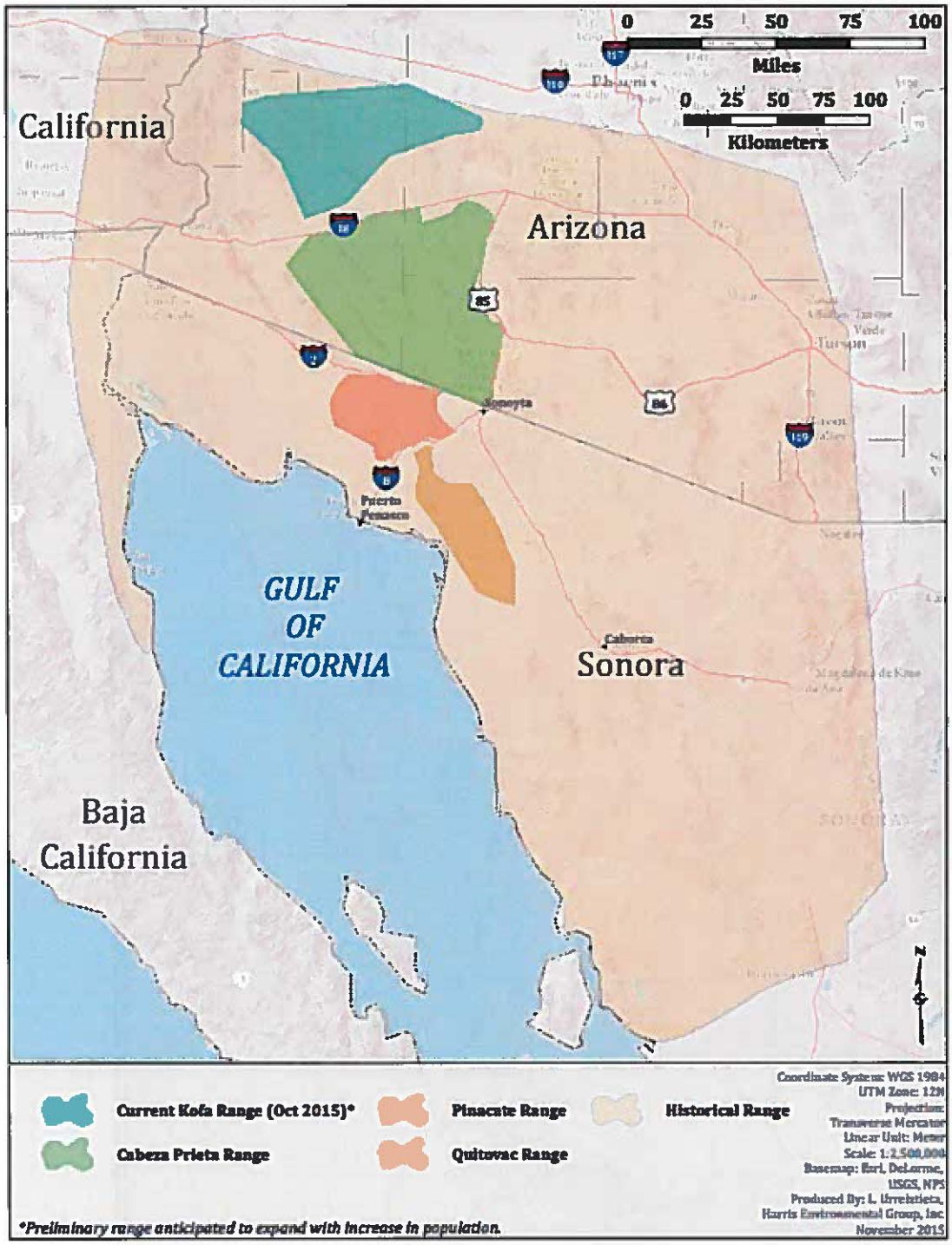


Figure 5. Historical and current ranges of Sonoran pronghorn in the United States and Mexico (the "Cabeza Prieta Range" is the range of the endangered Sonoran pronghorn population in the U.S.).



