

Biological Evaluation (BE)
AZ FTBL 900(1)
Las Cienegas National Conservation Area Road
Improvements
Pima and Santa Cruz Counties, Arizona

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September 2014

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1.0 Introduction

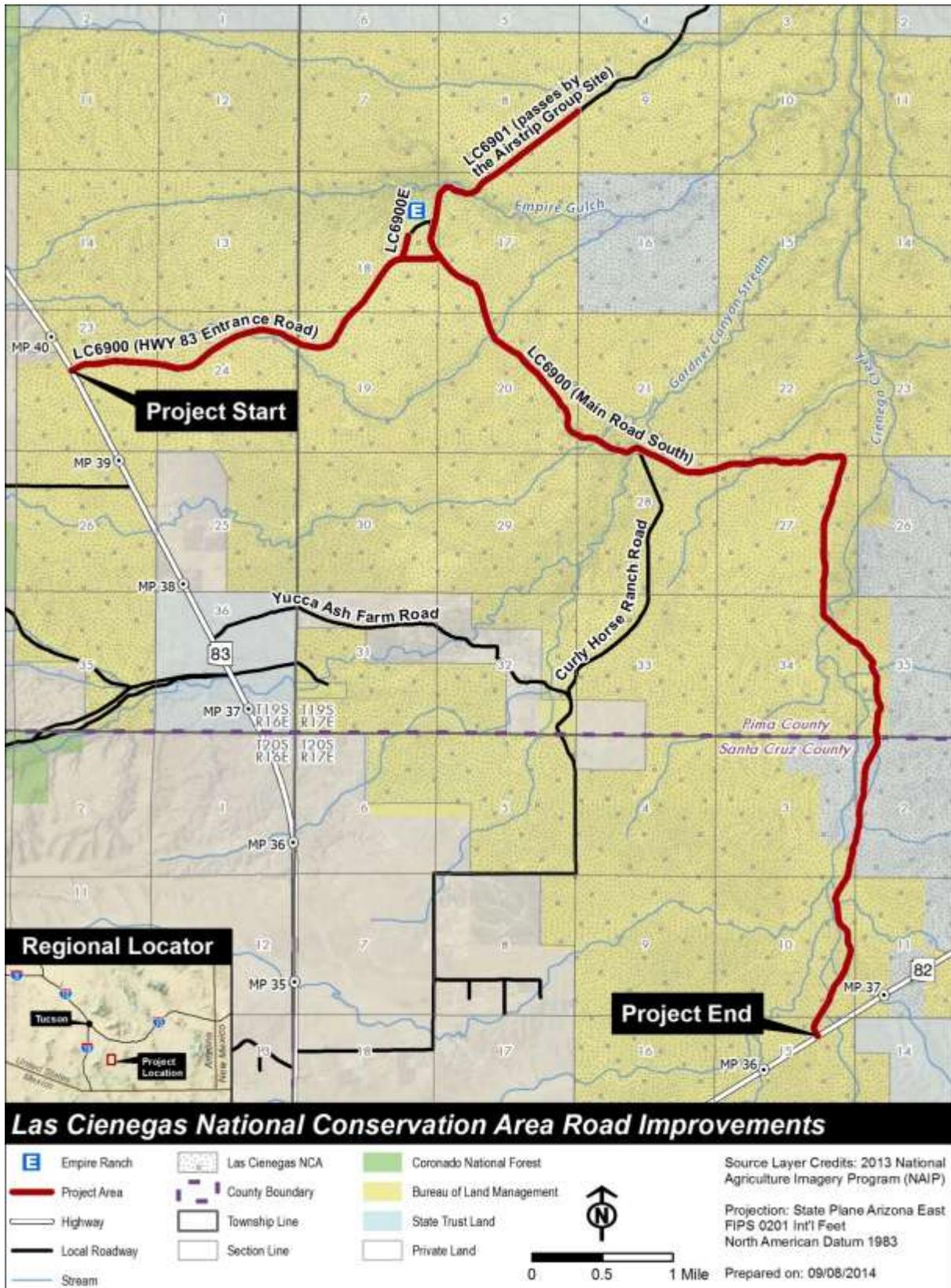
The Federal Highway Administration (FHWA), in cooperation with the Bureau of Land Management (BLM), is proposing roadway safety and drainage improvements along 13.3 miles of roadway within the LCNCA. The proposed improvements would occur along 3.04 miles of LC6900 (HWY 83 Entrance Road), 0.2 miles LC6900E, 1.68 miles of LC6901 (passes by the Airstrip Group Site), and 8.14 miles of LC6900 (Main Road South) to the Highway 82 entrance (see, **Figure 1**). These roads provide access to public lands for recreation, access to public events held at the LCNCA, and access for US Border Patrol and BLM law enforcement. The roads proposed for improvements directly connect to state routes 82 and 83, which are primary routes to the Coronado National Forest located west, south, and east of the NCA.

The purposes of this Biological Evaluation (BE) are to:

- 1) Review the proposed improvements to Las Cienegas National Conservation Area roads in sufficient detail to determine to what extent the proposed action may affect threatened, endangered, proposed, or candidate species and their designated or proposed critical habitat under the Endangered Species Act of 1973 ([ESA] 16 USC 1531 et seq.);
- 2) To determine if the proposed action may affect threatened, endangered, or candidate species that would require informal or formal consultation or conference with the U.S. Fish and Wildlife Service (USFWS) pursuant to the ESA.

The Bureau has consulted with the Service in 2002, 2008 and again in 2012 concerning the Las Cienega Resource Management Plan and subsequent aquatic species reintroductions. The result was three Biological and Conference Opinions (BOC): 22410-2002- F-0162, Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona; 22410-2008-F-0103, Aquatic Species Conservation at the San Pedro Riparian and Las Cienegas National Conservation Areas, Arizona; 22410-2002-F-0162-R001, Reinitiation of Biological Opinion on the Las Cienegas National Conservation Area Resource Management Plan (22410-2002-F-0162) in Pima and Santa Cruz Counties, Arizona. Of these three, the first and the last pertain to this project (02-21-02-F-162 and 22410-2002-F-0162-R001).

Figure 1: Project Location



2.0 Description of the Proposed Action

The proposed project includes resurfacing; reconditioning and rehabilitation, of the roadway surfaces, as well as drainage improvements along 13.3 miles of roadway (see **Figure 1**). Elements of the project include the following:

- Resurface the four road corridors and select vehicle pullouts with aggregate gravel.
- Pave LC6900 (HWY 83 Entrance Road) and LC6900E (to the cattleguard).
- Install and replace 69 signs, install 12 cattle guards and construct one new pullout on LC6900 (Main Road South).
- Perform drainage improvements including installing riprap, installing, cleaning and replacing select culverts, and vegetation removal from ditches, as needed.
- Install seven low-water crossings.

Most of the work would be accomplished in the road prism; however, the placement of riprap would occur between 8-16 feet from the roadway in select locations.

Further details regarding components of the Proposed Action are included in the following subsections.

Construction is anticipated to begin in December 1, 2014 and be completed by March 15, 2015. Construction activities would only occur during the day.

Road Improvements

The existing roadway surface varies throughout the project area. LC6900 (HWY 83 Entrance Road) and LC6900E are approximately 22 feet wide, while LC6901 (passes by the Airstrip Group Site) and LC6900 (Main Road South) are approximately 14 feet wide.

All four roads and select vehicle pullouts within the project area would be resurfaced using aggregate gravel. Approximately four inches of gravel would be added on top of all roads and select pullouts, except for LC6901 (passes by the Airstrip Group Site), which will have approximately eight inches of gravel surfacing. Certain areas within the project area (including roadway surface and ditches) may require grading and some excavation (reconditioning) prior to the placement of gravel. One new vehicle pullout would be created on LC6900 (Main Road South). The single lane roads would be graded to be at a cross slope and the water would drain off one side of the road depending on the direction of the cross slope.

In addition to the gravel resurfacing, Road LC6900 (HWY 83 Entrance Road) and LC6900E would be paved with asphalt and sealed using a chip seal in an effort color the roadway surface similar to the adjacent soils. No centerline or edge striping would be installed on any road within the project area. The double lane road would be crowned in the middle and water would drain off to either side.

The resurfacing and paving would be completed within the existing roadway prism and previously disturbed areas. The roadway prism includes the road surface and the adjacent ditch/shoulder. Roads within the project area would not be widened.

In addition to road resurfacing, the existing 12-foot wide cattle guards on Road LC6900 (HWY 83 Entrance Road), LC6901 (passes by the Airstrip Group Site), and LC6900 (Main Road South) would be replaced with 15-foot wide cattle guards. Twelve cattle guards would be replaced; one along LC6900 (HWY 83 Entrance Road), three along LC6901 (passes by the Airstrip Group Site) and eight along LC6900 (Main Road South). One fence gate would be installed and tied into the existing barbed wire fences adjacent to the cattle guards.

The installation of the cattle guard on LC6900 (HWY 83 Entrance Road) would be completed within the existing roadway surface; however, the cattle guards installed on LC6901 (passes by the Airstrip Group Site) and LC6900 (Main Road South) would require disturbance outside the roadway surface to address the changes in the grades, but within the roadway prism (approximately 1 foot on each side of the road). Revegetation may need to occur after construction depending on the amount of disturbance within the roadway prism.

Most signs adjacent to the roadway would be replaced to provide for better retro-reflectivity of the sign and some new signs would be installed within the project area to alert the driver to approaching hazards and roadway conditions. New signs would be installed at culvert locations, proposed low-water crossings, and cattle guards. Replacement of existing signs and the installation of new signs would be completed outside the roadway surface, but within the existing roadway prism.

During construction, equipment and material staging would be located in LCNCA maintenance yard accessed from the LC6900E. Staging would also be permitted at vehicle pullout and turnaround locations within the project area. Typical heavy equipment used in road construction would be used; such as, grader, front-end loader, backhoe, dump trucks, cement trucks, vibrating compactor, water truck, and paving machine.

During construction of the road improvements, traffic would be restricted to a single lane along all roads except for LC6900 (Main Road South). LC6900 (Main Road South) would be closed for two closures, lasting up to three weeks each, for the installation of the cattle guards. The BLM and FHWA-CFLHD would coordinate the closure periods with the contracting officer and local cattle ranchers by providing two months advance notice of the closures. In addition, a communication strategy would be developed by BLM to notify all affected entities of construction dates and road closures. These entities include but are not limited to Special Recreation Permit holders, Empire-Cienega lessee, hunters, the local fire department, US Customs & Border Patrol, Arizona Game & Fish Department, and the utility companies.

Low-Water Crossings

One low-water crossing would be installed along LC6900 (HWY 83 Entrance Road) and six low-water crossings would be installed along LC6900 (Main Road South) where the roads traverse large washes and erosion and drainage issues exist. The low-water crossings would consist of eight-inch thick, reinforced, concrete slabs, located within two, one-foot wide concrete cutoff walls (one wall installed on each side of the road). The concrete slabs would vary in size depending on the width of the road and the length of road within the drainage. The concrete

slabs on LC6900 (HWY 83 Entrance Road) would be approximately 22 feet wide and 110 feet long. While the concrete slabs on LC6900 (Main Road South) would be 14 feet wide and vary between 60 and 140 feet long.

Cutoff walls would be installed along the sides of the concrete slabs. The concrete cutoff walls would be one-foot wide and match the length of the concrete slabs. The walls would be buried to prevent erosion (undermining) of the slabs with the top of the cutoff walls level with the concrete slabs. The upstream cutoff walls would be four feet in depth and the downstream cutoff walls would be six feet in depth. With the walls, the low-water crossings would be 24 feet wide on LC6900 (HWY 83 Entrance Road) and 16 feet wide on LC6900 (Main Road South).

The construction and installation of the low-water crossings would be completed within the existing roadway prism. Revegetation may need to occur after construction depending on the amount of disturbance within the roadway prism. As mentioned above, construction equipment and material staging would be in the LCNCA maintenance yard located off LC6900E. Staging would also be permitted at vehicle pullout and turnaround locations within the project area.

