

**Biological Assessment**  
**OF**  
**ADOT Herbicide Treatment Program on**  
**Bureau of Land Management Lands in Arizona**

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## LIST OF ACRONYMS

ACEC	Area of Critical Environmental Concern	NEPA	National Environmental Policy Act
AESO	Arizona Ecological Services Office (USFWS)	OHVs	off-highway vehicles
ADOT	Arizona Department of Transportation	PCH	proposed critical habitat
AGFD	Arizona Game and Fish Department	PE	proposed endangered species (ESA)
BA	Biological Assessment	PEIS	programmatic Environmental Impact Statement
BLM	Bureau of Land Management	PUP	pesticide-use permit
D	delisted species (ESA)	RNCA	Riparian National Conservation Area
DCH	designated critical habitat (ESA)	ROW	right-of-way
EPA	United States Environmental Protection Agency	SDS	safety data sheets
ERA	Environmental Risk Assessments	SOPs	standard operating procedures
ESA	Endangered Species Act	SR	State Route
FAHP	Federal-Aid Highway Program	SWFL	southwestern willow flycatcher
FHWA	Federal Highway Administration	TEP	threatened, endangered, and proposed species (ESA)
I	Interstate Highway	U.S.	United States
LE	listed endangered species (ESA)	US	United States Highway
LT	listed threatened species (ESA)	USFWS	United States Fish and Wildlife Service
MP	milepost	XN	experimental nonessential population
mph	miles per hour	YBCU	yellow-billed cuckoo
NCA	National Conservation Area	YCRA	Yuma clapper rail

## Executive Summary

The US Bureau of Land Management (BLM) in association with Federal Highway Administration (FHWA), propose to authorize the Arizona Department of Transportation (ADOT) to conduct annual herbicide treatment programs on roadway easements through BLM lands throughout Arizona. The “action area” of the project is the linear ADOT easement through lands administered by the BLM in Arizona. The action area may vary from 50 feet to 400 feet wide and occurs as segments along roadways throughout the state.

The BLM proposes to allow the use of approved herbicides under the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Final Programmatic Environmental Impact Statement* (PEIS) Record of Decision (BLM PEIS 2007) to reduce the incidence and spread of undesirable vegetation within ADOT right-of-ways (ROW). Tiered to the *Vegetation Treatments on BLM Lands in 17 Western States Final Biological Assessment* (BLM 2007) and the PEIS, this Biological Assessment (BA) analyzes the effects of the proposed herbicide treatment on species potentially occurring in Arizona that are federally listed as threatened, endangered, and proposed (TEP) under the federal Endangered Species Act of 1973. Standard operating procedures and conservation measures included in the PEIS and BLM BA, along with recommended conservation measures from the *Recommended Protection Measures for Pesticide Applications in Region 2 of the US Fish and Wildlife Service* (USFWS 2007f) were incorporated into this analysis, and will be adhered to during the proposed action to minimize potential effects to TEP species.

Of the TEP species potentially occurring within Arizona, it was determined that 24 species have the potential, due to known distribution or presence of suitable habitat, to occur within the action area and thus were evaluated in detail. Determinations for the evaluated species are included in the table below. The proposed action will have no effect to the 43 TEP species excluded from further evaluation, or their habitat.

USFWS Arizona Species Evaluated in Detail		
Species	Status <sup>1</sup>	Effects Determination
Arizona cliffrose ( <i>Purshia subintegra</i> )	ESA LE	May affect, not likely to adversely affect
Arizona hedgehog cactus ( <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i> )	ESA LE	May affect, not likely to adversely affect
Bonytail chub ( <i>Gila elegans</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat.
Brady pincushion cactus ( <i>Pediocactus bradyi</i> )	ESA LE	May affect, not likely to adversely affect
California condor ( <i>Gymnogyps californianus</i> )	ESA LE, XN	May affect, not likely to adversely affect
Chiricahua leopard frog ( <i>Lithobates chiricahuensis</i> )	ESA LT DCH	May affect, not likely to adversely affect species or designated critical habitat
Fickeisen plains cactus ( <i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i> )	ESA LE PCH	May affect, not likely to adversely affect species or proposed critical habitat
Gierisch mallow ( <i>Sphaeralcea gierischii</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat.
Holmgren (Paradox) milk-vetch ( <i>Astragalus holmgreniorum</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Huachuca water umbel ( <i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat.
Mojave desert tortoise ( <i>Gopherus agassizii</i> )	ESA LT DCH	May affect, not likely to adversely affect species. No effect on designated critical habitat

## USFWS Arizona Species Evaluated in Detail

Species	Status <sup>1</sup>	Effects Determination
Narrow-headed gartersnake ( <i>Thamnophis rufipunctatus</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Northern Mexican gartersnake ( <i>Thamnophis eques megalops</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Ocelot ( <i>Leopardus pardalis</i> )	ESA LE	May affect, not likely to adversely affect
Peebles Navajo cactus ( <i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i> )	ESA LE	May affect, not likely to adversely affect
Pima pineapple cactus ( <i>Coryphantha scheeri</i> var. <i>robustispina</i> )	ESA LE	May affect, not likely to adversely affect
Razorback sucker ( <i>Xyrauchen texanus</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Siler pincushion cactus ( <i>Pediocactus sileri</i> )	ESA LT	May affect, not likely to adversely affect
Sonoran pronghorn ( <i>Antilocapra americana sonoriensis</i> )	ESA LE, XN	May affect, not likely to adversely affect
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Virgin River chub ( <i>Gila seminuda</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Woundfin ( <i>Plagopterus argentissimus</i> )	ESA LE, XN DCH	May affect, not likely to adversely affect species or designated critical habitat
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Yuma clapper rail ( <i>Rallus longirostris yumanensis</i> )	ESA LE	May affect, not likely to adversely affect

<sup>1</sup> Status Definitions: ESA=Endangered Species Act, LE=Listed Endangered, LT=Listed Threatened, XN=Experimental Nonessential Population, PCH = Proposed Critical Habitat, DCH = Designated Critical Habitat.

Sources: U.S. Fish and Wildlife Service Endangered Species Act Species List for the State of Arizona. Accessed October 3, 2014 (<http://ecos.fws.gov/ipac/>).

## 1. Introduction

The Bureau of Land Management (BLM) in association with Federal Highway Administration (FHWA), propose to authorize the Arizona Department of Transportation (ADOT) to conduct annual herbicide treatment programs on roadway easements throughout Arizona. The BLM manages 12.2 million acres of land within the state, and ADOT is responsible for maintaining hundreds of miles of interstates and highways across BLM lands (BLM 2014). Approximately 8.3 million acres of “weed infestations” occur on Arizona’s BLM lands, half of which occur along roadways (BLM 2007). Therefore, BLM, ADOT, and FHWA believe there is a need to contain, control, or eradicate undesirable vegetation that poses safety hazards or threatens native plant communities on road easements. The “action area” of the project is the linear ADOT easement through lands administered by the BLM in Arizona. The action area may vary from 50 feet to 400 feet wide and occurs as segments along roadways throughout the state (Figure 1) (See also Appendix A).