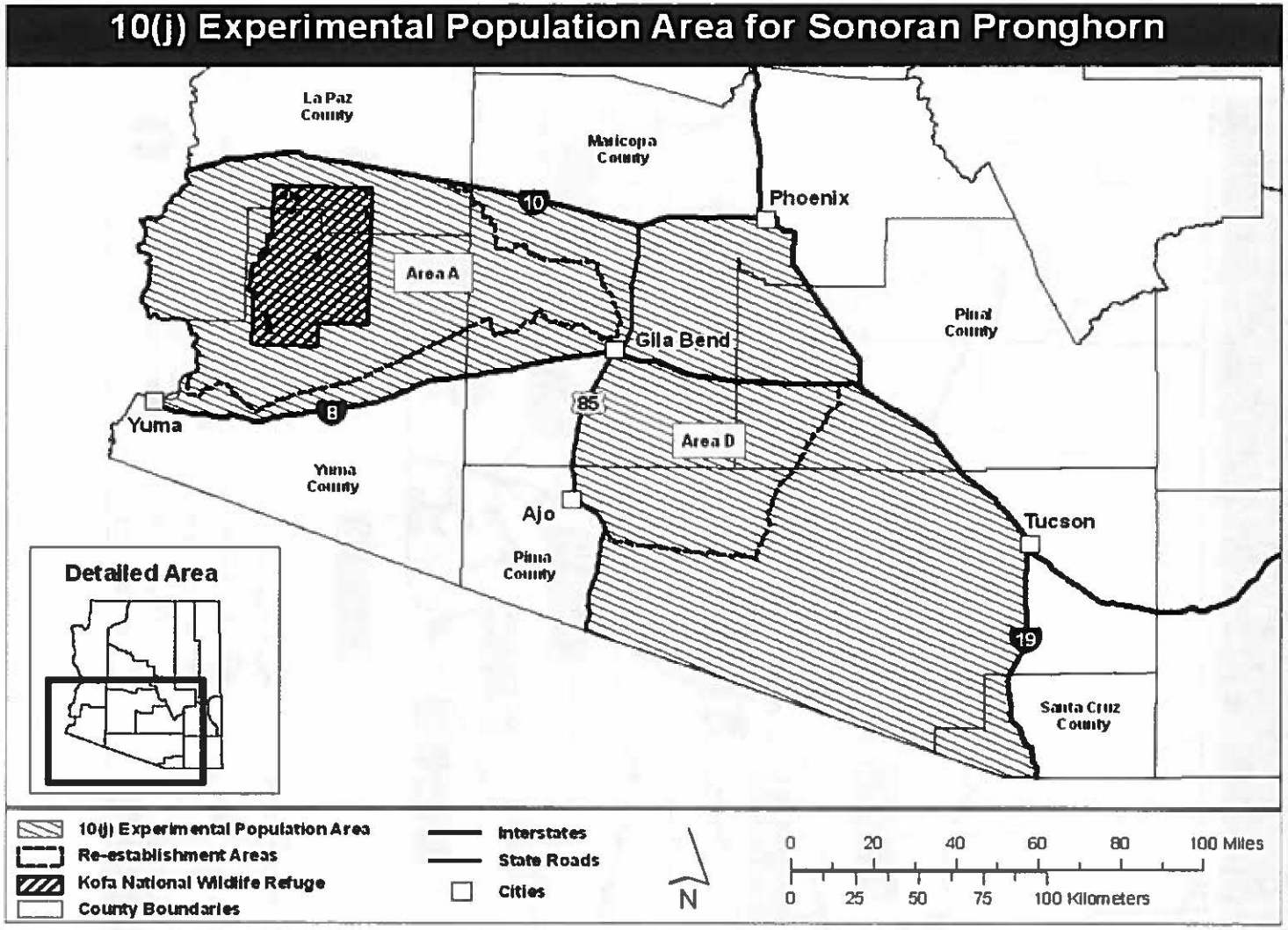
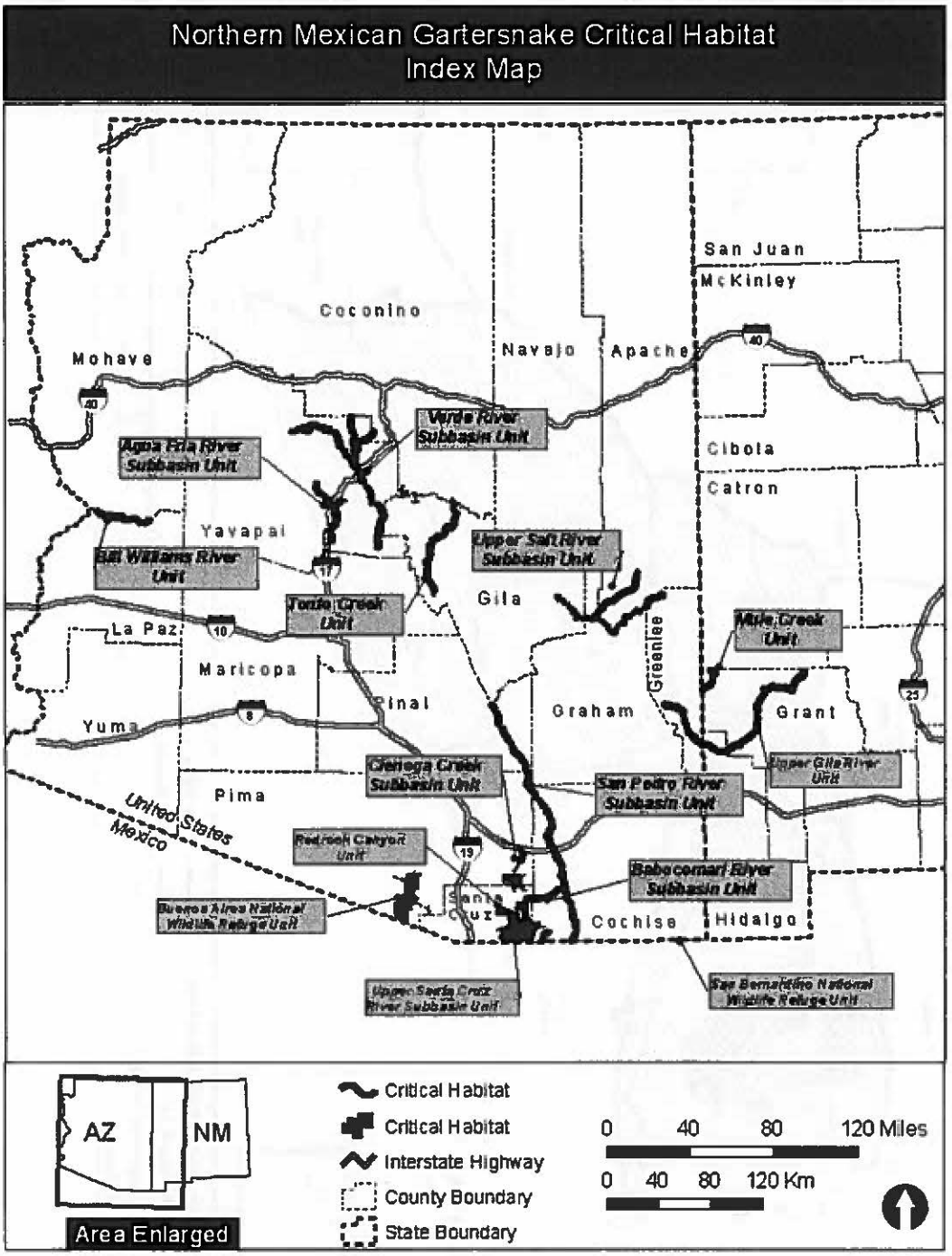