During construction of the low-water crossings, road closures along LC6900 (HWY 83 Entrance Road) and LC6900 (Main Road South) would occur to allow the concrete to cure. Temporary road closures on LC6900 (HWY 83 Entrance Road) would occur between 6:00 a.m. on Monday through 12:00 p.m. on Friday, with no weekend closures. LC6900 (Main Road South) would be closed for two closures, lasting each up to three weeks, for the installation of low-water crossings. The BLM and FHWA-CFLHD would coordinate the closure periods with the contracting officer and local cattle ranchers by providing two months advance notice of the closures. A communication strategy would be developed by BLM to notify all affected entities of construction dates and road closures. These entities include but are not limited to Special Recreation Permit holders, Empire-Cienega lessee, hunters, the local fire department, US Customs & Border Patrol, Arizona Game & Fish Department, and the utility companies.

Additional Drainage Improvements

Additional drainage improvements would be performed on LC6900 (HWY 83 Entrance Road), LC6900 (Main Road South) and LC6901 (passes by the Airstrip Group Site). These improvements would include installing riprap; removing, cleaning and replacing culverts; installing one encasement water pipe, and cleaning and vegetation removal from roadside ditches. Riprap would be installed at three locations adjacent to LC6900 (HWY 83 Entrance Road) and at one location on LC6900 (Main Road South). Along LC6900 (HWY 83 Entrance Road), three culverts would be cleaned in place and riprap and geotextile fabric would be installed at three locations to mitigate erosion that is occurring on site. Along LC6901 (passes by the Airstrip Group Site) one culvert would be removed and replaced with a 24-inch pipe culvert. Along LC6900 (Main Road South), two 24-inch pipe culverts would be installed, one existing culvert would be repaired, and one culvert would be removed, cleaned and then re-laid. One 6-inch encasement water pipe would be installed, to replace the existing 2.5-inch polyvinyl chloride (PVC) water pipe. Alongside all roads, the ditches would be graded and vegetation in the ditches would be removed; however many of the ditches have been cleared of vegetation

recently. In the southern third of the project area, the road crosses some drainages where the ditches contain some weeds, however most ditches are un-vegetated.

Disturbance from construction and installation of the proposed drainage improvements would result in temporary and permanent impacts outside of the existing roadway prism. Temporary impacts would result during culvert removal, cleaning, and installation, and encasement pipe installation. Permanent impacts would result during the installation of riprap and during ditch cleaning because of vegetation removal. During construction of the drainage improvements, one lane of traffic would remain open along all roads.

3.0 Action Area/Biological Setting

The project area is dominated by semi-desert grassland, Sacaton grassland, and plains grassland and mesquite bosque (BLM 2001). The project crosses through a small stretches riparian habitat at Empire Gulch and Gardner Canyon. Photographs of the project area are provided in **Appendix A. Figure 2** displays the vegetation types within and adjacent to the project area. A list of plant species identified adjacent to the project area is included in **Appendix C**.

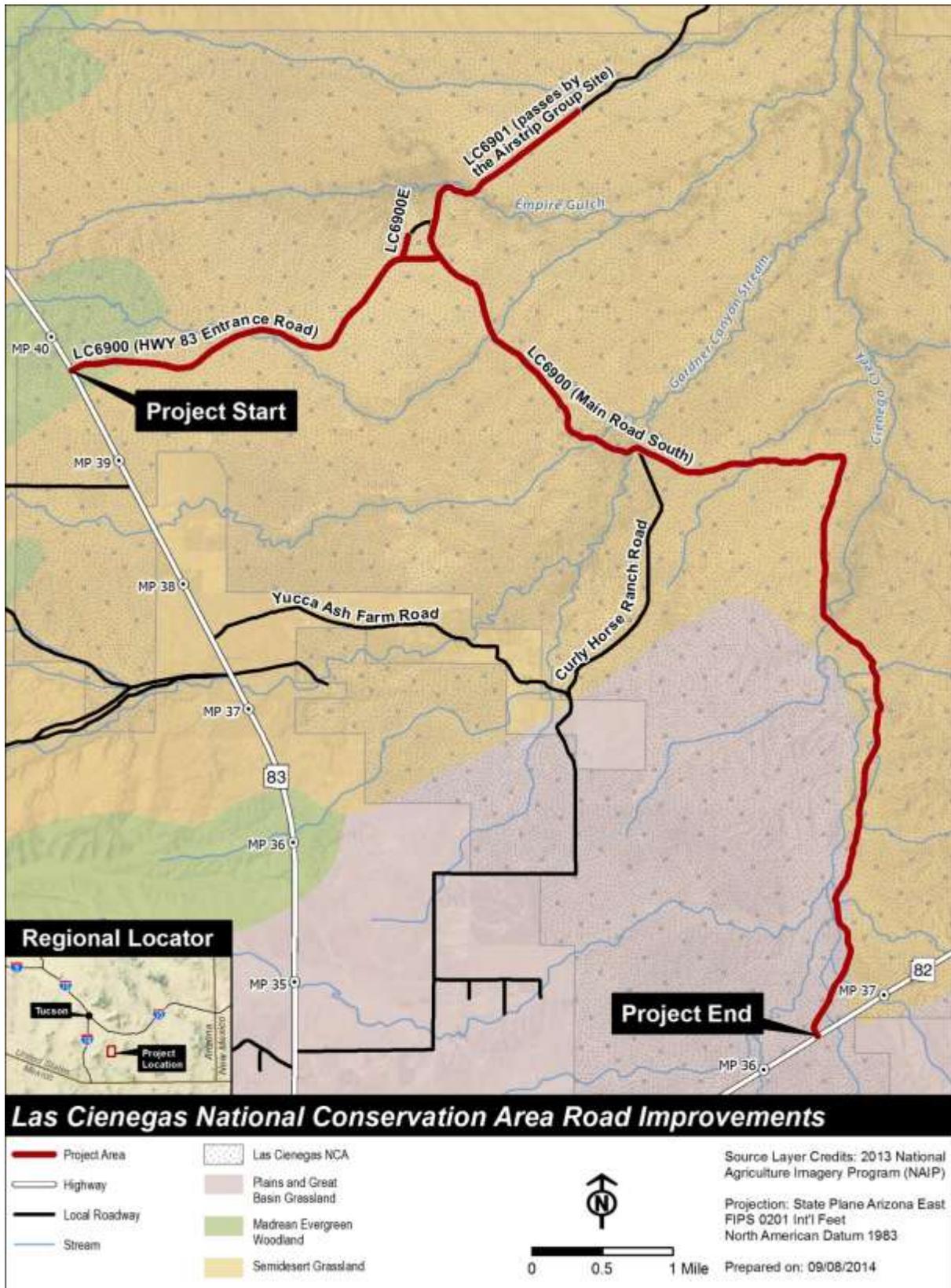
The project area is in the Cienega Creek watershed, and crosses several substantial drainages, including Cienega Creek, Los Posos Gulch, Gardner Canyon, Road Canyon, and Empire Gulch.

None of these drainages has perennial water at the road crossings, but Cienega Creek has perennial flows beginning about three miles downstream of both the Gardner Canyon and Cienega Creek crossings. Runoff in the watershed is generally rapid and summer monsoons typical in the area cause flash flooding. Storm events over 1" of precipitation in one hour usually cause road damage and make the low water crossings impassable due to erosion and/or deposits of loose sand and gravels. No delineated floodplains are found in the area, but the major drainages and bottomlands along the project area are prone to flash floods and area flooding during major storm events (BLM 2001).

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The project roads cross several clay soil types that are sticky and plastic when wet, have low strength and a high shrink and swell potential. These soils are found in the valley bottoms, and pose severe limitations on roads. They become practically impassable when wet and are prone to severe rutting. They require frequent maintenance and result in soil damage when vehicles

Figure 2: Vegetation Cover Types



go around impassable spots. Because the road is natural soil surface, much of it is also prone to dusty conditions and wind erosion when dry. Streambed soils at the major wash crossings consist of unconsolidated sands and gravels which shift during the seasonal flashfloods (BLM 2001).

Habitats in the around the project area include oak woodlands, semi desert grasslands, sacaton grasslands, scrub-grassland, cottonwood-willow riparian areas, cienegas and mesquite woodlands. Big-game animals include mule deer (*Odocoileus hemionus*), whitetail deer (*Odocoileus virginianus*), pronghorn (*Antilocapra Americana*), and javelina (*Pecari tajacu*). Bird species commonly seen in the project area include red-tail hawk (*Buteo jamaicensis*), Swainsons hawk (*Buteo swainsoni*), northern harriers (*Circus cyaneus*), roadrunners (*Geococcyx sp.*), Gambel's quail (*Callipepla gambelii*), and a variety of grassland sparrows. Both Mohave and diamond back rattlesnakes (*Crotalus scutulatus* and *Crotalus atrox*), gopher snakes (*Pituophis sp.*), and a variety of lizards are frequently observed. Occasionally box turtles (*Terrapene ornata*) or Gila monsters (*Heloderma suspectum*) are observed (BLM 2001).

4.0 Current Management Direction

The ESA requires that any action authorized by a federal agency does not jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of their designated critical habitat. If a project should affect an ESA-listed species or its habitat, interagency consultation is required under ESA Section 7 with the USFWS) and/or National Marine Fisheries Service, as determined based on the listed species that may be affected. In the case of species or critical habitat proposed for Federal protection under the ESA, the formal conference is required instead of formal consultation. This biological evaluation follows the USFWS process to determine the potential effects to ESA-listed species as a result of the construction, continued operation, maintenance of the proposed project, indirect effects (including interrelated and interdependent) related to the project and cumulative impacts.

The project would disturb more than one acre of land; therefore, a National Pollutant Discharge Elimination System (NPDES) permit would be required. To comply with the terms and conditions of the NPDES permit, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented, which would minimize the transport of sediment by requiring the use of storm water and erosion control best management practices (BMPs).

5.0 Methods

The project area was evaluated for the presence of, and potential to support, ESA-listed and BLM sensitive plant and wildlife species. The project area includes the area that could be directly impacted by project elements plus the surrounding land adjacent to the project area that may be disturbed by project actions. Most of the potential direct project-related habitat disturbance would occur within a 6-foot buffer along each side of the roadway from the edge of pavement and surrounding potential staging and stockpiling areas. In addition, as required under the Section 7 Consultation process, indirect effects related to the project including cumulative effects will be described and evaluated. As effects to listed species and critical

habitat were identified, the project was modified to eliminate the potential for adverse effects where possible. Thus, the project timing and procedures were modified to reach the point where any effect could be considered improbable or extremely limited.

Data from USFWS, Arizona Game and Fish Department (AGFD) Heritage Data Management System, and BLM were reviewed to identify special-status species that occur, or have the potential to occur, in the vicinity of the project area. A table of all ESA threatened, endangered, candidate and proposed species potentially occurring in the project area, as well as the BLM sensitive species, is provided in **Appendix B**. The data sources included:

- AGFD on-line database records;
- BLM Las Cienegas Sensitive Species List that includes Federally listed species and critical habitat (Appendix B); and
- USFWS species list dated September 8, 2014 for the project location within Santa Cruz and Pima counties.

Because of the data searches, 11 ESA-listed threatened, endangered, or proposed species were evaluated for presence of suitable habitat (including soils, climate, disturbance, plant communities, etc.) within the project area. All Critical habitat was identified within the project limits. The species with critical habitat not consulted on previously include Chiricahua leopard frog designated critical habitat, northern Mexican garter snake proposed critical habitat, and southwestern willow flycatcher designated critical habitat. Potential effects Critical habitat for the Gila chub from all activities described in the RMP (including road maintenance and improvement) were consulted on in 2002 for the Las Cienegas RMP.

Wetland delineation in combination with rare plant and wildlife habitat suitability assessments were conducted within the project area on July 9-10, 2014 to determine the presence/absence and potential for special status species. This included surveys for sensitive plant species conducted within the area that could be directly disturbed by project activities, which included a 6-foot buffer along each side of the roadway edge and specific turnout areas.

6.0 Species Evaluation

6.1 ESA-Listed Species

This section contains background information, potential effects and ESA Section 7 determinations for the following 11 federally listed and one proposed species (four with designated critical habitat and two with proposed critical habitat) with a potential to occur within or in proximity to the project area.