For the purposes of this document, the term “undesirable vegetation” is used to encompass invasive plants, noxious weeds, and other hazardous vegetation. An invasive plant is one that grows and spreads rapidly, replacing native plants. The term “noxious” has legal ramifications in Arizona due to noxious weed laws and regulations. Hazardous vegetation is any vegetation not meeting size requirements within the clear zone (the area adjacent to a roadway where an errant car could leave the paved road surface and potentially recover). Noxious and invasive weeds commonly found along roadways in Arizona include, but are not limited to, various thistle-like flowering plants (*Centaurea* spp.), Russian thistle (*Salsola kali*), Dalmatian toadflax (*Linaria dalmatica*), mullein (*Verbascum thapsus*), and camelthorn (*Alhagi maurorum*); and grasses such as buffelgrass (*Pennisetum ciliare*), cheatgrass (*Bromus tectorum*), fountain grass (*Pennisetum setaceum*), and Johnsongrass (*Sorghum halapense*).

The spread of noxious and invasive vegetation has detrimental environmental impacts and the disturbed environments of roadways present apt conditions for such plants to thrive. Weed infestations threaten native biological potential at the macro and micro levels by outcompeting native vegetation, thus limiting habitat complexity, diversity, and composition; reducing wildlife forage nutrient levels or palatability; changing soil properties (e.g. pH); reducing water quality and quantity; and altering the suitability of an area for native wildlife. Additionally, dried plant matter along roadsides, specifically of invasive grasses, provides an excess of fuels and poses a serious fire hazard in a landscape not historically adapted to fire. Overall, the introduction and spread of undesirable vegetation can alter natural ecological processes and displace native wildlife including threatened, endangered, and sensitive species.

The proposed approach to undesirable vegetation control within the action area would prevent the further spread of invasive species onto interior BLM lands and fulfill the primary objectives of the BLM vegetation treatment program to manage hazardous fuels, control noxious weeds, and restore fish, wildlife, and native vegetation on public lands.

This Biological Assessment (BA) is tiered to the *Vegetation Treatments on BLM Lands in 17 Western States Final Biological Assessment* (BLM 2007) and the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Final Programmatic Environmental Impact Statement* (PEIS) (BLM PEIS 2007). The BA and PEIS analyzed the effects of using herbicides for treating vegetation on public lands in the western United States. This BA will address the application of herbicides within ADOT easement through lands administered by the BLM in Arizona.

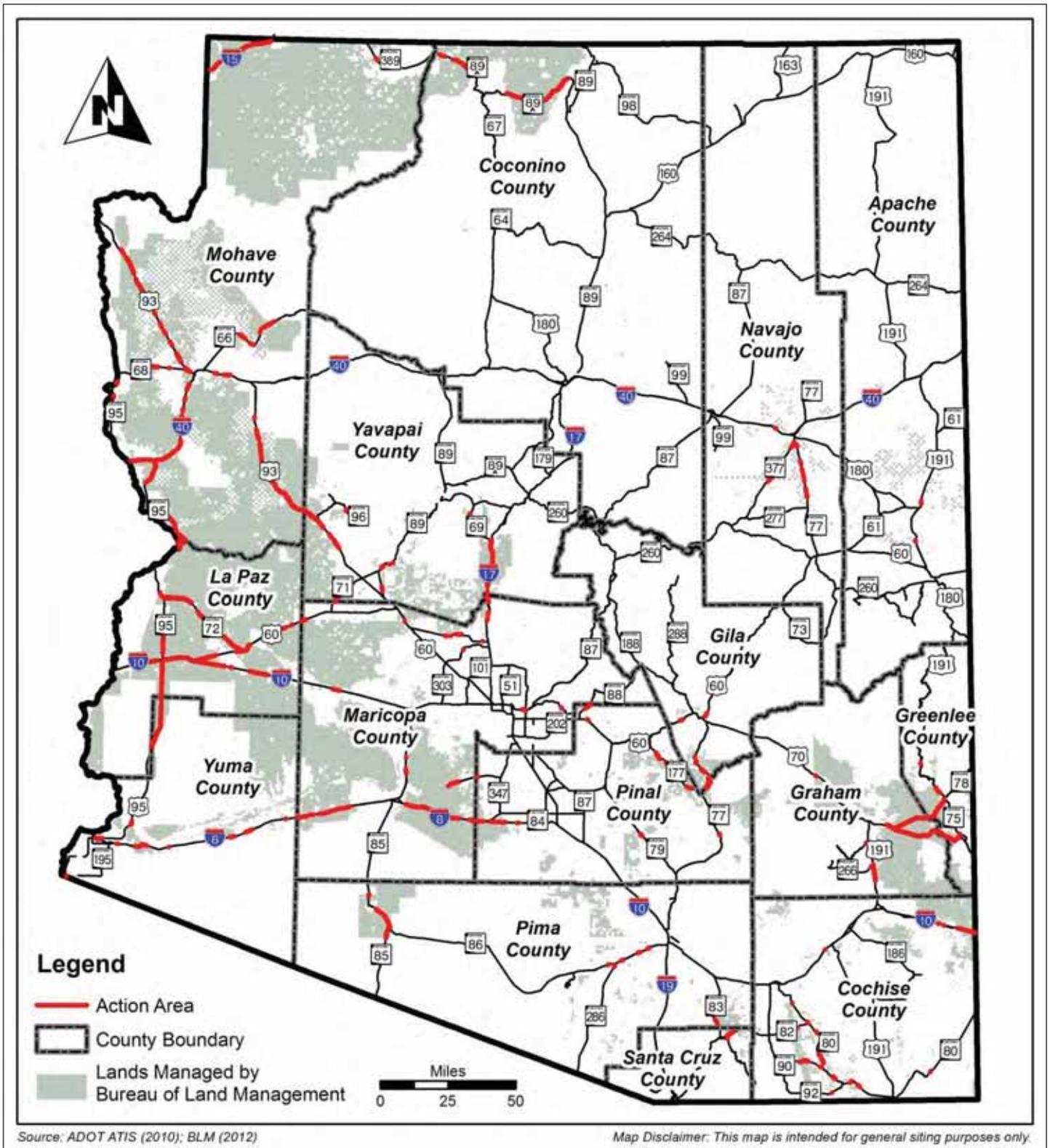


Figure 1– Statewide Action Area Map

## 2. Proposed Action

The BLM proposes to allow the use of approved herbicides under the PEIS Record of Decision (BLM PEIS 2007) to reduce the incidence and spread of undesirable vegetation within ADOT right-of-ways (ROW). Areas within ADOT ROWs would be treated as part of federally-funded projects under the Federal-Aid Highway Program and during routine state-funded maintenance work.