Figure 6. 10(j) Nonessential Experimental Population area for Sonoran pronghorn in southwestern Arizona, United States.

Figure 7. Northern Mexican garternake critical habitat map.



APPENDIX A. Concurrences

Yellow-billed Cuckoo and its proposed critical habitat

Environmental Baseline

The Western Distinct Population Segment (DPS) is listed as a threatened species (USFWS 2014b). In most of the range, western yellow-billed cuckoos primarily breeds in cottonwood-willow dominated riparian habitat along low-gradient rivers and streams, and in open riverine valleys that provide wide floodplain conditions. However, in the southwest, cuckoos can also breed in higher gradient and narrower drainages, and in ephemeral reaches of hydro- or xeroriparian habitat. Woodland habitat in drainages may be continous or patchy with openings. Suitable habitat may also consist of narrow stringers of trees, or scattered trees. Trees in ephemeral drainages may include narrow to wide reaches of one or more of the following species: willow, cottonwood, mesquite, oak, sycamore, hackberry, alder, ash, walnut, acacia, elderberry, soapberry, tamarisk, juniper, and desert willow. Western yellow-billed cuckoos in Arizona also use drainages and hillsides of mesquite and oak woodlands some distance from riparian gallery forests, including the foothills and mountains of southern Arizona. Yellow-billed cuckoos occur throughout the action area in appropriate habitat from May through September.

Critical habitat for the yellow-billed cuckoo was proposed on August 15, 2014 (USFWS 2014a). Proposed critical habitat encompasses 546,335 acres across the western United States (see Figure A-1 for a map of proposed critical habitat units in Arizona). A revised proposed rule that may include additional proposed critical habitat is under development. Critical habitat Unit AZ-18 Upper San Pedro, Unit AZ-23 Arivaca Wash, and San Luis Wash, and Unit AZ-27 Black Draw are within the action area of the TIMR project. No critical habitat is proposed on the Tohono O'odham Nation. A total of 7 miles of non-waived roads within proposed yellow-billed cuckoo habitat are proposed to be maintained under the TIMR program.