- Chiricahua leopard frog (*Lithobates chiricahuensis*) – ESA Threatened with Designated Critical Habitat
- Gila topminnow (*Poeciliopsis occidentalis*) – ESA Endangered,
- Gila Chub (*Gila intermedia*) – ESA Endangered with Designated

- Desert pupfish (*Cyprinodon macularius*) – ESA Endangered, Huachuca water-umbel (*Lilaeopsis schaffneriana* ssp. *recurva*) – ESA Endangered,
- Lesser long nosed bat (*Leptonycteris curasoae yerbabuena*) ESA Endangered
- Jaguar (*Panthera onca*) – ESA Endangered with Designated Critical Habitat, Northern Mexican garter snake (*Thamnophis eques megalops*) – ESA Threatened with Proposed Critical Habitat,
- Ocelot (*Leopardus pardalis*) – ESA Endangered,
- Southwestern willow flycatcher (*Empidonax traillii extimus*) – ESA Endangered with Designated Critical Habitat
- Yellow-billed cuckoo (*Coccyzus americanus*) – ESA Proposed Threatened with Proposed Critical Habitat,

6.1.1 Species with Previous ESA Section 7 Consultation

As stated in the introduction, consultation on the LCNCA RMP and reintroductions of listed species has been completed in the past. Federally listed species analyzed in the 2002 RMP consultation and conference, past and ongoing reintroduction projects are listed below.

Project name: *Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona*

Opinion number: 22410-2002- F-0162 (= 02-21-02-F-162)

Date of opinion: October 4, 2002

Listed species affected:

- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Gila topminnow (*Poeciliopsis o. occidentalis*)
- Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*)
- Desert pupfish (*Cyprinodon m. macularius*)
- Canelo Hills ladies'-tresses (*Spiranthes delitescens*)
- Northern aplomado falcon (*Falco femoralis septentrionalis*)
- Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*)
- Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)
- Chiricahua leopard frog (*Lithobates chiricahuensis*)
- Gila chub (*Gila intermedia*) and proposed Critical Habitat

As part of this biological and conference opinion, USFWS determined that the actions in the LCNCA RMP were not likely to adversely affect the Aplomado falcon (*Falco femoralis*) and jaguar. Canelo Hill's lady's tress has never been recorded in the LCNCA after 26 years of botanical inventories and riparian monitoring. Therefore, it is extremely unlikely to be part of the wetland-riparian plant community (Jeffery Simms, BLM Fishery Biologist, personal communication).

After thorough review of the proposed project, it was concluded that the maintenance and road improvement project was similar to the description of road related actions in the RMP. The key point is that the majority of road work will stay within the road prism (bed and ditches) allowing for some level of disturbance up to six feet on either side with some additional spot work for

culverts and rip-wrap out 8 to 16 feet. Therefore, no new effects, which would trigger re-initiation of consultation, are anticipated or likely. The two past BOCs have analysis and a take statement for these species.

Project name: *Re-initiation of Biological Opinion on the Las Cienegas National Conservation Area Resource Management Plan (22410-2002-F-0162) in Pima and Santa Cruz Counties, Arizona.* (The re-initiation of this BO was on the project called the proposed modification and use of livestock watering facilities for the release of Chiricahua leopard frog (*Rana chiricahuensis*), Gila topminnow (*Poeciliopsis occidentalis*), desert pupfish (*Cyprinodon macularius*), Gila chub (*Gila intermedia*), and Huachuca water umbel (*Lilaeopsis schaffneriana var recurva*) on the Las Cienegas national Conservation Area, Santa Cruz and Pima Counties, Arizona

Opinion number: 22410-2002-F-0162-R001 (This BCO is a reinitiation BOC 22410-2002- F-0162).

Date of opinion: February 21, 2012

Listed species affected:

- Chiricahua leopard frog (*Lithobates chiricahuensis*)
- Gila chub (*Gila intermedia*)
- Gila topminnow (*Poeciliopsis occidentalis*)
- Desert pupfish (*Cyprinodon macularius*)
- Huachuca water umbel (*Lilaeopsis schaffneriana var. recurva*).

This biological opinion and conference included a USFWS concurrence that the proposed action is not likely to adversely affect the endangered lesser long-nosed bat and proposed action is not likely to destroy or adversely modify proposed critical habitat for the Chiricahua leopard frog.

6.1.2 Species and Critical Habitat (proposed or designated) Not Covered by BOC 22410-2002- F-0162 on the LCNCA RMP

Federally listed species not included under an existing biological opinion include the following:

- Critical Habitat for jaguar (*Panthera onca*)
- Endangered ocelot (*Leopardus pardalis*)
- Proposed threatened yellow-billed cuckoo
- Proposed Critical Habitat for yellow-billed cuckoo
- Threatened northern Mexican garter snake
- Proposed Critical Habitat for northern Mexican garter snake
- Designated Critical Habitat for Chiricahua leopard frog
- Designated Critical Habitat for southwestern willow flycatcher

Chiricahua Leopard Frog Designated Critical Habitat

Chiricahua leopard frog habitat is known currently and/or historically from cienegas (mid-elevation wetland communities often surrounded by arid environments), pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,281 to 8,890 feet in central and southeastern Arizona; west-central and southwestern New Mexico; and in Mexico from northern

Sonora and the Sierra Madre Occidental of western Chihuahua and perhaps south to Durango. Historical records exist for Pima, Santa Cruz, Cochise, Graham, Apache, Greenlee, Gila, Coconino, Navajo, and Yavapai counties, Arizona; and Catron, Grant, Hidalgo, Luna, Socorro, and Sierra counties, New Mexico. (USFWS 2007) In Arizona, the Chiricahua leopard frog is found in the mountain regions of central and southeastern Arizona, along the Mogollon Rim in central Arizona, southwestern Arizona south of the Gila River, and in the mountains and valleys south of the Gila River in southeastern Arizona and southwestern New Mexico (AGFD 2011).

The Chiricahua leopard frog is a habitat generalist that historically was found in a variety of aquatic habitat types, but is now limited to the comparatively few aquatic systems that support few or no, non-native predators (e.g. American bullfrogs, fishes, and crayfishes). In the Chiricahua region of southeastern Arizona, there has been an alarming expansion of non-native predatory vertebrates and decline of Chiricahua leopard frogs over the previous two decades. Chiricahua leopard frogs were primarily limited to habitats subject to drying or near drying, such as stock tanks. Non-native predatory fishes and American bullfrogs do not favor these habitats, but because they are not stable aquatic habitats, they are marginal for leopard frogs. Leopard frogs are currently so strongly impacted by harmful non-native species, which are most prevalent in perennial waters, that their occupied niche is increasingly restricted to environments that tend to be ephemeral and unpredictable. This increasingly narrow realized niche is a primary reason for the threatened status of the Chiricahua leopard frog (USFWS 2007).

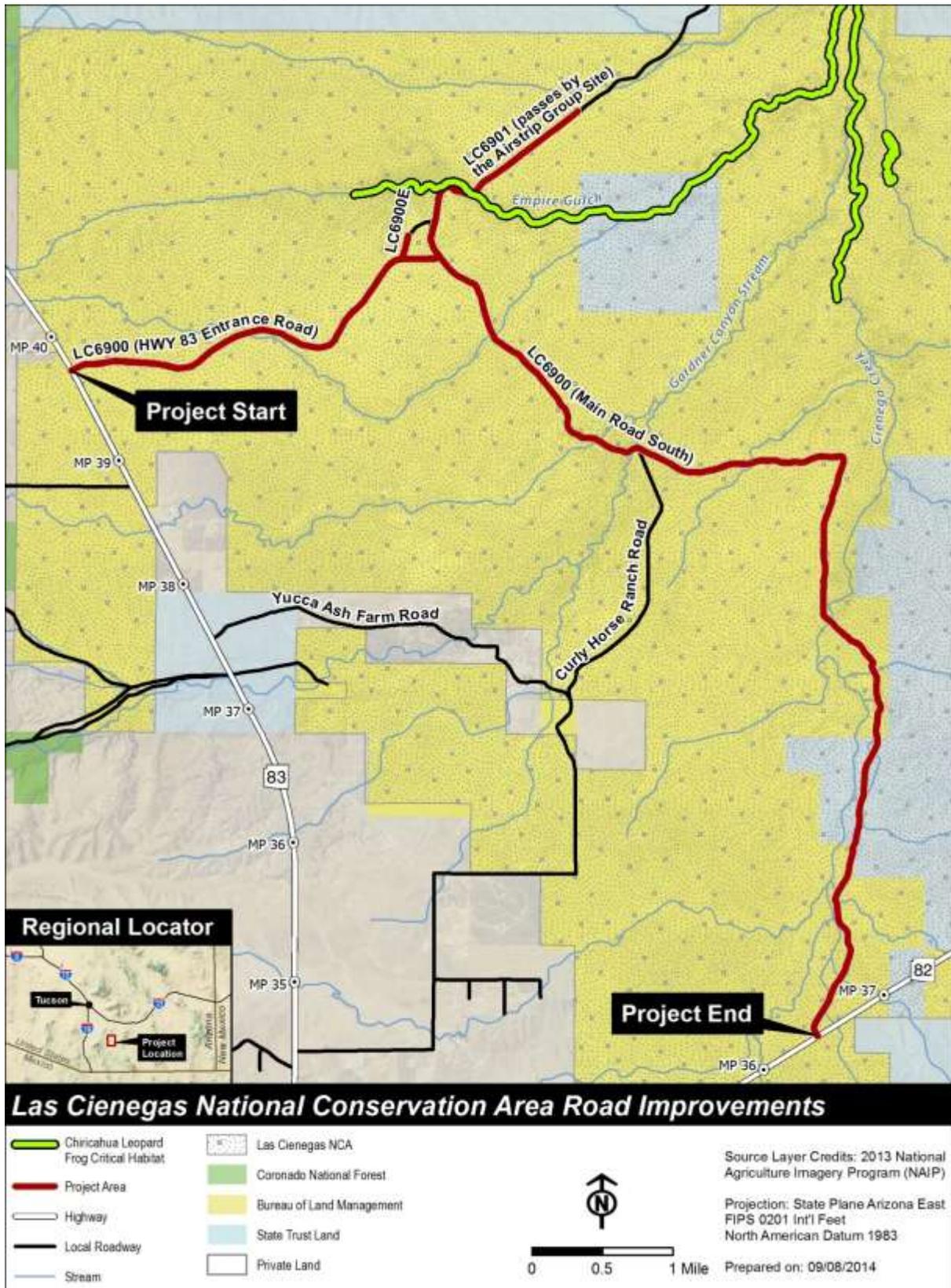
Breeding season depends on elevation, occurring earlier (February to June) at lower elevations and later (May to August) at higher elevations. Eggs are deposited underwater on vegetation. Adults feed on invertebrates such as arthropods. Larvae feed on algae, organic debris, plant tissue, and other plant matter (AGFD 2011). Chiricahua leopard frogs likely overwinter at or near breeding sites, although microsites for these “hibernacula” have not been studied. Other leopard frogs typically overwinter at the bottom of well-oxygenated ponds or lakes, and may bury themselves in the mud (USFWS 2007). Because of the relatively warm water (>15°C in Empire spring, this species does not hibernate in the winter (Rosen et al 2013) and is active. The water in the project area during the winter may cross under the road, but it is much colder than at the water source and there is no open water (closed marsh vegetation) in the project area.

Habitat for the leopard frog within the LCNCA occurs at 14 sites. Critical habitat is located within Cienega Creek and associated wetlands, including Empire Gulch (**Figure 3**).

Primary constituent elements (PCEs) of the physical or biological features essential to the conservation of the Chiricahua leopard frog are:

(i) Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:

Figure 3: Chiricahua Leopard Frog Critical Habitat



(A) Standing bodies of fresh water (with salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present), including natural and manmade (e.g., stock) ponds, slow moving streams or pools within streams, off-channel pools, and other ephemeral or permanent water bodies that typically hold water or rarely dry for more than a month. During periods of drought, or less than average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but they would still be considered essential breeding habitat in non-drought years.

(B) Emergent and or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof, but emergent vegetation does not completely cover the surface of water bodies.

(C) Nonnative predators (e.g., crayfish (*Orconectes virilis*), bullfrogs (*Lithobates catesbeianus*), nonnative predatory fish) absent or occurring at levels that do not preclude presence of the Chiricahua leopard frog.

(D) Absence of chytridiomycosis, or if present, then environmental, physiological, and genetic conditions are such that allow persistence of Chiricahua leopard frogs.

(E) Upland habitats that provide opportunities for foraging and basking that are immediately adjacent to or surrounding breeding aquatic and riparian habitat.