ADOT would provide the necessary information to complete Pesticide Use Proposals (PUPs) describing proposed activities and chemicals to be used within the ADOT ROWs. Only federally registered and BLM-approved herbicides will be used. Herbicides and adjuvants will be used in accordance with product labeling and the respective Safety Data Sheet (SDS). Herbicide application will occur in accordance with Arizona Department of Agriculture Office of Pest Management regulations, as well as the recommended protection measures developed for Region 2 of the United States Fish and Wildlife Service (USFWS) (USFWS 2007f). ADOT would coordinate at least annually with the BLM State Pesticide Coordinator and BLM State Deputy Director to evaluate the procedure for developing, reviewing and updating PUPs for herbicide use within ADOT ROWs.

Herbicides could be administered using mechanized ground applications such as spray boom or wand attached to a truck or off-highway vehicle; or manual applications using backpack sprayers, direct application to the vegetation, or applying solid granules to the soil. Herbicide formulations may include solid formulations such as granules, pellets, or treated seeds, dust formulation, liquid formulations or ultra-low volume formulations which are applied at a rate of ½ gallon or less per acre. The herbicide mixture could include an inert marker dye to ensure complete coverage and confirm that non-target species were not sprayed.

Appropriately-sized nozzles and tips would be used to minimize overspray onto native vegetation. Information and instructions on the herbicide label would be followed. Herbicides would be mixed according to labeled mixtures and uses. All herbicide containers would show the product label and would be leak and spill resistant. All application equipment and chemicals would be stored in appropriate storage facilities and SDSs would be maintained on-site. The applicator(s) would have the appropriate State of Arizona or BLM pesticide applicator's certification. All individuals associated with the handling or application of herbicides on public lands would be familiar with the pesticides used and emergency procedures to be used in case of herbicide spill. Safe use of herbicides includes precautionary measures to prevent accidental spills.

### ***Herbicides Proposed for Use***

All herbicide active ingredients approved for use on BLM lands are listed under the PEIS Record of Decision (BLM PEIS 2007) and are registered by the United States Environmental Protection Agency (EPA). Current herbicides proposed for use in this analysis are incorporated by reference into this document and a list is included in Appendix B. Future approved herbicides added under the PEIS can be proposed for use on BLM lands through amendments to the Environmental Assessment.

Environmental Risk Assessments (ERA) were previously prepared by the BLM for each active ingredient and a full description is incorporated by reference. ERAs identify toxicological risk levels to plants and animals through direct and indirect exposure pathways such as direct spray, contact with sprayed vegetation, ingestion of sprayed prey/forage, and exposure through off-site runoff or drift. Risk levels were quantified using the highest approved application rates to evaluate the potential for "negative health effects", that is, lethal effects (mortality) and sublethal effects, such as altered behavior, reduced growth and reproduction rates, or an increased susceptibility to environmental stressors, resulting in illness.

Herbicides are chemical formulations containing active and inert (inactive) ingredients. To increase the effectiveness of an herbicide, adjuvants may be added or tank mixes of two or more compatible herbicides are used. The list of adjuvants approved for use by the BLM is incorporated by reference and is also included in Appendix B. Due to the sheer number of possible combinations, the risk levels of inert ingredients, adjuvants, and tank mixtures were not assessed in the ERAs. Because the active ingredient is the active herbicide component responsible for plant desiccation, potential effects to sensitive species are evaluated from the standpoint of the active ingredient. However, not all inert ingredients can be considered non-toxic. Adjuvants and tank mixes may have a higher level of toxicity than the active ingredient alone. Therefore, BLM and ADOT managers should follow the “Environmental Hazards” section on the herbicide label and carefully choose the least toxic active ingredients and mixtures pertaining to the specific environment of the action area.

### **3. Coordination with USFWS**

Coordination at the programmatic level was initiated with the USFWS as a part of the previous, BA. In 2007, USFWS concurred with a determination of “may affect, but not likely to adversely affect” with the understanding that all standard operating procedures (SOPs) and conservation measures included in the PEIS, Biological Assessment (BA), and ERAs would be implemented at the programmatic and local levels. All relevant standard operating procedures and conservation measures are incorporated into this document by reference. Furthermore, coordination will be completed at the local level to address site-specific effects and actions, and to develop additional conservation measures with the intention of attaining “no effect” or “may affect, not likely to adversely affect” findings for the potentially affected species in Arizona.

### **4. Conservation Measures**

Guided by BLM handbooks and manuals, SOPs were outlined in the BLM PEIS Record of Decision, to minimize risks to the environment during the implementation of herbicide treatment programs (BLM PEIS 2007). SOPs provide standards for pretreatment considerations and application timing and methods. SOPs are incorporated by reference into this document and all SOPs pertinent to this analysis are included in Appendix D.

The previous BA identifies several programmatic habitat- and herbicide-specific conservation measures (BLM 2007). These measures are incorporated by reference and those pertinent to this analysis are included in Appendix E.

In 2007, the USFWS recommended protection measures for pesticide applications based on the Pesticide Ecotoxicity Ratings for threatened and endangered species listed under the ESA which occur within Region 2 (USFWS 2007f). Guidelines specified in the document (USFWS 2007f) were used to determine the recommended protection measures and avoidance distances that are applicable to this analysis. These measures are incorporated by reference and those pertinent to this analysis are included in Appendix E. The ecotoxicity ratings were also incorporated by reference and the ratings for the herbicides proposed for use in this analysis are included in Appendix C.

General conservation measures developed for general program implementation at the local level are included below. These measures provide standards pertinent to this analysis for the implementation of programmatic habitat, herbicide- and species- specific conservation measures found in Appendix E.

## **General Conservation Measures**

- Use only herbicides that have been approved in the BLM PEIS 2007 (refer to Appendix B)
- Habitat conservation measures must be followed based on special conditions in aquatic and terrestrial habitats (refer to Appendix E)
- Establish 30 foot buffer zones (or greater if specified in the species or herbicide-specific conservation measures) around perennial water courses, or wetland and riparian areas.
  - Do not directly apply herbicides to open water or aquatic habitats.
  - Use only manual application methods
  - Use only herbicides that are approved for use in riparian areas, wetlands and aquatic habitats within the buffer zones.
- Within designated buffer zones:
  - Use only specified approved herbicides.
  - Use specified application methods.
  - Do not use vehicle or off highway vehicle equipment off of established roads.
- Vehicles and equipment used during treatment activities shall be washed prior to leaving the equipment storage facility.
- All attached plant/vegetation and soil/mud debris shall be removed from vehicles and equipment prior to leaving a treatment location.
- All pretreatment special status species surveys shall be conducted by a qualified biologist.
- If herbicide treatments are planned within delineated suitable habitat areas for threatened, endangered and proposed (TEP) plants, conduct a species-specific presence/absence survey within 1 to 3 years prior to the treatment per the species-specific conservation measures (refer to Appendix E).
  - Pretreatment surveys shall be conducted per protocol, or in the absence of a protocol, during the season and conditions in which the species is most likely to be encountered (e.g. flowering season, fruiting season). Contact the USFWS Arizona Ecological Services Office (AESO) (602.242.0210) for current approved survey protocols.
  - If individuals are found, the surveyed habitat is considered to be occupied even if the species is absent from the habitat for some portion during the calendar year (e.g. dormant period, subterranean period).
  - If individuals are found, do not apply herbicide within the appropriate avoidance distance specified in the species- or herbicide-specific conservation measures for plants or occupied habitat (refer to Appendix E).
  - If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species (refer to Appendix E).
- If herbicide treatments are planned within delineated suitable habitat for TEP animals, contact the USFWS AESO (602.242.0210) within 60 days prior to herbicide treatment to determine if the habitat is occupied.
  - If the USFWS requests that pretreatment surveys be conducted, pretreatment surveys shall be conducted per protocol, or in the absence of a protocol, during the season and conditions in which the species is most likely to be encountered (e.g. breeding season). Contact the USFWS Arizona Ecological Services Office (AESO) (602.242.0210) for current approved survey protocols.