The primary constituent elements of proposed yellow-billed cuckoo critical habitat include (we note that the following primary constituent elements in the proposed critical habitat rule are undergoing review and may be adjusted to better characterize Arizona habitat conditions in a future revised proposed rule):

1. Riparian woodlands (willow-cottonwood, mesquite thornforest, or a combination of these) in contiguous or nearly contiguous patches of at least 200 acres in extent and at least 325 feet wide, with at least one nesting grove (often willow dominated with average canopy closure of more than 70 percent), and a cooler, more humid environment than surrounding areas;

2. Adequate prey base, including a large insect fauna (e.g., cicadas, caterpillars, katydids, grasshoppers, large beetles, and dragonflies) and treefrogs in breeding areas and postbreeding dispersal areas; and

3. Dynamic riverine processes, especially including river system having hydrologic processes that promote regular habitat regeneration (sediment movement, seedling germination, plant vigor and growth), which leads to patches of old and new riparian vegetation.

Determination of Effects

We concur with your determination that the proposed action may affect, but is not likely to adversely affect yellow-billed cuckoos and their critical habitat for the following reasons:

- No TIMR activities will occur during the yellow-billed cuckoo migration/nesting season in suitable habitat, except in emergency circumstances where cuckoos are determined not to be present (based on results of weekly protocol surveys). Therefore, any potential directs effects due to disturbance from TIMR activities are discountable.
- Although the TIMR project may have minor impacts to yellow-billed cuckoo habitat, the amount of habitat potentially affected is a very small portion of available habitat. Therefore, any potential indirect effects due to impacts to cuckoo habitat are insignificant.
- The area of proposed yellow-billed critical habitat potentially affected by TIMR activities is relatively small (no area was provided by CBP; however, assuming roads to be maintained average 12 feet in width, about 10 acres [12 feet x 7 miles] within proposed yellow-billed critical habitat will be affected by the TIMR project). Within this area, although some minor impacts to yellow-billed critical habitat may occur, TIMR Program activities will have no measurable effect to the primary constituent elements of proposed critical habitat for the yellow-billed cuckoo. Therefore, direct and indirect effects to proposed yellow-billed critical habitat from TIMR project are insignificant.
- BMPs are in place that help ensure primary constituent elements of proposed critical habitat, as well as general yellow-billed cuckoo habitat, are not significantly impacted. For example, General BMP #3 in the 2012 Biological Opinion states "Vegetation control outside the immediate footprint of the tactical infrastructure within suitable habitat and within the range or designated critical habitat of threatened and endangered species will be limited. If a threatened or endangered species, primary constituent element, or other indicators of suitable habitat occur within the project area, then further consultation with FWS will be required."

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)

Based on the information received regarding project component #s 2 (additions within OPCNM) and 3 (the expansion of TIMR to the TON), our concurrence with your determination that the proposed project may affect, but is not likely to adversely affect the lesser long-nosed bat previously provided for the TIMR project (in biological opinion #02EAAZOO-2012-F-0170, dated November 6, 2012) remains the same. The effects and conclusion of the proposed additions within OPCNM and expansion of TIMR to the TON remain the same as previously analyzed. This conclusion is based on full implementation of the proposed project, including all BMPs and conservation measures included in the 2012 Biological Opinion.

Jaguar (*Panthera onca*) and its Critical Habitat

Based on the information received regarding project component #s 1 (newly listed species and critical habitat) and 3 (the expansion of TIMR to the TON), our concurrence with your determination that the proposed project may affect, but is not likely to adversely affect the jaguar previously provided for the TIMR project (in biological opinion #02EAAZOO-2012-F-0170, dated November 6, 2012) remains the same. The effects and conclusion of the proposed expansion of TIMR to the TON remain the same as previously analyzed.

With regard to the effects of project component #s 1 (newly listed species and critical habitat) and 2 (the expansion of TIMR to the TON) on jaguar critical habitat, we provide our concurrence with your determination that the proposed TIMR project may affect, but is not likely to adversely affect jaguar critical habitat. Our analysis is below.

<u>Environmental Baseline of Jaguar Critical Habitat</u>

Critical habitat (as defined under the ESA) for the jaguar was designated in the United States on March 5, 2014 for approximately 309,263 ha (764,207 ac) in Pima, Santa Cruz, and Cochise counties, Arizona, and Hidalgo County, New Mexico in six critical habitat units (USFWS 2014c; Figure A-2): (1) Baboquivari Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the Northern Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern Baboquivari Subunit; (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains; (3) Patagonia Unit, including the Patagonia, Santa Rita, Empire, and Huachuca Mountains, and the Canelo and Grosvenor Hills; (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa Rita Subunit, and (4c) Whetstone-Huachuca Subunit; (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and New Mexico; and (6) San Luis Unit, including the northern extent of the San Luis Mountains at the New Mexico-Mexico border. Critical habitat units 1 (Baboquivari Unit), 2 (Atascosa Unit), and 3 (Patagonia Unit) are within the action area of the TIMR project. No critical habitat is designated on the Tohono O'odham Nation. A total of 124 miles of non-waived roads within designated jaguar critical habitat are proposed to be maintained under the TIMR program.