(ii) Dispersal and nonbreeding habitat, consisting of areas with ephemeral (present for only a short time), intermittent, or perennial water that are generally not suitable for breeding, and associated upland or riparian habitat that provides corridors (overland movement or along wetted drainages) for frogs among breeding sites in a metapopulation with the following characteristics:

(A) Are not more than 1.0 mile (1.6 kilometers) overland, 3.0 miles (4.8 kilometers) along ephemeral or intermittent drainages, 5.0 miles (8.0 kilometers) along perennial drainages, or some combination thereof not to exceed 5.0 miles (8.0 kilometers).

(B) In overland and non-wetted corridors, provide some vegetation cover or structural features (e.g., boulders, rocks, organic debris such as downed trees or logs, small mammal burrows, or leaf litter) for shelter, forage, and protection from predators; in wetted corridors, provide some ephemeral, intermittent, or perennial aquatic habitat.

(C) Are free of barriers that block movement by Chiricahua leopard frogs, including, but not limited to, urban, industrial, or agricultural development; reservoirs that are 50 acres (20 hectares) or more in size and contain predatory nonnative fish, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that physically block movement.

(iii) With the exception of impoundments, livestock tanks and other constructed waters, critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule (50 CFR 17).

Temporary construction related activity, including heavy equipment, increased presence of people, and construction traffic provide the potential for effects to occur. However, due to the winter temperatures, it is unlikely that impacts would occur because these species are inactive during construction of the proposed project. Nonetheless, BOC 2240-2002-F-0162 included effects of roads and road maintenance on this species and BOC 2240-2002-F0162-R001 included effects to reintroduced population of this species from activities described in the RMP.

No direct effects to Chiricahua leopard frog habitat, including critical habitat, are anticipated because no work would occur within the designated critical habitat along LC6901 (passes by the Airstrip Group Site), and no vegetation removal is anticipated within Empire Gulch (channel or floodplain) or drainage ditches or culverts where critical habitat is located. Construction activities would be entirely confined to the existing roadway adjacent to the Empire Gulch crossing. Only minor vegetation removal is anticipated as part of the project where existing ditches need to be cleaned out, limited expansion of a vehicle turnout area and the installation of riprap. None of these activities would occur near floodplain aquatic or semi-aquatic habitat in critical habitat; therefore, there would be no alteration or loss of habitat. Additionally, no equipment or material staging or stockpiling is scheduled to occur near Empire Gulch or the wildlife ponds and stock tanks, which will reduce the amount of activity in these areas and reduce the likelihood of project effects.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed.

Effect Determination for Chiricahua Leopard Frog Designated Critical Habitat

After reviewing the road improvement project plans and proposed action, there is no risk to wetland or riparian resources that support Chiricahua leopard frog. Thus, the road improvement project will have **no effect** on proposed critical habitat for Chiricahua leopard frog, as roadwork will be concentrated inside of the existing disturbed roadbed and margins. This essentially eliminates all risk to the species habitat and the risk of effects to PCEs including open, clean surface water; suitable substrate and vegetation; absence of aquatic nonnative predators; absence of chytridiomycosis; upland foraging habitats; and barrier free dispersal and nonbreeding habitat.

The direct, indirect and cumulative effects to Chiricahua leopard frog from the proposed road improvement project are consistent with those related to road management described in the LCNCA RMP and consulted/conferenced on; therefore, there is no need for additional consultation.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts. Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality.

These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized the RMP. These potential effects to Chiricahua leopard frogs need to be part of a formal consultation and conference reinitiation of BOC 02-21-02-F-162, (Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona) in order to come into compliance with Section 7(a)2 of the ESA. Likewise, the entire road system affects the sediment load in ephemeral channels that connect to critical habitat. This road project would not change the existing sediment load much except that the new surface would produce less sediment than the existing one. The effects of the road system will need to be addressed in a reinitiation of formal consultation on the BOC for the LCNCA RMP.

Jaguar

The jaguar is the largest felid in the New World. Range wide, jaguars measure about 1.5 to 2.4 meters from nose to tip of tail and weigh from 80 to 348 pounds. Males are typically larger than females, with reports of males being 10 to 25 percent larger than females. Jaguars have a relatively robust head, compact but muscular body, short limbs and tail, and powerfully built chest and forelegs. They have the strongest teeth and jaws of any American cat, and their skulls are more massive than those of mountain lions. Their canines are well developed and effectively deployed. The overall coat of a jaguar is typically pale yellow, tan, or reddish yellow above, and generally whitish on the throat, belly, insides of the limbs, and underside of the tail, with prominent dark rosettes or blotches throughout. (USFWS 2012)

Jaguars prefer a warm, tropical climate, usually associated with water, and are rarely found in extensive arid areas. However, jaguars have been documented in arid areas, including thorn scrub, desert scrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities of northwestern Mexico and southwestern U.S. The more open, dry habitat of southwestern U.S. has been characterized as marginal in terms of water, cover, and prey densities (USFWS 2012). In Arizona, jaguar may only be found in the southeastern part of the state (AGFD 2004). While jaguars have been documented as far north as the Grand Canyon, occurrences in the U.S. since 1963 have been limited to south-central Arizona and extreme southwestern New Mexico. Jaguars in the U.S. are thought to be part of a population, or populations, that occur largely in Mexico (USFWS 2012). Jaguars may breed year-round or, in northern latitudes, from December to January. Cubs are born in April and May. Dens caves,

dense brush, or heavy cover is used to protect young. Their diet focuses on peccaries and deer, but may include various other species, including armadillos, turtles, birds, and fish (AGFD 2004).

Sightings of jaguar in Arizona are rare. The most recent sighting in Arizona reported to the public was in the Santa Rita Mountains in 2013 (Time 2013). The entire project area lies within the mapped range of the jaguar (AGFD 2014). Dense vegetation along wash and creek bottoms within the NCA may be used for foraging and travel corridors. However, no jaguars have been recorded in the area and they are extremely unlikely to occur, and the habitat is minimal at best (BLM 2003). Newly designated Critical Habitat is located more than 5 miles from the project site. Overall, the dense river bottoms with shrub and tree vegetation associated with jaguar is not found within the road corridor except at Empire Gulch. The project area crosses Empire Gulch just below Empire Spring and Gardner Canyon, which may provide dispersal habitat and passage.

The proposed action will not result in removal of woody vegetation; therefore potential jaguar habitat would not be impacted. The resurfacing and rehabilitation of the roadway could increase vehicle usage and speed that could result in direct or indirect impacts to this species, such as vehicle mortality or noise disturbance. Construction related noise and activity could cause the jaguar and associated prey species to avoid the areas directly adjacent to the project area while the project is ongoing. However, it is anticipated that this would have no effect on the species because the potential for species presence is virtually nonexistent, and no vegetation removal is planned except in ditches and around culverts.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed, which will produce less sediment from erosion than it currently does.

Effect Determination for Jaguar

After reviewing the road improvement project plans and proposed action, the project is not going to disturb riparian resources that support a corridor for movement for jaguar and is extremely unlikely to affect the jaguar itself, thus it is reasonable to anticipate that the road improvement project will have **no effect** on jaguar. The combination of nocturnal habits of this species, short duration of the project and its extreme rarity make encounters with this species by road improvement activities virtually nonexistent. Because roadwork inside of the existing disturbed road bed and margins will virtually eliminate risk of damage to habitat.

Effect Determination for Jaguar Designated Critical Habitat

Due to great distance of designated Critical Habitat from the project area, the road improvement project will have **no effect** on jaguar Critical Habitat.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts.

Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality.

These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized by the RMP. These potential effects to newly designated jaguar critical habitat need to be part of a formal consultation and conference reinitiation of BOC 22410-2002-02-F-0162, (*Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona*) in order to come into compliance with Section 7(a)2 of the ESA.

Ocelot

The ocelot's range includes Texas, Arizona, Mexico, Central America, and South America (USFW 2010). In Arizona, the ocelot may only be found in the southeastern part of the state in Pima, Santa Cruz, and Cochise counties. Habitat requirements include areas of dense cover or vegetation. They avoid open areas with little to no cover. Habitat used occurs below 4,000 feet in elevation and can include subtropical thorn scrub, tropical deciduous forest, tropical thorn scrub, or, less commonly, temperate oak and pine-oak woodland (AGFD 2010).

Most young are born from September to January, but breeding is thought to occur throughout the year. Dens can be found in caves, logs, hollow trees, or dense thickets (AGFD 2010). Ocelots typically sleep during daylight hours, draped either along a high tree limb or in a sheltered den, which may be a hollow tree, small cave, or a shallow depression under vegetation (USFWS 2010). Prey can be various, including armadillos, land tortoises, land crabs, rodents, and other mammals and reptiles, as well as birds, insects, fish, and amphibians (AGFD 2010).

Sightings of ocelot in Arizona are rare. A male ocelot was photographed near the Proposed Rosemont Mine project in the Santa Rita Mountains on April 8 and May 14 according to the Service (AZ Daily Star June 2013). The project area crosses a portion of mapped ocelot habitat in the along Empire Gulch and Gardner Canyon, and habitat is mapped along much of Cienega Creek (AGFD 2014).

The proposed action would not result in removal of any woody vegetation; therefore potential ocelot habitat would not be impacted. Rehabilitation of the roadway could increase vehicle usage and speed that could result in direct or indirect impacts to this species, such as vehicle mortality or noise disturbance. Construction related noise and activity could cause the ocelot and associated prey species to avoid the areas directly adjacent to the project area while the project is ongoing. However, it is anticipated that this would have no effect on the species because the potential for species presence is virtually nonexistent, and no vegetation removal is planned except in ditches and around culverts.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed, which will produce less sediment from erosion than it currently does.

Effect Determination for the Ocelot

After reviewing the road improvement project plans and proposed action, the project is not going to disturb riparian resources that support a corridor for movement for ocelot and is extremely unlikely to affect the jaguar itself, thus it is reasonable to anticipate that the road improvement project will have **no effect** on ocelot. The combination of nocturnal habits of this species, short duration of the project and its extreme rarity make encounters with this species by road improvement activities virtually nonexistent. Because roadwork inside of the existing disturbed road bed and margins will virtually eliminate risk of damage to habitat.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts. Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality.

These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized the RMP. These potential effects to ocelot newly discovered in the basin need to be part of a formal consultation and conference reinitiation of BOC 22410-2002-F-0162, (Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona) in order to come into compliance with Section 7(a)2 of the ESA.

Northern Mexican Garter snake

The northern Mexican garter snake is a medium-sized snake of maximum length of about 44 inches. Typically, this species is olive to olive-brown or olive-gray with three lighter-colored stripes running the length of the body, and with the middle stripe darkening towards the tail. Paired black spots extend on the back and sides of the body (USFWS 2014). The northern Mexican garter snake is active in the day and evening (Holycross and Rosen 2011).

Fragmented populations of the Northern Mexican garter snake currently occur within small, isolated wetland habitats in southeast Arizona, the Verde River drainage, Tonto Creek, and Cienega Creek drainage. Habitat utilized in Arizona includes managed ponds (e.g. stock tanks), lowland river riparian forests and woodlands (including Cienegas and Cienegas streams), and upland stream gallery forests between 3,000 and 5,000 feet elevation. Habitat of dense vegetation is preferred. Adults mate in April and May, and females give birth to live young in

July and August. Hibernation occurs above the floodplain, in rocky outcroppings, during late fall and winter (AGFD 2012).

The northern Mexican garter snake is an active predator and depends on smaller animals for its prey base (Rosen and Schwalbe 1988). The species forages for food along vegetated floodplains, searching for prey in water and on land, or may forage along the edges of open water and thick stands of vegetation such as cattails. Their diet consists of native fish and adult and larval native amphibians, including Gila topminnow, desert pupfish, red shiner, adult and larval (tadpoles) leopard frogs (e.g., lowland leopard frog [*Rana yavapaiensis*] and Chiricahua leopard frog [*Lithobates chiricahuensis*]), although they will also consume earthworms, rodents, lizards, and salamanders (USFWS 2013a).