- Delineated suitable habitats are considered to be occupied even if the species is absent from the habitat for some portion during the calendar year (e.g. migration, hibernation).
- Within occupied habitats, do not apply herbicide within the appropriate avoidance distance specified in the species- or herbicide-specific conservation measures (refer to Appendix E).
- If species occupancy is unknown and surveys have not been conducted during the most recent appropriate survey season prior to treatment, assume that the species is present, delineate species-specific suitable habitat, and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat.

## 5. Species Identification and Evaluations

The USFWS list of federally threatened, endangered, and proposed species potentially occurring in Arizona was reviewed by a qualified biologist. Table 1 includes species from the list that are evaluated in detail in this document. The remaining species were excluded from further evaluation, and a justification for their exclusion is included in Table 2. For those species excluded from further evaluation, the project will have no effect on the species and the action area does not occur within critical habitat if it is proposed or designated.

**Table 1 – USFWS Arizona Species Evaluated in Detail**

Species	Status <sup>1</sup>	Effects Determination
Arizona cliffrose ( <i>Purshia subintegra</i> )	ESA LE	May affect, not likely to adversely affect
Arizona hedgehog cactus ( <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i> )	ESA LE	May affect, not likely to adversely affect
Bonytail chub ( <i>Gila elegans</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat.
Brady pincushion cactus ( <i>Pediocactus bradyi</i> )	ESA LE	May affect, not likely to adversely affect
California condor ( <i>Gymnogyps californianus</i> )	ESA LE, XN	May affect, not likely to adversely affect
Chiricahua leopard frog ( <i>Lithobates chiricahuensis</i> )	ESA LT DCH	May affect, not likely to adversely affect species or designated critical habitat
Fickeisen plains cactus ( <i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i> )	ESA LE PCH	May affect, not likely to adversely affect species or proposed critical habitat
Gierisch mallow ( <i>Sphaeralcea gierischii</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Holmgren (Paradox) milk-vetch ( <i>Astragalus holmgreniorum</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Huachuca water umbel ( <i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Mojave desert tortoise ( <i>Gopherus agassizii</i> )	ESA LT DCH	May affect, not likely to adversely affect species. No effect on designated critical habitat
Narrow-headed gartersnake ( <i>Thamnophis rufipunctatus</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Northern Mexican gartersnake ( <i>Thamnophis eques megalops</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Ocelot ( <i>Leopardus pardalis</i> )	ESA LE	May affect, not likely to adversely affect
Peebles Navajo cactus ( <i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i> )	ESA LE	May affect, not likely to adversely affect

**Table 1 – USFWS Arizona Species Evaluated in Detail**

Species	Status <sup>1</sup>	Effects Determination
Pima pineapple cactus ( <i>Coryphantha scheeri</i> var. <i>robustispina</i> )	ESA LE	May affect, not likely to adversely affect
Razorback sucker ( <i>Xyrauchen texanus</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Siler pincushion cactus ( <i>Pediocactus sileri</i> )	ESA LT	May affect, not likely to adversely affect
Sonoran pronghorn ( <i>Antilocapra americana sonoriensis</i> )	ESA LE, XN	May affect, not likely to adversely affect
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Virgin River chub ( <i>Gila seminuda</i> )	ESA LE DCH	May affect, not likely to adversely affect species or designated critical habitat
Woundfin ( <i>Plagopterus argentissimus</i> )	ESA LE, XN DCH	May affect, not likely to adversely affect species or designated critical habitat
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	ESA LT PCH	May affect, not likely to adversely affect species or proposed critical habitat
Yuma clapper rail ( <i>Rallus longirostris yumanensis</i> )	ESA LE	May affect, not likely to adversely affect

<sup>1</sup> Status Definitions: ESA=Endangered Species Act, LE=Listed Endangered, LT=Listed Threatened, XN=Experimental Nonessential Population, PCH = Proposed Critical Habitat, DCH = Designated Critical Habitat.

Sources: U.S. Fish and Wildlife Service Endangered Species Act Species List for the State of Arizona. Accessed October 3, 2014 (<http://ecos.fws.gov/ipac/>).

**Table 2 – USFWS Arizona Species Excluded from Evaluation**

Species	Status <sup>2</sup>	Habitat Requirements	Exclusion Justification
Acuna cactus ( <i>Echinomastus erectocentrus</i> var. <i>acunensis</i> )	ESA LE PCH	Well drained knolls and gravel ridges in Sonoran desertscrub from 1,198 to 3,773 feet.	No suitable habitat within the action area. Proposed critical habitat will not be affected. A small population is located in the Little Ajo Mountains approximately 1.5miles west of State Route (SR) 85. However, no soils suitable for Acuna cactus are located in the action area along SR 85.
Apache (Arizona) trout ( <i>Oncorhynchus gilae apache</i> )	ESA LT	Streams and rivers generally above 6,000 feet elevation with adequate stream flow and shading; temperatures below 77 degrees Fahrenheit; and substrate composed of boulders, rocks, gravel and some sand and silt.	Action area does not occur within the species known range.
Beautiful shiner ( <i>Cyprinella formosa</i> )	ESA LT DCH	Small to medium sized streams and ponds with sand, gravel, and rock bottoms at elevations below 4,500 feet.	Action area does not occur within the species known range, and designated critical habitat will not be affected.
Black-footed ferret ( <i>Mustela nigripes</i> )	ESA LE XN	Grassland plains generally in association with prairie dogs below 10,500 feet.	Action area does not occur within the species known range. The 10(j) non-essential experimental population occurs in Aubrey Valley, outside of BLM lands.