The primary constituent elements of critical habitat essential to the conservation of the jaguar within areas of expansive open spaces in the southwestern United States at least 100 km^2 (37 mi^2) in size are those which:

1. Provide connectivity to Mexico;

2. Contain adequate levels of native prey species, including deer and javelina, as well as medium- sized prey such as coatis, skunks, raccoons, or jackrabbits;

3. Include surface water sources available within 20 km (12.4 mi) of each other;

4. Contain greater than 1 to 50 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses;

5. Are characterized by intermediately, moderately, or highly rugged terrain;

6. Are below 2,000 m (6,562 ft) in elevation; and

7. Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square-km (0.4-square-mi) area (expressed as an HII of less than 20).

Determination of Effects on Jaguar Critical Habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect jaguar critical habitat for the following reasons:

- The area of jaguar critical habitat potentially affected by TIMR activities is relatively small (no area was provided by CBP; however, assuming roads to be maintained average 12 feet in width, about 180 acres [12 feet x 124 miles] within jaguar critical habitat will be affected by the TIMR project). Within this area, although some minor impacts to general jaguar habitat may occur, TIMR Program activities will have no measurable effect to the primary constituent elements of jaguar critical habitat. Therefore, direct and indirect effects to jaguar critical habitat from TIMR project are insignificant.
- BMPs are in place that help ensure primary constituent elements are not significantly impacted. For example, General BMP #3 in the 2012 Biological Opinion states "Vegetation control outside the immediate footprint of the tactical infrastructure within

suitable habitat and within the range or designated critical habitat of threatened and endangered species will be limited. If a threatened or endangered species, primary constituent element, or other indicators of suitable habitat occur within the project area, then further consultation with FWS will be required."

- It is likely that road maintenance may help reduce off-road incursion (or "drive arounds") due to poor road conditions. Therefore, potential indirect effects to jaguar critical habitat from reduced incursion into jaguar critical habitat may be beneficial.
- No jaguar critical habitat occurs on the Tohono O'odham Nation; therefore, any potential direct or indirect effects to jaguar critical habitat from the TON TIMR project are discountable.

Acuña cactus (*Echinomastus erectocentrus var. acunensis*) and its Proposed Critical Habitat

Environmental Baseline

The acuña cactus is listed as an endangered species (USFWS 2012) and occurs in valleys and on small knolls and gravel ridges of up to 30 percent slope in the Palo Verde-Saguaro Association of the Arizona Upland subdivision of the Sonoran Desert scrub at 365 to 1,150 m (1,198 to 3,773 ft) in elevation. It currently occurs in Maricopa, western Pima, and Pinal counties.

Critical habitat for the acuña cactus was proposed on July 8, 2013 and encompasses 18,921 acres in Maricopa, western Pima, and Pinal counties (USFWS 2013) (Figure A-3). Critical habitat Unit 1 ("OPCNM"; on OPCNM) and Unit 2 ("Ajo"; on BLM lands) are within the action area. About 6 miles of non-waived roads within proposed acuña cactus are proposed to be maintained under the TIMR program.

The primary constituent elements of proposed acuña cactus critical habitat include:

(i) Native vegetation within the Paloverde-Cacti-Mixed Scrub Series of the Arizona Upland Subdivision of the Sonoran Desert-scrub at elevations between 365 to 1,150 m (1,198 to 3,773 ft). This vegetation must contain predominantly native plant species that:

a. Provide protection to the acuña cactus. Examples of such plants are creosote bush, ironwood, and palo verde;
b. Provide for pollinator habitat with a radius of 900 m (2,953 ft) around each individual, reproducing acuña cactus;
c. Allow for seed dispersal through the presence of bare soils immediately adjacent to and within 10 m (32.8 ft) of individual, reproducing acuña cactus.

(ii) Soils overlying rhyolite, andesite, tuff, granite, granodiorite, diorite, or Cornelia quartz

monzonite bedrock that are in valley bottoms, on small knolls, or on ridgetops, and are generally on slopes of less than 30 percent.