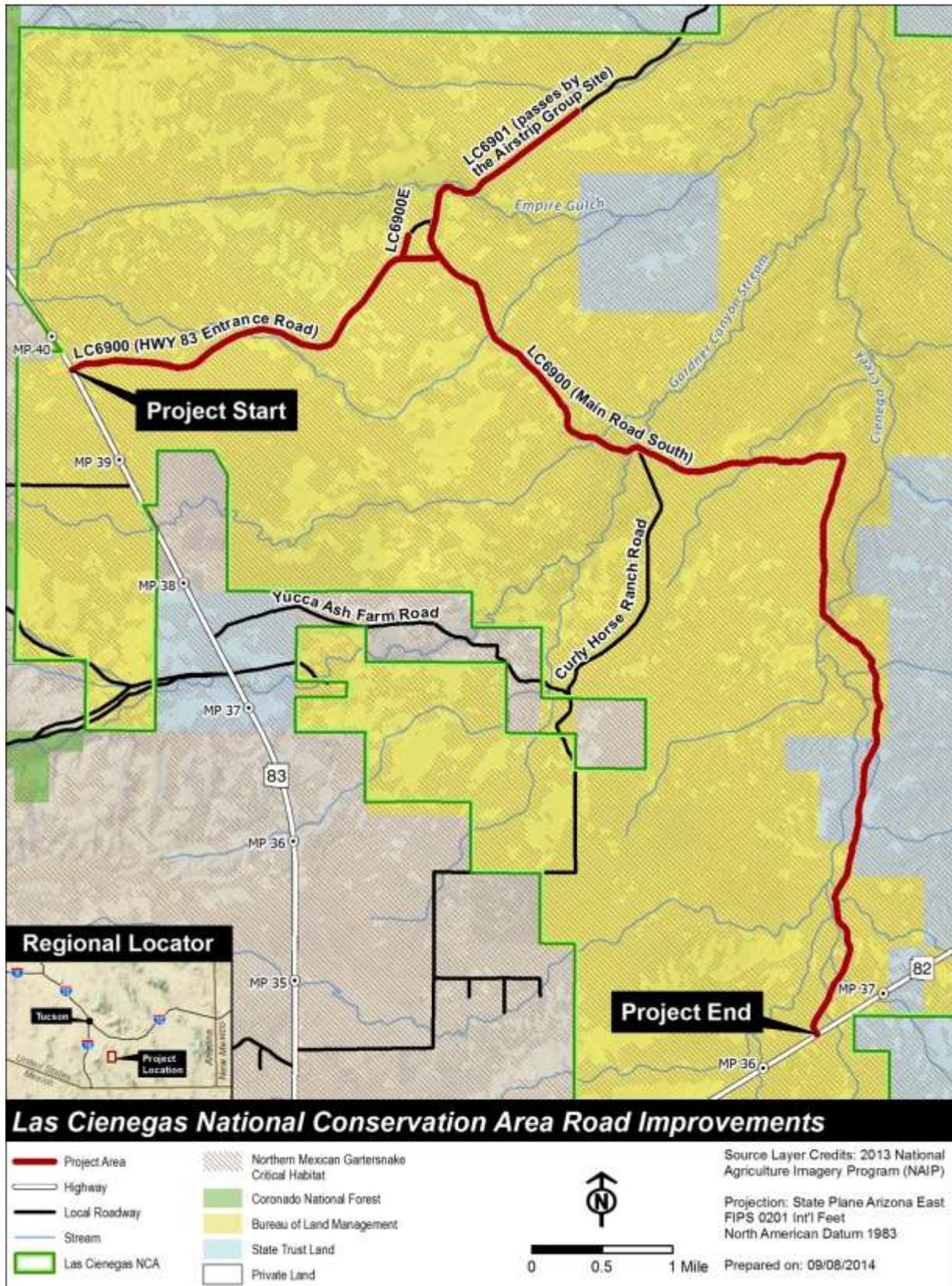
Records from the NCA show individuals were captured from Cienega Creek in 1986, 1994, 1996, 1999, 2000, 2007, 2008, and 2011. The 2011 trapping effort provided evidence that while the northern Mexican garter snake still exists in the NCA as a low-density population that appears to also still be in decline. In 2012, nearly 40 newborn Northern Mexican garter snakes bred in captivity were released into the NCA. In addition to Cienega Creek, tanks, springs, and wetlands in the area support suitable Northern Mexican garter snake habitat (USFWS 2014). They were released to Maternity Wildlife Pond and Empire Wildlife Pond in May of 2011. Maternity is about half a mile from LC6900A junction with LC6900. Empire is located adjacent to the floodplain along Empire Gulch. It is 2.6 miles from the pond to Empire Spring, which touches LC6901 at the cement crossing. Both populations have young snakes and were founded with less than 20 individuals. None is anticipated to grow to adult size and reproduce this year. However, in subsequent years, these individuals are expected to reach maturity and reproduce leading to migrants that occupy other surface waters in the basin.

USFWS listed the species as threatened under the ESA on July 8, 2014 and has proposed designated critical habitat (USFWS 2013a). The project area lies within designated critical habitat for the Northern Mexican garter snake (USFWS 2014) (**Figure 4**).

Select areas within critical habitat contain primary constituent elements that provide the physical and biological features necessary for the species' survival. PCEs specific to northern Mexican garter snakes have been proposed to include:

- Perennial or intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that allows for adequate river functions;
- Relatively still water wetlands such as livestock tanks, springs, and cienegas;

Figure 4: Northern Mexican Garter Snake Critical Habitat



- Shoreline habitat with adequate rocks, logs, and organic debris to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities;
- Aquatic habitat with sufficient characteristics that support a native fish and amphibian prey base;
- Adequate terrestrial space (up to 600 feet) adjacent to designated stream systems with sufficient structural characteristics to support gestation, immigration, emigration, and hibernation (brumation);
- A prey base consisting of viable populations of native amphibian and native fish species; and
- An absence of nonnative fish species, bullfrogs (*Lithobates catesbeiana*), and/or crayfish, or occurrence of these nonnative species at low enough levels such that recruitment of Northern Mexican garter snakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

No snakes were observed during a site survey on July 9-10, 2014. There is potentially suitable gestation and hibernation habitat for this species adjacent to the roadway in the project area mainly along Empire Gulch and Gardner Canyon. PCE habitat components are included in and near the project area with the presence of water tanks and cattle stock ponds.

As part of the NPDES permit that would be required for the project, a SWPPP would be prepared and implemented, which would minimize the transport of sediment by requiring use of storm water and erosion control BMPs. In addition, all construction activities would comply with the terms and conditions of the Clean Water Act Section 404 Permit and Section 401 Water Quality Certification. Therefore, no adverse effects to aquatic habitats within or downstream from the project area are expected. Since no work will occur within the aquatic areas and storm water and 404 permits will be required, no PCEs would be impacted by the proposed project.

Eight low water crossings are proposed to be constructed across ephemeral channels on the LC6900. These are similar in design to the ones previously built below Empire Spring (Empire Gulch Crossing) and the one crossing Cienega Creek upstream of the retired Cienega Ranch agriculture fields on the LC6901. All will be built during the winter and in the existing crossing at grade with the streambed. This type of design is reliable and mitigation in the SWPPP will alleviate most erosion and sediment movement in the channel. Only modest residual amounts of sediment are anticipated to be transported downstream. Bank and bed stability are anticipated to be similar to the existing crossings described above. Construction will occur when nighttime temperatures are near or below freezing and garter snakes are either bruminating or hibernating. No movement away from population sources is anticipated or likely. The low water crossing at Empire Gulch is functioning well and, thus, is not part of this project. Likewise cattle guards will be replaced with virtually no risk of encountering northern Mexican garter snakes during replacement for the same reasons as stated above.

Construction activities would be primarily confined to the existing roadway. Only minor vegetation removal is anticipated as part of the project where ditches need to be cleaned out, repair of culverts, the installation of riprap, and small expansion of a vehicle turnout area; therefore, alteration or loss of habitat important to this species would not occur. During construction, traffic would be limited but the roadway and roadway closures would occur. During times of the year when this species is active, vibrations and other construction related activities close to occupied habitat are temporary disturbances that have the potential to affect northern Mexican garter snakes. If northern Mexican garter snakes are present near the project area during construction, individuals could be displaced, injured, or killed. However, northern Mexican garter snakes primarily disperse during nighttime and after rains when project-related, construction activities would not be taking place, and no impacts to aquatic habitats or rocky outcroppings that would be suitable for gestation or hibernation are planned. Additionally, construction is scheduled during the winter months when snakes are typically hibernating or in a state of brumination (very low activity level) and thus the potential for direct effects is virtually nonexistent. Because project construction would take place during the winter months when northern Mexican garter snakes are less active or even hibernating in the area, there is little opportunity for direct effects to them. This coupled with the rarity of the species in the area and distance from occupied areas, makes an encounter with this species during the project highly improbable.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed, which will produce less sediment from erosion than it currently does.

Effect Determination for Northern Mexican Garter Snake

After reviewing the road improvement project plans and proposed action, the proposed project, as planned would pose no risk to this species or aquatic and riparian resources that support habitat, thus, the road improvement project will have **no effect** to the northern Mexican garter snake. The combination of habitat preferences, season selected for implementation, distance of occupied sites, short project duration, all work inside of the existing disturbed road bed and margin, and species scarcity make encounters with this species by road improvement activities virtually nonexistent.

Effect Determination for Northern Mexican Garter Snake Proposed Critical Habitat

After reviewing the road improvement project plans and proposed action, there is no risk to wetland or riparian resources that support northern Mexican garter snake. Thus, the road improvement project will have **no effect** on proposed critical habitat for northern Mexican garter snake, as roadwork will be concentrated inside of the existing disturbed roadbed and margins. This essentially eliminates all the risk of effects to PCEs including open, clean aquatic habitat or riparian habitat; adequate terrestrial space; a prey base consisting native amphibian and native fish species; absence of nonnative fish, amphibians and crayfish.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts. Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality.

These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized the RMP. These potential effects to northern Mexican garter snake and proposed critical habitat need to be part of a formal consultation and conference reinitiation of BOC 22410-20-02-F-0162, (Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona) in order to come into compliance with Section 7(a)2 of the ESA. Likewise, the entire road system affects the sediment load in ephemeral channels that connect to critical habitat. This road project would not change the existing sediment load much except that the new surface would produce less sediment than the existing one. The effects of the road system will need to be addressed in a reinitiation of formal consultation on the BOC for the LCNCA RMP

Southwestern Willow Flycatcher Designated Critical Habitat

The southwestern willow flycatcher has a distribution that includes southern Nevada, southern Utah, southern California, Arizona, New Mexico, western Texas, and possibly southwestern Colorado. In Arizona, the species breeds along the Colorado River near the mouth of the Little Colorado River in the Grand Canyon and south of Yuma; at the headwaters of the Little Colorado River near Greer and Eagar; along the middle Gila, Salt, and Verde rivers; along the middle to lower Sand Pedro River; and along the upper San Francisco River near the community of Alpine. Southwestern willow flycatchers require riparian areas with dense canopy cover and surface water during midsummer. In Arizona, the birds are found from 75 to 9,180 feet in elevation. Southwestern willow flycatchers arrive at breeding territory in late April to early May and migrate south in August and September. The species also nests in stands or forests of willow (*Salix* spp.), cottonwood (*Populus* sp.), and tamarisk (*Tamarix* spp.) along waterways. Nests generally occur in the branch fork about 5.3 meters above the ground, on average (Craig 1998). They feed primarily on flying insects, but occasionally consume berries and seeds. (AGFD 2013) Their diet is composed mostly of insects, including species from the wasp and bee family (*Hymenoptera*), the beetle family (*Coleoptera*), the fly family (*Diptera*), and the true bug family (*Hemiptera*), among others. Breeding occurs from May to August. Probable factors contributing to population declines are loss, alteration, and fragmentation of native riparian breeding habitat; loss of wintering habitat; nest predation; and brood parasitism by brown-headed cowbirds (Smith 2004).

In 2003, surveys were conducted by AGFD along Cienega Creek although no southwestern willow flycatchers were observed. However, brown-headed cowbirds, which are known to parasitize flycatcher nests, were present (Smith 2004). These surveys were part of on-going surveys being conducted by the AGFD since 1996 and were not associated with this project. According to the distribution data on the Arizona Heritage Data Management System, there have been southwestern willow flycatcher occurrences within the project area (AGFD 2014b). This species occurs adjacent to the project area in the riparian corridors along Empire Gulch and Gardner Canyon. The project area crosses through approximately 0.25 mile of critical habitat where LC6901 travels along and crosses Empire Gulch (**Figure 5**). No nests or individuals were observed during a site survey on July 9-10, 2014. According to BLM staff, southwestern willow flycatchers were observed during spring surveys and one nest has been documented along Cienega Creek within the NCA (BLM 2014).