**Table 2 – USFWS Arizona Species Excluded from Evaluation**

Species	Status <sup>2</sup>	Habitat Requirements	Exclusion Justification
California least tern ( <i>Sterna antillarum browni</i> )	ESA LE	Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems below 2,000 feet.	Extremely rare migrant. No suitable habitat within the action area.
Canelo Hills ladies' tresses ( <i>Spiranthes delitescens</i> )	ESA LE	Finely grained, highly organic, saturated soils of cienegas around 5,000 feet elevation.	Action area does not occur within the species known range.
Cochise pincushion cactus ( <i>Coryphantha robbinsorum</i> )	ESA LT	Semidesert grassland with small shrubs, agave, other cacti, and grama grass below 4,200 feet.	Action area does not occur within the species known range.
Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	ESA LE XN DCH	Warm, swift, turbid mainstem rivers below 4,000 feet. Prefers eddies and pools.	Action area does not occur within the species known range. The XN population is located in the Salt and Verde river drainages, outside of BLM lands. No designated critical habitat in Arizona.
Desert pupfish ( <i>Cyprinodon macularius</i> )	ESA LE DCH	Shallow springs, small streams, and marshes below 4,000 feet. Tolerates saline and warm water.	Action area does not occur within the species known range and designated critical habitat will not be affected.
Gila chub ( <i>Gila intermedia</i> )	ESA LE DCH	Pools, springs, cienegas, and streams with an elevation range of 2,000–5,500 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Nearest occurrences are in tributaries to the Agua Fria River, which parallels the action area along Interstate 17 (I-17) within 1 mile, and approximately 6 miles north of SR 82 in the perennial portion of Cienega Creek, which is ephemeral at the SR 82 crossing (Minckley and Marsh 2009).
Gila topminnow ( <i>Poeciliopsis occidentalis occidentalis</i> )	ESA LE	Small streams, springs, and cienegas with vegetated shallows below 4,500 feet.	Action area does not occur within the species known range. Extant natural and reintroduced populations do not occur near or within the action area.
Gila trout ( <i>Oncorhynchus gilae</i> )	ESA LT	Small high mountain streams from 5,000 to 10,000 feet.	Action area does not occur within the species known range. Reintroduced into two creeks in Arizona, outside of BLM lands (Minckley and Marsh 2009).
Hualapai Mexican vole ( <i>Microtus mexicanus hualapaiensis</i> )	ESA LE	Moist, grass/sedge habitats along permanent or semi-permanent waters (springs or seeps) from 3,500 to 7,000 feet.	Action area does not occur within the species known range. Located in the Hualapai Mountains, which are greater than 1.5 miles from the action area.

**Table 2 – USFWS Arizona Species Excluded from Evaluation**

Species	Status <sup>2</sup>	Habitat Requirements	Exclusion Justification
Humpback chub ( <i>Gila cypha</i> )	ESA LE DCH	Large warm turbid rivers, especially canyon areas with deep fast water below 4,000 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Species is restricted to canyon reaches of the Colorado River, specifically the Grand Canyon in Arizona (Minckley and Marsh 2009).
Jaguar ( <i>Panthera onca</i> )	ESA LE DCH	Found in Sonoran desertscrub up through subalpine conifer forest with an elevation range of 1,600–9,000 feet.	No suitable habitat within the action area and designated critical habitat will not be affected.
Jones cycladenia ( <i>Cycladenia humilis</i> var. <i>jonesii</i> )	ESA LT	Mixed desert scrub, juniper, or wild buckwheat-Mormon tea associations from 4,390 to 6,000 feet.	Action area does not occur within the species known range. Occurs only in Woodbury and Potter Canyons approximately 4 miles from the action area (USFWS 2008c).
Kanab ambersnail ( <i>Oxyloma haydeni kanabensis</i> )	ESA LE PCH	Travertine seeps and springs in Grand Canyon National Park at 2,900 feet.	Action area does not occur within the species known range and proposed critical habitat will not be affected.
Kearney's blue star ( <i>Amsonia kearneyana</i> )	ESA LE	West-facing drainages in the Baboquivari Mountains from 3,600 to 3,800 feet.	Action area does not occur within the species known range.
Lesser long-nosed bat ( <i>Leptonycteris curasoae yerbabuena</i> )	ESA LE	Desert scrub habitat with agave and columnar cacti present as food plants from 1,600 – 7,500 feet.	No day roost sites such as mines or caves are within the action area. No direct spray of food plants would occur.
Little Colorado spinedace ( <i>Lepidomeda vittata</i> )	ESA LT DCH	Moderate to small streams; found in pools and riffles with water flowing over fine gravel and silt substrate from 4,000 to 8,000 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Nearest occurrences include the Little Colorado River approximately 0.3 mile west of United States Highway (US) 191, and Silver Creek approximately 0.5 mile east of SR 77. Designated critical habitat is at least 10 miles from the action area.
Loach minnow ( <i>Tiaroga cobitis</i> )	ESA LE DCH	Benthic species of small to large perennial streams below 8,000 feet with swift shallow water over cobble and gravel. Recurrent flooding and natural hydrograph important.	Action area does not occur within the species known range and designated critical habitat will not be affected. The species is geographically isolated into specific stream reaches. The nearest occurrence is in the San Francisco River, 0.5 mile east of the action area along US 191.

**Table 2 – USFWS Arizona Species Excluded from Evaluation**

Species	Status <sup>2</sup>	Habitat Requirements	Exclusion Justification
Masked bobwhite ( <i>Colinus virginianus ridgewayi</i> )	ESA LE	Desert grasslands with diversity of dense native grasses, forbs, and brush from 1,000 to 4,000 feet.	Action area does not occur within the species' known range. Only known to occur within the Buenos Aires National Wildlife Refuge.
Mexican gray wolf ( <i>Canis lupus baileyi</i> )	ESA LE XN	Chaparral, woodland, and forested areas. May cross desert areas. Found at elevations of 4,000–12,000 feet.	Action area does not occur within the species known range. While the current experimental population area includes all lands in Arizona between Interstates 10 and 40, based on telemetry data, the population only persists on national forest and reservation lands (AGFD 2012a).
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	ESA LT DCH	Nests in canyons and dense forests with multi-layered foliage structure from 4,100 to 9,000 feet.	Action area does not occur within the species' known range and designated critical habitat will not be affected. No suitable habitat within the action area.
Mount Graham red squirrel ( <i>Tamiasciurus hudsonicus grahamensis</i> )	ESA LE DCH	Montane conifer forests from spruce-fir to mixed conifer greater than 8,000 feet elevation.	Action area does not occur within the species known range and designated critical habitat will not be affected. Found only in the Pinaleno Mountains on national forest lands.
Navajo sedge ( <i>Carex specuicola</i> )	ESA LT DCH	Silty soils at shady seeps and springs from 5,700 to 6,000 feet.	Action area does not occur within the species known range. Endemic to the Navajo Reservation.
New Mexico meadow jumping mouse ( <i>Zapus hudsonius luteus</i> )	ESA LE PCH	Nests in dry soils but also uses moist, streamside, dense riparian/wetland vegetation below 8,000 feet.	Action area does not occur within the species known range and proposed critical habitat will not be affected. Found in the White Mountains on national forest and reservation lands.
New Mexican ridge-nosed rattlesnake ( <i>Crotalus willardi obscurus</i> )	ESA LT DCH	Primarily found in canyon bottoms in pine-oak communities at an elevation range of 5,000–6,600 feet.	Action area does not occur within the species known range. In Arizona, found only in the Peloncillo Mountains (Brennan 2008). No designated critical habitat in Arizona.
Nichol Turk's head cactus ( <i>Echinocactus horizonthalonius</i> var. <i>nicholii</i> )	ESA LE	Sonoran desertscrub from 2,400 to 4,100 feet.	Action area does not occur within the species known range.