Determination of Effects

We concur with your determination that the proposed action may affect, but is not likely to adversely affect acuña cactus and its proposed critical habitat for the following reasons:

- Because all TIMR activities near acuña cactus will occur within the footprint of roads, direct effects to acuña cactus from being crushed by vehicles or pedestrians associated with TIMR are discountable.
- Although dust can impact acuña cactus (e.g., negatively affect plant photosynthesis, respiration, transpiration, water use efficiency, leaf conductance, growth rate, vigor, and gas exchange), BMPs are in place to control dust resulting from TIMR activities (Acuña Cactus BMP #1 and other dust control BMPs included in the 2012 Biological Assessment). Therefore, potential indirect effects to acuña cactus from dust are insignificant.
- Although invasive species can impact acuña cactus and its proposed critical habitat, BMPs are in place to ensure invasive species introduction is prevented (Vegetation BMP #5). Therefore potential indirect effects to acuña cactus and its proposed critical habitat from invasive species are discountable.
- It is likely that road maintenance may help reduce off-road incursion (or "drive arounds") due to poor road conditions. Therefore, potential indirect effects to acuña cactus and its proposed critical from reduced incursion into acuña cactus proposed critical habitat may be beneficial.

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U.S. Fish and Wildlife Service (USFWS). 2012. Endangered and Threatened Wildlife and Plants: 12-Month Finding for the Lemmon Fleabane; Endangered Status for the Acuña Cactus and the Fickeisen Plains Cactus and Designation of Critical Habitat. Federal Register Vol. 77, No. 192.

U.S. Fish and Wildlife Service (USFWS). 2013. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Acuña Cactus and the Fickeisen Plains Cactus. Federal Register Vol. 78, No. 130.

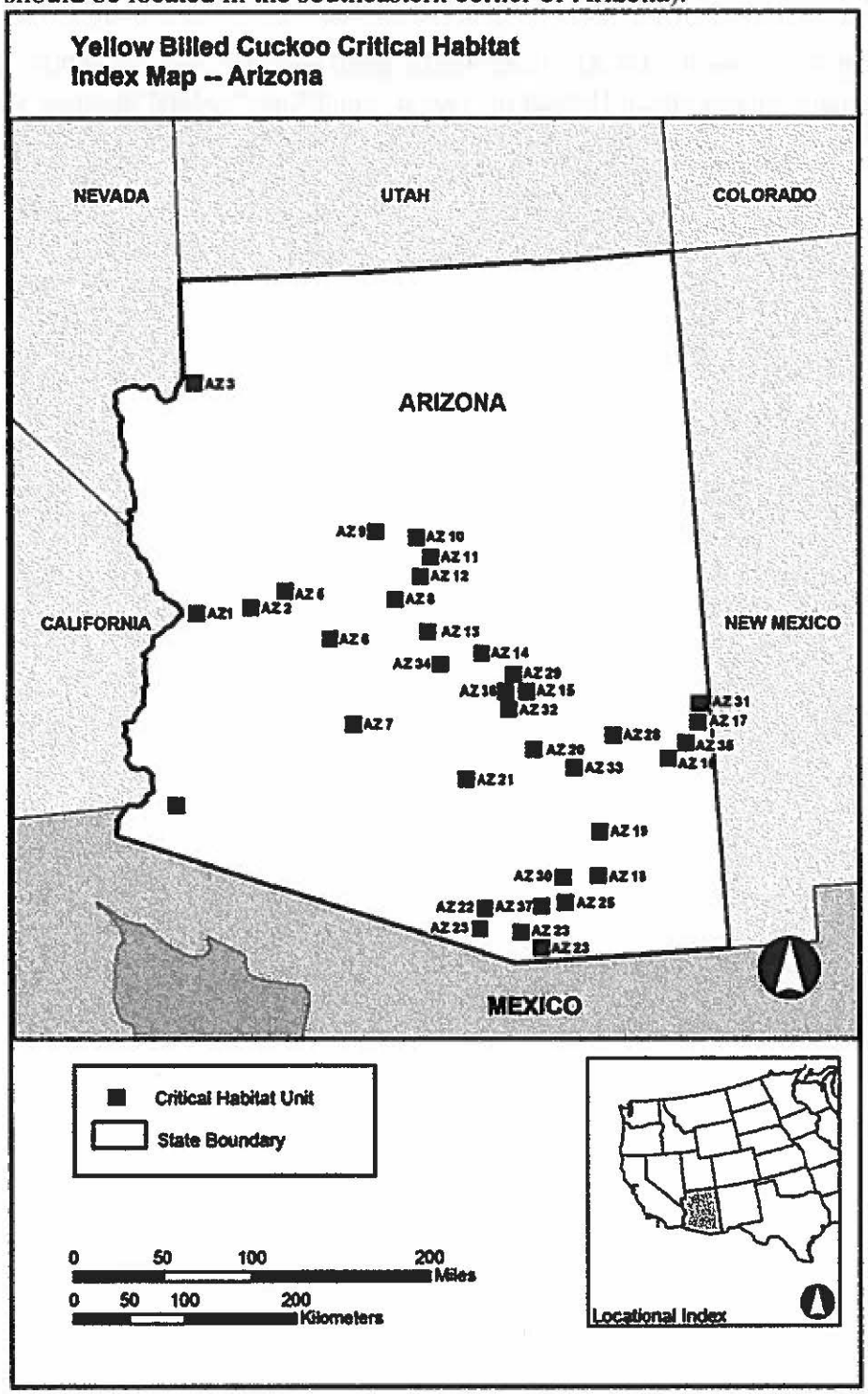
U.S. Fish and Wildlife Service (USFWS). 2014a. Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for western distinct population segment of the yellow-billed cuckoo; Proposed rule. Federal Register Vol. 79, No. 158.