The mature deciduous riparian trees within and adjacent to the project area constitute a small patch of the overall extensive riparian habitat within the NCA. The riparian habitats directly adjacent to the project area are less than ideal due to their proximity to the road and small abundance of multistoried canopies. The proposed action would not result in removal of any riparian or woody vegetation; therefore potential southwestern willow flycatcher habitat would not be impacted. Additionally, construction is scheduled to take place during the winter months so willow flycatchers will not be using riparian habitat the project area. As such, no construction-related disturbances are anticipated because the species would not be present within or adjacent to the project area.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed, which will produce less sediment from erosion than it currently does.

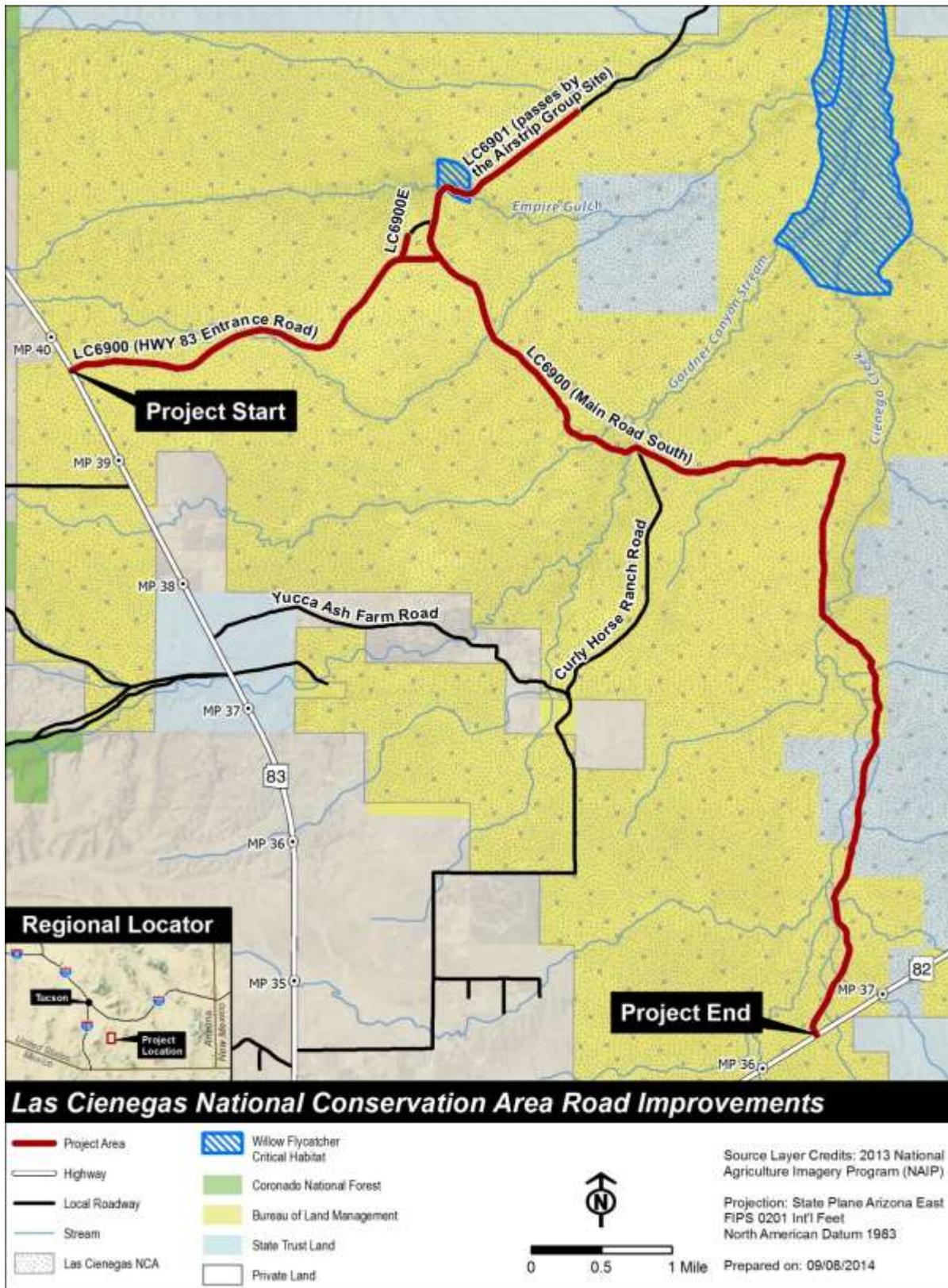
Designated Critical Habitat

PCEs specific to the flycatcher:

(1) Primary Constituent Element 1 — *Riparian vegetation*: Riparian habitat in a dynamic river or lakeside, natural or manmade successional environment (for nesting, foraging, migration, dispersal, and shelter) that is comprised of trees and shrubs (that can include Goodding's willow, coyote willow, Geyers willow, arroyo willow, red willow, yew leaf willow, pacific willow, box elder, tamarisk, Russian olive, buttonbush, cottonwood, stinging nettle, alder, velvet ash, poison hemlock, blackberry, seep willow, oak, rose, sycamore, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut) and some combination of:

(a) Dense riparian vegetation with thickets of trees and shrubs that can range in height from about 2 m to 30 m (about 6 to 98 ft.). Lower-stature thickets (2 to 4 m or 6 to 13 ft. tall) are

Figure 5: Southwestern Willow Flycatcher Critical Habitat



found at higher elevation riparian forests and tall-stature thickets are found at middle- and lower-elevation riparian forests; and/or

(b) Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft.) above ground or dense foliage only at the shrub or tree level as a low, dense canopy; and/or

(c) Sites for nesting that contain a dense (about 50 percent to 100 percent) tree or shrub (or both) canopy (the amount of cover provided by tree and shrub branches measured from the ground); and/or (d) Dense patches of riparian forests that are interspersed with small openings of open water or marsh or areas with shorter and sparser vegetation that creates a variety of habitat that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 ac) or as large as 70 ha (175 ac);

Primary Constituent Element 2 — *Insect prey populations*: A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, which can include: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies, moths, and caterpillars (Lepidoptera); and spittlebugs (Homoptera).

Effect Determination for Southwestern Willow Flycatcher

After reviewing the road improvement project plans and proposed action, the proposed action, as planned would pose no risk to riparian resources that support southwestern willow flycatcher, thus, the road improvement project will have **no effect** on southwestern willow flycatcher. Due to the construction of the proposed project during the winter months, and the majority of road work inside of the existing disturbed area eliminates the risk to the species and the risk of damage to habitat.

Effect Determination for Southwestern Willow Flycatcher Designated Critical Habitat

After reviewing the proposed project, there is no risk to wetland or riparian resources that support southwestern willow flycatcher habitat. Thus, the road improvement project will have **no effect** on proposed critical habitat for southwestern willow flycatcher, as roadwork will be concentrated inside of the existing disturbed roadbed and margins. This essentially eliminates all risk of effects to PCEs including riparian vegetation comprised of dense trees and shrubs interspersed with small openings of open water or marsh; and an abundant, diverse insect prey population.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts. Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the

Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality.

These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized the RMP. These potential effects to southwestern willow flycatcher need to be part of a formal consultation and conference reinitiation of BOC 02-21-02-F-162, (Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona) in order to come into compliance with Section 7(a)2 of the ESA.

Yellow-billed Cuckoo

The yellow-billed cuckoo is a medium-sized bird of about 12 inches and has been separated into eastern and western populations based on size of the bird, bill color, and length of tail between birds found east of the continental divide and those to the west (USFWS 2011). USFWS has proposed to list the western population of the yellow-billed cuckoo as a threatened species under the ESA (USFWS 2013b).

The distribution of the Western Distinct Population Segment of the yellow-billed cuckoo ranges from west of the Rocky Mountains in North America south to southern Baja California. The bird winters in South America. Though not abundant, occurrences have been recorded in every county in Arizona. Yellow-billed cuckoos occupy habitat of riparian cottonwood-willow galleries, salt cedar, and larger mesquite (*Prosopis* spp.) bosques at elevations of less than 6,600 feet. Nesting often coincides with outbreaks of cicadas and tent caterpillars, which provide food. In addition, the species feeds on hairy caterpillars, frogs, lizards, ants, beetles, wasps, flies, berries, and fruit. (AGFD 2013) In Arizona, the majority of cuckoo nests have been located in willows, but nests have been documented in cottonwood, sycamore, alder, mesquite, hackberry (*Celtis* spp.), and salt cedar (Corman and Magill 2000).

In Arizona, the species was historically widespread and locally common, although habitat destruction, modification, and degradation from damming, water diversions, transportation and urbanization infrastructure, and wildfire have threatened the suitable habitat available for this species. Arizona probably contains the largest remaining cuckoo population among states west of the Rocky Mountains (USFWS 2011). Losses of riparian habitats from historic levels have been substantial in Arizona, with losses greatest at lower elevations (below about 3,000 feet) along the Lower Colorado River and its major tributaries (Rosenberg *et al.* 1991). As habitat has declined, cuckoo numbers have likely declined, as has been documented for the lower Colorado River (Rosenberg *et al.* 1991).

The NCA's riparian habitats are known to support yellow-billed cuckoos (BLM 2011) and the species has been documented near the project area (AGFD 2013). In 2014, and in previous years, yellow-billed cuckoo (BLM files 2014) has occupied the riparian area in Empire Gulch, bisected by the LC6901. Both suitable and occupied habitat is present for this species within and adjacent to the project area in the riparian areas along Empire Gulch and Gardner Canyon. The mature deciduous riparian trees within and adjacent to the project area constitute a small patch of the overall extensive riparian habitat within the NCA. The proposed action would not

result in removal of any riparian or woody vegetation; therefore, occupied and suitable yellow-billed cuckoo habitat would not be impacted. Additionally, construction is scheduled to take place during the winter months so cuckoos will not be using riparian habitat the project area. As such, no construction-related disturbances are anticipated because the species would not be present within or adjacent to the project area. The project is proposed for implementation before the species returns to Arizona. No direct effects are anticipated or likely.

Yellow-billed cuckoo Designated Critical Habitat

A distinct populations segment of yellow-billed cuckoo was proposed for listing with critical habitat in the United States October 3, 2013 (USFWS 2013b). No critical habitat has been proposed for this species at this time.

Available data from California, Arizona, and western New Mexico indicate a small number of arrivals in May, but most birds arrive in June and some do not arrive until early July. The birds begin their southbound migration in mid-August, and most have left the breeding grounds by mid-September (USFWS 2013b).

The western yellow-billed cuckoo's breeding season varies regionally with the availability of its preferred food. Nesting peaks later (mid-June through August) than in most co-occurring bird species, and may be triggered by an abundance of cicadas (*Cicadidae* sp.), katydids (*Tettigoniidae* sp.), caterpillars (*Lepidoptera* sp.), or other large prey items that form the bulk of their diet. In Arizona, cicadas are an important food source. In California and Arizona, yellow-billed cuckoos rarely begin nesting before mid-June. Nesting in western North America continues through August, and up to three broods can be raised in a season if the prey base is sufficient (USFWS 2013b).

At the landscape level, the amount of cottonwood– willow-dominated vegetation cover and the width of riparian habitat influences western yellow-billed cuckoo distribution and abundance. Cuckoos require large blocks of riparian habitat for breeding and nests almost exclusively in low to moderate elevation riparian woodlands that cover 50 acres (ac) (20 hectares (ha)) or more within arid to semiarid landscapes. Biologists have hypothesized that this species may be restricted to these extensive, moist habitats because of humidity requirements for successful hatching and rearing of young (USFWS 2013b).

Occupied habitat in Arizona may contain box elder (*Acer negundo*), Arizona alder (*Alnus oblongifolia*), Arizona walnut (*Juglans major*), Arizona Sycamore (*Platanus wrightii*), oak (*Quercus* spp.), netleaf hackberry (*Celtis reticulata*), velvet ash (*Fraxinus velutina*), Mexican elderberry (*Sambuccus mexicanus*), tamarisk (*Tamarix* spp.), and seepwillow (*Baccharis glutinosa*). Surveys conducted by the Arizona Breeding Bird Atlas reported 68% of the yellow-billed cuckoo observations were in lowland riparian woodlands, often containing a variable combination of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. In Arizona, streamside cottonwood, willow groves, and larger mesquite bosques for migrating and breeding preferred. This species is rarely observed as a transient in xeric desert or urban settings. The Upper San Pedro River has had the largest yellow-billed cuckoo population in Arizona and yellow-billed cuckoo do use habitat along the Babocomari River (USFWS 2013b).