**Table 2 – USFWS Arizona Species Excluded from Evaluation**

Species	Status <sup>2</sup>	Habitat Requirements	Exclusion Justification
Northern aplomado falcon ( <i>Falco femoralis septentrionalis</i> )	ESA LE XN	Grassland and savannah between 3,500 and 9,000 feet.	While all of Arizona is designated as an experimental population area, the species is believed to be extirpated from Arizona and no reintroduction sites are located in Arizona, thus occurrences in Arizona are extremely rare. Project will not impact suitable habitat.
San Bernardino springsnail ( <i>Pyrgulopsis bernardina</i> )	ESA LT DCH	Springs with firm substrate composed of cobble, gravel, woody debris, and aquatic vegetation at 3,806 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Restricted to Cochise County in the USFWS San Bernardino National Wildlife Refuge.
San Francisco Peaks ragwort ( <i>Packera franciscana</i> )	ESA LT DCH	Alpine tundra above 10,900 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected.
Sentry milk vetch ( <i>Astragalus cremnophylax</i> var. <i>cremnophylax</i> )	ESA LE	Grows on a white layer of Kaibab limestone, with little or no soil, in an unshaded opening within a pinyon juniper- cliffrose plant community above 4,000 feet.	Action area does not occur within the species known range. Restricted to outcroppings along Granite Gorge in Grand Canyon National Park.
Sonora chub ( <i>Gila ditaenia</i> )	ESA LT DCH	Perennial and intermittent, small to moderate-sized streams with boulders and cliffs at approximately 3,900 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Restricted to three creeks in Santa Cruz County, outside of BLM lands.
Sonora tiger salamander ( <i>Ambystoma mavortium stebbinsi</i> )	ESA LE	Stock tanks and impounded cienegas; rodent burrows, rotted logs, and other moist cover sites from 4,000 to 6,300 feet.	Action area does not occur within the species known range. Found in the San Rafael Valley and foothills of the east slope of the Patagonia and Huachuca Mountains.
Spikedace ( <i>Meda fulgida</i> )	ESA LE DCH	Medium to large perennial streams with moderate to swift velocity waters over cobble and gravel substrate. Recurrent flooding and natural hydrograph important to withstand invading exotic species below 6,000 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected.
Three Forks springsnail ( <i>Pyrgulopsis trivialis</i> )	ESA LE DCH	Rheocrene springs, seeps, marshes, spring pools, outflows and diverse lotic waters from 8,000 to 8,500 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected. Locally endemic to Three Forks Springs, Boneyard Creek and Boneyard Bog.
Welsh's milkweed ( <i>Asclepias welshii</i> )	ESA LT DCH	Open, sparsely vegetated semi-stabilized sand dunes and on lee slopes of actively drifting sand dunes at various elevations.	Action area does not occur within the species known range. No designated critical habitat in Arizona.

<b>Species</b>	<b>Status<sup>2</sup></b>	<b>Habitat Requirements</b>	<b>Exclusion Justification</b>
Yaqui catfish ( <i>Ictalurus pricei</i> )	ESA LT DCH	Moderate to large streams with slow current over sand and rock bottoms at an elevation range of 4,000–5,000 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected.
Yaqui chub ( <i>Gila purpurea</i> )	ESA LE DCH	Deep pools of small streams, pools, or ponds near undercut banks and debris; pools associated with springheads, and artificial ponds at an elevation range of 4,000–6,000 feet.	Action area does not occur within the species known range and designated critical habitat will not be affected.
Yaqui topminnow ( <i>Poeciliopsis occidentalis sonoriensis</i> )	ESA LE	Small to moderate sized streams, springs, and cienegas. Generally found in shallow areas with aquatic vegetation or debris. Tolerates relatively high water temperature and low dissolved oxygen at elevations below 4,500 feet.	Action area does not occur within the species known range.
Zuni bluehead sucker ( <i>Catostomus discorbolus yarrowi</i> )	ESA LE PCH	Small streams in low-velocity, moderate deep pools, and pool-runs with seasonal dense algae above 6,000 feet. Young prefer quieter shallow areas near shoreline.	Action area does not occur within the species known range and proposed critical habitat will not be affected. An isolated, rare species; occurs in a creek in Apache County, outside of BLM lands.
Zuni fleabane ( <i>Erigeron rhizomatus</i> )	ESA LT	Selenium-rich red or gray detrital clay soils derived from the Chinle and Baca formations from 7,300 to 8,000 feet.	Action area does not occur within the species known range. Endemic to the Navajo Reservation.

<sup>2</sup> Status Definitions: ESA=Endangered Species Act, LE=Listed Endangered, LT=Listed Threatened, PE=Proposed Endangered, PT=Proposed Threatened, XN=Experimental Nonessential Population, PCH = Proposed Critical Habitat, DCH = Designated Critical Habitat.

Source: U.S. Fish and Wildlife Service Endangered Act Species List for the State of Arizona. Accessed October 3, 2014 (<http://ecos.fws.gov/ipac/>).

### **5.1 Arizona Cliffrose**

Endangered Species Act Status:	Endangered, 1984
BLM Field Office Occurrence within ADOT ROW:	Kingman Field Office
ADOT District Occurrence on BLM lands:	Kingman District
Occurrence within Action Area:	US 93
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

#### Life History

The Arizona cliffrose (*Purshia subintegra*) is a low, straggling, woody, evergreen shrub that can grow up to six feet in height, but usually measures less than three feet. Ashy-gray shredded bark is characteristic of older branches whereas new shoots are red-brown in color and covered with dense, soft, white hairs. Leaves are small, narrow, and typically entire but can have one to five lobes with smooth edges that are curled under and dense white hairs on the underside. Flowers extend from a single peduncle with five white or pale-yellow petals and three to seven pistils. Fruit is an achene with long (0.80 inch) plumose persistent styles (AGFD 2001c).

Flowers are produced in late March through early May and may be pollinated within three days of blooming. Bees are the primary pollinators of cliffrose, which can be self-pollinated but produce significantly fewer seeds than when cross-pollination occurs (AGFD 2001c). Fruit dispersal occurs during the summer, when the summer rains dislodge seeds from the plants. However, the timing of seed germination and seedling establishment is unknown (USFWS 1994a).