U.S. Fish and Wildlife Service (USFWS). 2014b. Endangered and threatened wildlife and plants; Determination of threatened status for the western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*). Federal Register Vol. 79, No. 192.

U.S. Fish and Wildlife Service (USFWS). 2014c. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Jaguar: Final Rule. Federal Register Vol. 79, No. 43.

FIGURES

Figure A-1. Proposed critical habitat for the yellow-billed cuckoo in Arizona (note Unit A27 should be located in the southeastern corner of Arizona).



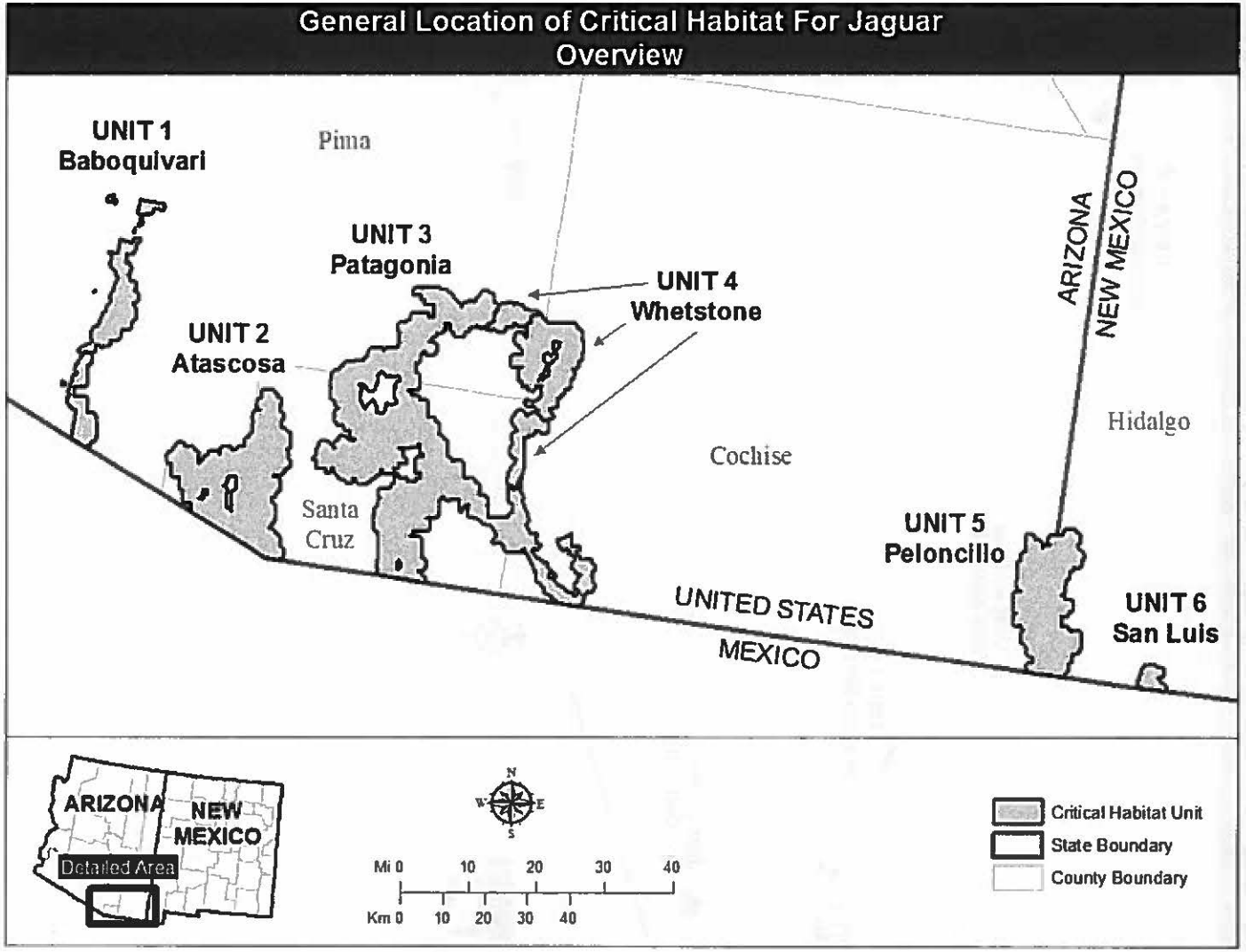


Figure A-2. Jaguar critical habitat in Arizona and New Mexico.

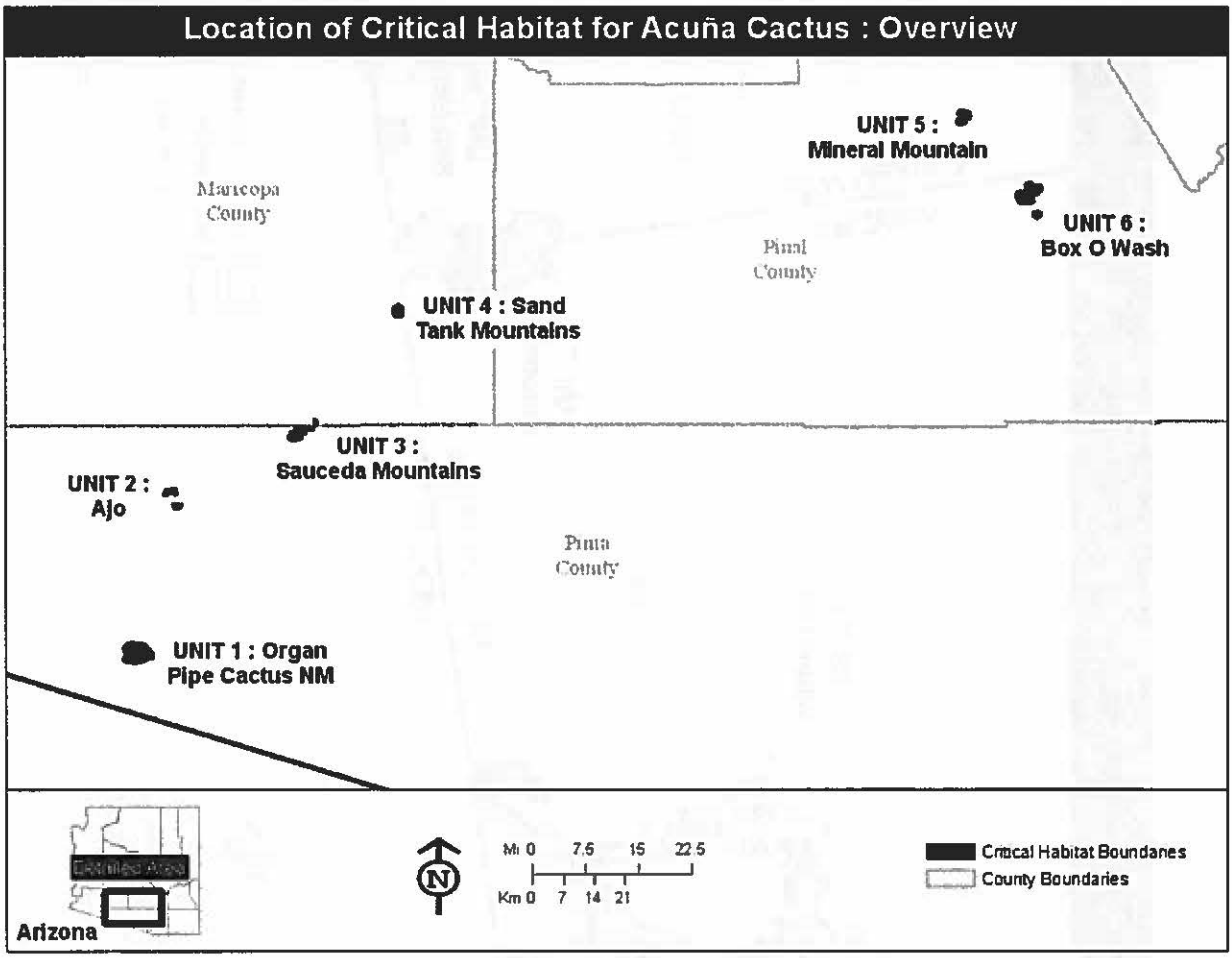



Figure A-3. Proposed acua cactus critical habitat in Arizona.