The curtailment and decline in the habitat of the western yellow-billed cuckoo is primarily the result of the long-lasting effects of habitat loss from manmade features that alter watercourse hydrology so that the natural processes that sustained riparian habitat in western North America are greatly diminished. Loss and degradation of habitat has also occurred because of livestock overgrazing and encroachment from agriculture. All of these have the potential to promote, and are exacerbated by, the conversion of native habitat to predominantly nonnative vegetation. The curtailment, degradation, fragmentation, and loss of habitat for the western yellow-billed cuckoo is ongoing and, absent changes in the landscape, hydrology, or other factors, it will likely continue to be negatively impacted or lost into the future. Climate change is a critical issue with potentially severe wide-ranging effects on the species and its habitat. The available scientific literature suggests that the effects of climate change will likely exacerbate multiple existing threats to the western yellow-billed cuckoo and its habitat. These threats include habitat loss and degradation from altered hydrology, with secondary effects from increases in nonnative vegetation and wildfire. These threats may result in smaller patch sizes of habitat such that the western yellow-billed cuckoo (USFWS 2013b) will no longer occupy many.

Designated Critical Habitat

Under the Act and its implementing regulations, USFWS are required to identify the physical or biological features essential to the conservation of the western yellow-billed cuckoo in are occupied at the time of listing, focusing on the features' PCEs. USFWS considers PCEs to be the elements of physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

Based on current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes including breeding, foraging and dispersing, USFWS determines that the PCEs specific to the western yellow-billed cuckoo are:

(1) Primary Constituent Element 1— *Riparian woodlands*: Riparian woodlands with mixed willow cottonwood vegetation, mesquite-thorn forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are greater than 325 ft. (100 m) in width and 200 ac (81 ha) or more in extent. These habitat patches contain one or more nesting groves, which are generally willow dominated, have above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.

(2) Primary Constituent Element 2— *Adequate prey base*: Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.

(3) Primary Constituent Element 3— *Dynamic riverine processes*. River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and

perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old.

Complete avoidance of the species and avoidance of critical habitat alteration is fully incorporated in the proposed action.

Cumulative Effects

No cumulative effects have been identified or are likely as the project is largely related to maintenance of an existing roadbed.

Effect Determination for Western Yellow-billed Cuckoo

After reviewing the road improvement project plans and proposed action, the proposed project, as planned would pose no risk to riparian resources that support western yellow-billed cuckoo, thus, the road improvement project will have **no effect** on western yellow-billed cuckoo. The combination of season selected for implementation, roadwork inside of the existing disturbed roadbed and margins eliminates all risk to the species and the risk of damage to habitat.

Effect Determination for Western Yellow-billed Cuckoo Proposed Critical Habitat

After reviewing the road improvement project plans and proposed action, there is no risk to wetland or riparian resources that support western yellow-billed cuckoo. Thus, the road improvement project will have **no effect** on proposed critical habitat for western yellow-billed cuckoo, as roadwork will be concentrated inside of the existing disturbed roadbed and margins. This essentially eliminates all risk to PCEs including riparian woodlands, prey base and riverine processes.

Indirect and Interrelated Effects

After completion of the project, traffic and driving speeds may increase which may increase the potential for harm or mortality through vehicle collisions. The majority of the use is expected to be from vehicle-based recreation. Vehicle-based recreation has both direct and indirect impacts. Increased levels of vehicle use and increased speeds would result in greater chances of wildlife mortality. Indirect impacts include disturbance to wildlife activity patterns due to vehicle presence and noise, and the potential increased presence of visitors. The closing of roads in the Rosemont Junction area and proposed changes in the Motorized Travel System on the Nogales Ranger District, Coronado National Forest could result in increased levels of vehicle-based recreation and vehicle related wildlife mortality. These interrelated effects are part of a larger set of effects from a large array of activities on the LCNCA that are authorized under the RMP. These potential effects to yellow-billed-cuckoo need to be part of a formal consultation and conference reinitiation of BOC 02-21-02-F-162, (Effects of the proposed Las Cienegas National Conservation Area Resource Management Plan in Pima and Santa Cruz Counties, Arizona) in order to come into compliance with Section 7(a)2 of the ESA.

7.0 Conservation/Minimization Measures

The following conservation measures would be implemented for the project in order to avoid and minimize potential impacts to ESA-listed species and proposed or designated critical habitat; to control erosion and sedimentation during construction; to protect water quality in streams; and to limit the spread of invasive weeds.

- Construction activities will be conducted outside of the southwestern willow flycatcher, yellow-billed cuckoo and migratory and breeding seasons and will be completed by March 15. If construction cannot be finished by March 15, then the contract will contact CFL and CFL, in consultation with BLM, will determine a path forward (may include curtailing project until next winter).
- During construction, garbage or trash produced would be removed promptly and properly to avoid creating attractive wildlife nuisances.
- BLM has reviewed the sequence of work for this project developed by Federal Highways in consultation with BLM. The BLM has determined that this sequence is compatible with species occupation and activity levels within the project area that will prevent any effects from occurring.
- Vehicles and equipment entering the project area would be kept clean of noxious weeds and free from oil leaks and are subject to inspection. Construction equipment would be washed thoroughly to remove dirt, plant, and other foreign material prior to entering the project area. Particular attention would be shown to the under carriage and surfaces where soil containing exotic seeds may exist. These efforts are critical to prevent the introduction and establishment of non-native plant species into the project area.
- Storm water BMPs and good housekeeping procedures will be implemented for the project. Spill control measures will be kept on-site to protect against any accidental releases of chemicals or petroleum based products used for equipment operation. FHWA would require inspection of each piece of equipment before entering the project. Equipment found operating on the project that has not been inspected, or has oil leaks would be shut down and subject to citation.
- Provide certified weed free permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction.

8.0 Consultation Coordination

The USFWS Information, Planning, and Conservation (IPaC) decision support system database was used to request an official species list of threatened or endangered species that may occur in the Project Area on July 9, 2014. Phone conversations and email correspondence were initiated with Heather Swanson, BLM Biologist, on July 16, 2014 to discuss biological resources within and adjacent to the proposed project. Input was also received from Jeff Simms, BLM Biologist on several occasions in September of this year.

9.0 Summary of Findings

The FHWA in cooperation with the BLM is proposing to incorporate the Las Cienegas NCA transportation network into the Federal Lands Transportation Program. This transportation network is comprised of four BLM roads totaling nearly 13.3 miles. These routes provide access to public lands for recreation, access to public events held at the Las Cienegas NCA, and through access for US Border Patrol and BLM law enforcement. The routes proposed for improvements directly connect to state routes 82 and 83, which are primary routes to the Coronado National Forest located west, south, and east of the NCA.

Based on a desktop review of USFWS and AGFD data, as well as BLM documents, which included a review of recorded occurrences, known range, and habitat requirements of each species, it was determined that the following federally listed and proposed species and critical habitat have the potential to occur or are known to occur in the project area:

- Chiricahua leopard frog (*Lithobates chiricahuensis*) – ESA Threatened with Designated Critical Habitat
- Gila topminnow (*Poeciliopsis occidentalis*) – ESA Endangered,
- Gila Chub (*Gila intermedia*) – ESA Endangered with Designated
- Desert pupfish (*Cyprinodon macularius*) – ESA Endangered, Huachuca water-umbel (*Lilaeopsis schaffneriana* ssp. *recurva*) – ESA Endangered,
- Lesser long nosed bat (*Leptonycteris curasoae yerbabuena*) ESA Endangered
- Jaguar (*Panthera onca*) – ESA Endangered with Designated Critical Habitat, Northern Mexican garter snake (*Thamnophis eques megalops*) – ESA Threatened with Proposed Critical Habitat,
- Ocelot (*Leopardus pardalis*) – ESA Endangered,
- Southwestern willow flycatcher (*Empidonax traillii extimus*) – ESA Endangered with Designated Critical Habitat,
- Yellow-billed cuckoo (*Coccyzus americanus*) – ESA Proposed Threatened with Proposed Critical Habitat,

Two previous formal consultations/conferences on activities within the LCNCA have occurred in the past. The first was on the Las Cienegas NCA Resource Management Plan in 2002 (BOC 22410-2002- F-0162). Species and critical habitat potentially affected by actions in the RMP include the following:

- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Gila topminnow (*Poeciliopsis o. occidentalis*)

- Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*)
- Desert pupfish (*Cyprinodon m. macularius*)
- Canelo Hills ladies'-tresses (*Spiranthes delitescens*)
- Northern aplomado falcon (*Falco femoralis septentrionalis*)
- Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*)
- Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)
- Chiricahua leopard frog (*Lithobates chiricahuensis*)
- Gila chub (*Gila intermedia*) and proposed Critical Habitat

As part of this biological and conference opinion, USFWS concurred that that the actions in the LCNCA RMP were not likely to adversely affect the Aplomado falcon (*Falco femoralis*) and jaguar.

After thorough review of the proposed project, it was concluded that the maintenance and road improvement project was similar to the description of road related actions in the RMP. The key point is that the majority of road work will stay within the road prism (bed and ditches) allowing for some level of disturbance up to six feet on either side with some additional spot work for culverts and rip-wrap out 8 to 16 feet. Therefore, no new effects, which would trigger re-initiation of consultation, are anticipated or likely. This BOC has analysis and a take statement for these species.

The second consultation was a reinitiation on the Resource Management Plan BOC (22410-2002-F-0162) on the proposed modification and use of livestock watering facilities for the release of Chiricahua leopard frog (*Rana chiricahuensis*), Gila topminnow (*Poeciliopsis occidentalis*), desert pupfish (*Cyprinodon macularius*), Gila chub (*Gila intermedia*), and Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) on the Las Cienegas National Conservation Area, Santa Cruz and Pima Counties, Arizona (BOC 22410-2002- F-0162-R001).

Species included in the formal consultation/conference:

- Chiricahua leopard frog (*Lithobates chiricahuensis*)
- Gila chub (*Gila intermedia*)
- Gila topminnow (*Poeciliopsis occidentalis*)
- Desert pupfish (*Cyprinodon macularius*)
- Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*).

This biological opinion and conference opinion included a USFWS concurrence that the proposed action is not likely to adversely affect the endangered lesser long-nosed bat and not likely to destroy or adversely modify proposed critical habitat for the Chiricahua leopard frog.

Federally listed species and designated/proposed critical habitat not included under an existing biological opinion include the following:

- Critical Habitat for jaguar (*Panthera onca*)
- Endangered ocelot (*Leopardus pardalis*)
- Proposed threatened yellow-billed cuckoo
- Proposed Critical Habitat for yellow-billed cuckoo
- Threatened northern Mexican garter snake
- Proposed Critical Habitat for northern Mexican garter snake
- Designated Critical Habitat for Chiricahua leopard frog
- Designated Critical Habitat for southwestern willow flycatcher

Based on the nature of the project species, conservation measures that eliminate potential effects, data review, survey findings, and key aspects of species life histories, it has been determined that the proposed project would have **no effect** on ESA-listed or proposed species or result in the destruction or adverse modification of proposed or designated critical habitat not already considered and accounted for in previous consultations.

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**Appendix A:
Project Area Photographs**

Las Cienegas National Conservation Area Road Improvements
Biological Evaluation



Facing east along LC6900E near intersection with HWY 83



Facing south along LC6901 towards low-flow crossing through Empire Gulch.



Facing west along Empire Gulch towards LC6901.



Facing northwest along LC6900 (HWY 83 Entrance Road) towards Gardner Canyon.



Facing south from the road into Gardner Canyon.



Facing north along LC6900 (HWY 83 Entrance Road).