Arizona cliffrose has specific substrate requirements that include white-colored soils derived from tertiary limestone lakebed deposits that are high in lithium nitrates and magnesium. Such soils can be found from 2,120 to 4,000 feet in elevation on rolling, rocky hills and 0 to 40% slopes that are dissected by ephemeral drainages. Where it is found, Arizona cliffrose tends to be the dominant or co-dominant shrub within the creosotebush-crucifixion thorn association of the Arizona Upland Subdivision of the Sonoran Desertscrub Biotic Community (AGFD 2001c).

#### Distribution in Arizona

An Arizona endemic, this species is known to occur in four disjunct populations: the Burro Creek drainage in Mohave County; near Horseshoe Lake in Maricopa County; Verde Valley in Yavapai County; and the San Carlos Indian Reservation in Graham County (USFWS 2007b).

#### Status within the Action Area

The only population of Arizona cliffrose that occurs near the action area is the Burro Creek Population in Mohave County. The action area located along US 93 is within the boundaries (Township 14 North, Range 11 West, Sections 20, 28, and 29) of the subpopulation discovered by J. L. Anderson in 1991 (USFWS 1994a). However, recent survey information on this population is unknown. The USFWS general distribution of Arizona cliffrose is between approximately milepost (MP) 133.80 and MP 139.60, but this distribution does not cover Section 28 and 29 of the subpopulation identified by J. L. Anderson (Figure 2). In addition, patches of white-colored soils derived from tertiary limestone lakebed deposits are scattered along US 93 from approximately MP 131.00 to MP 144.00 (Appendix A).

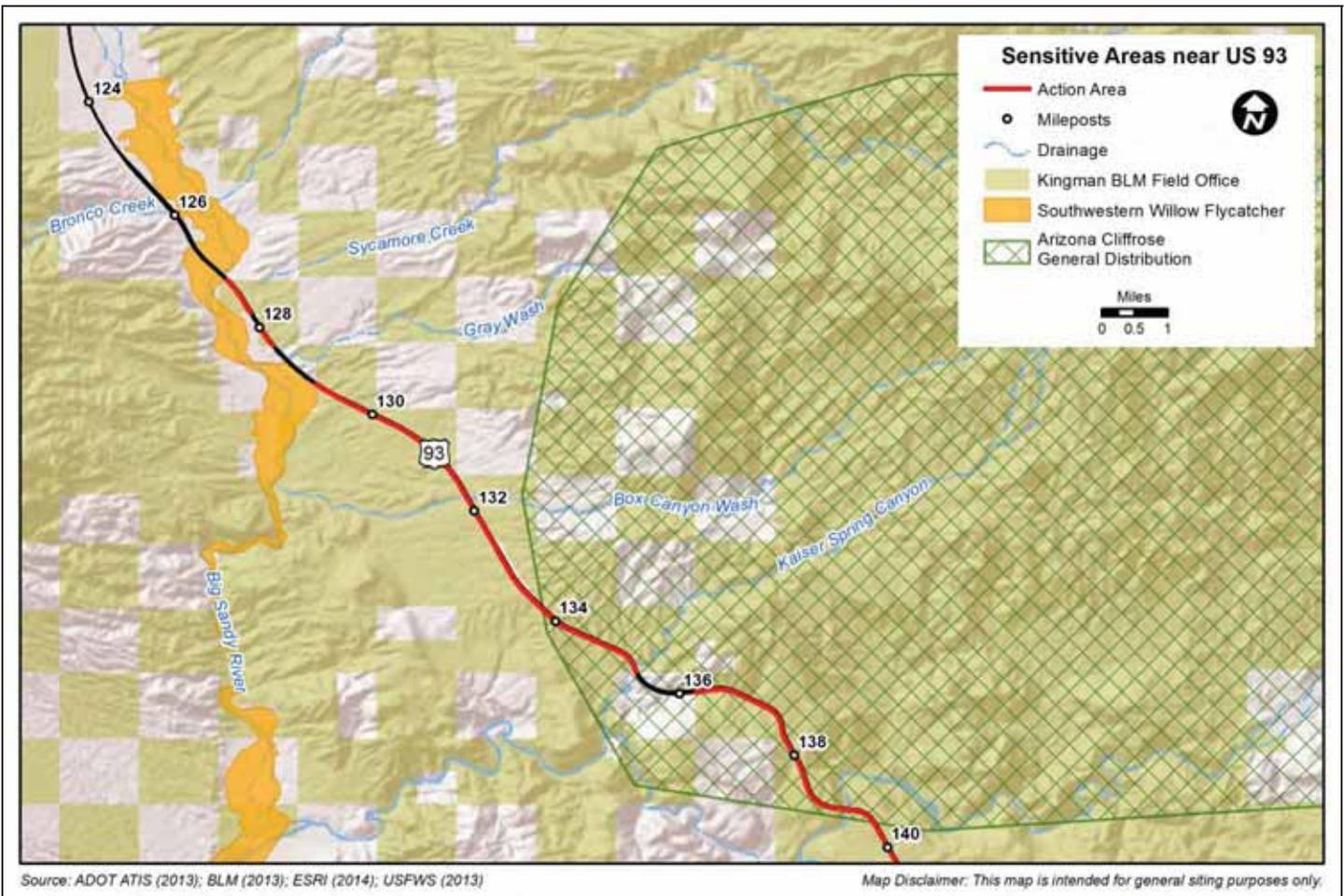


Figure 2 – Sensitive Areas near US 93

### Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Arizona cliffrose in suitable habitat along US Highway 93 within 3 years prior to treatment.
  - If Arizona cliffrose is found:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

### Effects Analysis

According to the species Recovery Plan “Herbicides should not be used along roadsides within Arizona cliffrose populations because treated plants are destroyed” (USFWS 1994a). As such the species range along US 93 will be surveyed for plants prior to treatment and herbicides will not be applied within known populations or occupied habitats. Broadcast spray applications could indirectly affect Arizona cliffrose by drift or run-off, if plants are adjacent to or down grade of the action area. However, possible exposure would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

As previously discussed, roadways present unique conditions that favor undesirable plants, and the long term effects of control or elimination of these undesirable plants can improve habitat by restoring native biological potential. Treating undesirable plants adjacent to Arizona cliffrose habitat would likely benefit the species over time by controlling the spread of undesirable plants which compete for available resources and reducing the potential for wildfires which could decimate an Arizona cliffrose population.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to National Environmental Policy Act (NEPA) review and consultation with the USFWS would occur if future project actions have the potential to affect Arizona cliffrose.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Arizona cliffrose, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation, adjacent to the action area all have the potential to indirectly affect Arizona cliffrose. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

### Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide will not be applied near Arizona cliffrose; therefore, the potential for adverse effects on the species is so minor as to be discountable. The proposed program of herbicide use on the action area with

proposed conservation measures may affect the Arizona cliffrose, but is not likely to adversely affect the Arizona cliffrose.