**Appendix B:
ESA Listed Threatened, Endangered, and Candidate
Species, and Sensitive Wildlife and Plant Species of Gila
District and Pima and Santa Cruz Counties, Arizona**

Federally Listed or Candidate Species with Historic or Current Occurrences in the Cienega Creek Basin (2010)		
Name	Federal Status	Habitat and Presence
Gila topminnow (<i>Poeciliopsis occidentalis occidentalis</i>)	FE	Pools, cienegas, backwaters, seeps, and springs. Present in Cienega Creek, Empire Gulch, and Mattie Canyon
Gila chub (<i>Gila intermedia</i>)	FE	Deep pools with overhanging banks/cover. Present in Cienega Creek and Mattie Canyon. Designated Critical Habitat on LCNCA
Desert pupfish (<i>Cyprinodon macularius</i>)	FE	Small, shallow pools, cienegas, backwaters, seeps, and springs. Historically present in the Santa Cruz and San Pedro river drainages. One reintroduced population is present in pond on private land within planning area. Reintroduced to wetlands and wildlife pond throughout the LCNCA.
Chiricahua leopard frog (<i>Rana chiricahuensis</i>)	FT	Pools in stream channels and isolated pools at seeps and springs. Present in Cienega Creek, Empire Gulch, Mattie Canyon, and off-channel ponds in 1990's. Declining numbers. Currently, only present in Empire Gulch.
Northern Mexican garter snake (<i>Thamnophis eques megalops</i>)	FT	Perennial stream segments and marshes along Cienega Creek and tributaries. Declining numbers. Has proposed CH on LCNCA.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	FT	Large, open bodies of water for foraging; large trees or snags or cliffs for nesting. Transient in planning area.
Northern aplomado falcon (<i>Falco femoralis septentrionalis</i>)	FE	Open grassland habitats with scattered trees/yucca for nesting and perches. Extirpated.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	FE	Dense willow and cottonwood habitats along streams with perennial water. Migratory individuals documented. Breeding pairs confirmed in planning area. Designated CH on LCNCA
Yellow-billed cuckoo	PT	Cottonwood-willow riparian areas along

<i>(Coccyzus americanus)</i>		Cienega Creek and tributaries. Proposed CH on LCNCA.
Black-tailed prairie dog <i>(Cynomys ludovicianus)</i>	FC	Open, desert grasslands. Recently reintroduced.
Lesser long-nosed bat <i>(Leptonycteris curasoae yerbabuena)</i>	FE	Forages on agave in upland grassland habitats. Confirmed presence in planning area.
Jaguar <i>(Felis onca)</i>	FE	May use dense vegetation in river bottoms for foraging and travel corridors. Historical records from mountains next to planning area but no current records . Has Designated Critical Habitat on the LCNCA.
Ocelot <i>(Felis pardalis)</i>	FE	May use dense vegetation in river bottoms for foraging and travel corridors. Historical records from mountains next to planning area but no current records .
Canelo lady tresses orchid <i>(Spiranthes delitescens)</i>	FE	Present in drainages near planning area but not documented along Cienega Creek or tributaries.
Huachuca water umbel <i>(Lilaeopsis schaffneriana ssp. recurva)</i>	FE	Early successional species requiring periodic flooding and opening of streamside habitat and sand deposition. Has been found in Empire Gulch and Cienega Creek. Reintroduced to Cieneguita wetlands.
<p>FE = Federally listed as endangered. FT = Federally listed as threatened. FP = Proposed for federal listing. DL = Delisted but similar level of protection to a proposed species. FC = Candidate for federal listing. All species are also on the wildlife of special concern in Arizona (WSCA) list, (draft) Arizona Game and Fish Department.</p>		

BLM Sensitive Species ¹ Within Empire-Cienega Planning Area (updated 2014 J.R. Simms)		
Name	Habitat	Presence
Longfin dace	Pools and riffles in perennial streams.	PC
Texas horned lizard	Desert grassland.	PC
Canyon spotted whiptail (<i>Aspidoscelis burti</i>)	Inhabits semi-desert grasslands and Madrean evergreen woodlands	PC
Gray hawk	Cottonwood willow galleries next to mesquite woodland. Population increasing in planning area.	PC
Burrowing owl	Open grassland in association with black-tailed prairie dog or kangaroo rat mounds.	PC
Loggerhead shrike	Grassland, open habitats.	PC
Cave myotis	Roosts in large numbers in caves/mines and forages on insects in uplands and over water.	PC
Fringed myotis	Roosts in large numbers in caves/mines and forages on insects in uplands and over water.	PC
California leaf-nosed bat	Roosts in large numbers in caves/mines and forages on insects in uplands and over water.	PC
Mexican long-tongued bat	Roosts may vary from crevices to caves, usually small numbers. Forages on nectar from agaves and other plants.	PC
Huachuca golden aster	Open grassland, disturbed and	PC

<i>(Heterotheca rutteri)</i>	undisturbed sites. Documented at one locale within planning area but much more potential habitat exists.	
Arizona Giant sedge (<i>Carex spissa</i> var. <i>ultra</i>)	Wetlands, steams and springs.	PC
Needle spined pineapple cactus (<i>Echinomastus</i> [= <i>Neolloydia</i>] <i>erectocentrus</i> var. <i>erectocentrus</i>)	Open sites dominated by desert grassland, chaparral, or mixed shrub vegetation on soils derived from limestone alluvium.	PL
PC = Presence Confirmed. PL = Presence Likely.		

AGFD Proposed Wildlife of Special Concern in Arizona Occurring or Likely to Occur in the Empire-Cienega Planning Area		
Name	Habitat	Presence
Mexican garter snake (<i>Thamnophis eques</i>)	Perennial stream segments and marshes along Cienega Creek and tributaries.	PC
Slevin's Bunch grass lizard (<i>Sceloporus slevini</i>)	Desert grassland.	PC
Lowland leopard frog (<i>Rana yavapaiensis</i>)	Perennial streams, springs, and pools within Cienega Creek watershed.	PC
Azure bluebird (<i>Sialia sialis fulva</i>)	Oak woodland, mainly in winter.	PL
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Cottonwood-willow riparian areas along Cienega Creek and tributaries.	PC
Ferruginous hawk (<i>Buteo regalis</i>)	Occasional visitor, foraging in grassland habitats.	PC
Northern goshawk (<i>Accipiter gentilis</i>)	Vagrant, usually dense coniferous forest.	PC
Swainson's hawk (<i>Buteo swainsoni</i>)	Regular breeder, grassland habitats.	PC
Green kingfisher (<i>Chloroceryle americana</i>)	Perennial streams, rare to regular visitor.	PC
Sprague's pipit (<i>Anthus spragueii</i>)	Desert grassland, open valley bottoms.	PC
Baird's sparrow (<i>Ammodramus bairdii</i>)	Desert grassland swales.	PC
Arizona grasshopper sparrow (<i>Ammodramus savannarum ammolegus</i>)	Desert grassland swales. Summer breeding population of particular concern.	PC
Western red bat (<i>Lasiurus blossevillii</i>)	Cottonwood willow riparian areas along Cienega Creek and tributaries.	PC

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Townsend's big-eared bat (<i>Plecotus townsendii</i>)	Roosts in caves/mines, forages on insects in uplands or over water.	PC
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Open, desert grasslands.	RI
PC = Presence confirmed. PL = Presence likely. EX=Extirpated. RI = Reintroduced		

**Appendix C:
Vegetation Species Lists Identified During July 9-10, 2014
Field Survey**

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Scientific Name	Colloquial Name
<i>Acacia constricta</i>	whitethorn acacia
<i>agave palmerii</i>	lechuguilla
<i>Agave shottii</i>	shindagger
<i>Amsinkia menziesii</i>	fiddleneck
<i>Anisacanthus thurberi</i>	desert honeysuckle
<i>Arctostaphylos pungens</i>	pointleaf manzanita
<i>Asclepias linaria</i>	pine-leaf milkweed
<i>Astragalus lentiginosus</i>	locoweed
<i>Astragalus nothoxys</i>	sheep locoweed
<i>Atriplex canescens</i>	four-wing saltbush
<i>Baccharis salicifolia</i>	seepwillow
<i>Baccharis sarothroides</i>	desert broom
<i>Bidens aurea</i>	bur marigold
<i>Bouvardia ternifolia</i>	bouvardia
<i>Brassica nigra</i>	black mustard
<i>Calochortus ambiguus</i>	Mariposa lily
<i>Camissonia californica</i>	mustard primrose
<i>Castilleja lanata</i>	wooly paintbrush
<i>Chamaecrista nictitans</i>	pea
<i>Chamaesaracha sordida</i>	five eyes
<i>Cirsium neomexicanum</i>	New Mexico thistle
<i>Commandra umbellata</i>	false toadflax
<i>Conzuya canadensis</i>	horseweed
<i>Cryptantha barbiger</i>	bearded cryptantha
<i>Cucurbita digitata</i>	five-finger gourd
<i>Cylindropuntia versicolor</i>	staghorn cholla
<i>Dalea pulchra</i>	indigo bush
<i>Datura wrightii</i>	sacred datura
<i>Dieteria asteroides</i>	narrow-leaf aster
<i>Echinocereus coccineus</i>	claret cup
<i>Echinocereus triglochidiatus</i>	hedgheg cactus
<i>Echinopepon wrightii</i>	balsam apple
<i>Ericameria cuneata</i>	desert rock goldenbush
<i>Erigeron arizonicus</i>	Arizona fleabane
<i>Eriogonum fasciculatum</i>	flat-top buckwheat
<i>Erodium cicutarium</i>	filaree
<i>Ferocactus wizlizenii</i>	fishhook barrel cactus
<i>Fouquieria splendens</i>	ocotillo
<i>Gaillardia pulchella</i>	blanket flower
<i>Gomphrena caespitosa</i>	tufted globe amaranth

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<i>Grindelia squarrosa</i>	curly-cup gumweed
<i>Gutierrezia serotina</i>	snakeweed
<i>Gymnosperma glutinosum</i>	gumhead
<i>Helianthus annuus</i>	sunflower
<i>Heterotheca subaxillaris</i>	camphorweed
<i>Hoffmanseggia</i> sp.	rush pea
<i>Kochia</i>	Kochia
<i>Lactuca serriola</i>	prickly lettuce
<i>Lactuca</i> sp.	lettuce
<i>Lamium amplexicaule</i>	henbit
<i>Larrea tridentata</i>	creosote bush
<i>Lepidium virginicum</i>	Virginia pepperweed
<i>Linum lewisii</i>	blue flax
<i>Linum neomexicanum</i>	yellow flax
<i>Lupinus concinnus</i>	elegant lupine
<i>Machaeranthera gracile</i>	goldenweed
<i>Malacothrix stebbinsii</i>	desert dandelion
<i>Mammillaria grahamii</i>	fishhook pincushion
<i>Marah gilensis</i>	big root
<i>Maurandya antirrhiniflora</i>	snapdragon vine
<i>Melilotus albus</i>	white sweet clover
<i>Melilotus officinalis</i>	yellow sweet clover
<i>Mimosa distachya</i>	Garabatico
<i>Nolina microcarpa</i>	beargrass
<i>Oenothera primiveris</i>	desert primrose
<i>Olneya tesota</i>	ironwood
<i>Opuntia engelmannii</i>	Englemann's prickly pear
<i>Porophyllum ruderale</i>	poreleaf
<i>Proboscidea parviflora</i>	Devil's claw
<i>Prosopis glandulosa</i>	honey mesquite
<i>Prosopis velutina</i>	mesquite
<i>Purshia stansburiana</i>	cliff rose
<i>Rhus ovata</i>	sumac
<i>Robinia neomexicana</i>	New Mexico locust
<i>Rumex crispus</i>	curly dock
<i>Salix goodingii</i>	Gooding's willow
<i>Salix taxifolia</i>	yew willow
<i>Salsola fendleri</i>	Fendler's hawkweed
<i>Sambucus neomexicana</i>	blue elderberry
<i>Senecio flaccidus</i>	threadleaf groundsel
<i>Sisymbrium altissimum</i>	tall tumble mustard

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<i>Sisymbrium irio</i>	London rocket
<i>Solanum eleagnifolium</i>	silverleaf nightshade
<i>Solanum stoloniferum</i>	fender's nightshade
<i>Solidago wrightii</i>	Wright's goldenrod
<i>Sonchus asper</i>	sow thistle
<i>Sphaeralcea laxa</i>	Caliche globemallow
<i>Stephanomeria pauciflora</i>	wire lettuce
<i>Taraxacum officinale</i>	dandelion
<i>Thysanocarpus curvipes</i>	lace pod
<i>Tribulus terrestris</i>	puncture vine
<i>Verbascum thapsus</i>	mullein
<i>Verbena neomexicana</i>	vervain
<i>Vicia americana</i>	American vetch
<i>Yucca elata</i>	soaptree yucca
<i>Yucca schottii</i>	mountain yucca

**Appendix D:
Aquatic Species Reintroductions on the Las Cienegas
NCA**