## 5.2 Arizona Hedgehog Cactus

Endangered Species Act Status:	Endangered, 1979
BLM Field Office Occurrence within ADOT ROW:	Tucson Field Office
ADOT District Occurrence on BLM lands:	Globe District
Occurrence within Action Area:	SR 77
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

### Life History

The Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) is a large perennial succulent with four to 20 dark green, strongly ribbed, cylindroid stems, often forming in clusters and reaching a height of nine to 16 inches. Each stem measures at least three inches in diameter and has an average of nine tuberculate ribs. Smooth spines consisting of one to three gray or pink central spines with the largest pointing down and five to 11 smaller radial spines that are slightly curved occur in clusters along the ribs' apex. Crimson flowers with yellow anther and green stigma burst through the upper third of the stems, leaving a scar on the stem directly above the spine (AGFD 2003a, USFWS 2000a). Arizona hedgehog can be distinguished from similar *Echinocereus* species in its range by shorter, thicker spines; a deflexed central spine; longer, more robust stems with fewer ribs per stem; and producing crimson flowers on the upper third of stem ribs (AGFD 2003a).

Budding occurs from April to May, and small red spiny fruit are produced from May to June. When mature, the globose fruit containing up to 100 small black seeds are dropped and dispersed by unknown agents. Successful germination is dependent on soil type and typically occurs in mid-summer (AGFD 2003a).

The Arizona hedgehog cactus grows in very rocky environments in canyons, boulder-pile ridges and slopes, in the ecotone between Interior Chaparral and Madrean Evergreen Woodland at elevations ranging from 3,300 to 5,700 feet (AGFD 2003a, USFWS 2000a). Preferred habitat characteristics include narrow cracks in bedrock, open slopes, and boulder pile ridges comprised of Orthoclase-rich granite of late Cretaceous age. This cactus has also been found on parent material comprised of volcanic tuff, mid-Tertiary age dacite, and rhyolite, and in the understory of shrubby vegetation within the Arizona desert grassland (AGFD 2003a).

### Distribution in Arizona

Arizona hedgehog cactus are found in the Pinal, Dripping Springs, Superstition, and Mescal mountains, and in the highlands between Globe and Superior in Gila and Pinal counties, in central Arizona (AGFD 2003a).

### Status within the Action Area

The action area along SR 77 between MP 156.00 and MP 156.60 is located within the known range of Arizona hedgehog cactus in the Mescal Mountains (Appendix A). Elevation at this location varies between 3,460 and 3,800 feet and suitable habitat including boulder piles and exposed rocky slopes are scattered throughout the ROW.

## Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Arizona hedgehog cactus in suitable habitat along State Route 77 within 3 years prior to treatment.
  - If Arizona hedgehog cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
    - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
    - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

## Effects Analysis

During broadcast spray applications Arizona hedgehog cactus could be exposed by direct spray if the species is present within the action area or by drift or run-off, if plants are adjacent to or down grade of the action area. However, possible exposure would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

Herbicide use may temporarily result in reduction of herbaceous cover within the action area. A reduction in herbaceous cover surrounding Arizona hedgehog cactus is a concern because loss or damage by freezing is a known threat to the species at exposed sites (Fletcher 1984). However, implementation of species-specific conservation measures would prevent loss of herbaceous cover directly surrounding individuals and no Arizona hedgehog cactus would become exposed as a result of this project. A reduction of herbaceous forage within the range of this species could also promote predation on cactus located within or near the action area. However, due to the significant amount of forage available outside of the action area, a substantial increase of cactus predation is unlikely.

Herbicide treatment would likely benefit Arizona hedgehog cactus in the long-term, by restoring native conditions and increasing habitat suitability within the species range. In addition, the control or elimination of

undesirable plants reduces wildfire fuels and the risk of a wildfire that would be detrimental to species such as the Arizona hedgehog cactus that are not fire adapted and have a limited distribution.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Arizona hedgehog cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Arizona hedgehog cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Arizona hedgehog cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

### Determination

The implementation of species-specific conservation measures would prevent herbicide application near Arizona hedgehog cactus and the loss of insulating herbaceous cover due to treatment, thus the potential for adverse effects of the proposed herbicide program to the species is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Arizona hedgehog cactus but is not likely to adversely affect the Arizona hedgehog cactus.

### **5.3 Bonytail Chub**

Endangered Species Act Status:	Endangered, 1980
BLM Field Office Occurrence within ADOT ROW:	Lake Havasu Field Office
ADOT District Occurrence on BLM lands:	Kingman, Yuma Districts
Occurrence within Action Area:	SR 95, SR 95S
Critical Habitat:	Designated 1994
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

### Life History

The bonytail chub (*Gila elegans*) is a streamlined silvery fish named for its long, thin caudal peduncle. The species occupies a variety of microhabitats including river channels, flooded, ponded, or inundated riverine habitats, and the open waters of reservoirs. It is believed that flooded bottomlands are important nursery habitats. Spawning occurs from May to July over rocky substrates or shorelines. Bonytail feed on terrestrial and aquatic insects, plant debris, algae, and plankton. The species is one of the rarest native fish in the Colorado River Basin, and one of the most endangered species in North America (AGFD 2001a; USFWS 2009a).

## Distribution in Arizona

Historically, the species was distributed throughout the upper and lower Colorado River Basin and its large tributaries, including the Gila, Salt, and Verde rivers in Arizona. Currently, the bonytail chub is mostly restricted to reservoirs along the Colorado River. Within Arizona, bonytail primarily persist in Lake Mohave, although individuals have also been captured in lakes Powell and Havasu, and may be present in the river channel between Davis Dam and Parker Dam. No self-sustaining populations exist in the wild; rather, populations are augmented with hatchery raised fish. Capture rates continue to be low and natural recruitment is virtually nonexistent (USFWS 2002a).

## Status within the Action Area

Suitable and designated critical habitat within the Colorado River is within close proximity to the action area in Mohave and La Paz counties. Between Davis Dam and Lake Havasu, the action area along SR 95 between MP 246.70 and MP 247.70 is within 450 feet of suitable and occupied habitat within the river (Appendix A). Designated critical habitat in Lake Havasu occurs within 200 to 400 feet of SR 95 between MP 159.60 and MP 160.40 (Figure 3).

## Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Colorado River on State Route 95S and State Route 95 should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Do not conduct herbicide treatments during bonytail chub spawning season (May through July) within ½ mile of the Colorado River along State Route 95 and State Route 95S.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

Given the extremely rare status of bonytail within Arizona, it is unlikely that individuals would be present near the shoreline at the time of treatment and therefore direct spray or contact is not anticipated. However, because shorelines are important habitat for spawning and larval rearing, a higher risk for exposure is posed to eggs and larvae due to accidental direct spray, runoff or drift. To prevent the potential for direct effects to eggs and larvae, herbicide treatments would not be conducted within the action area during the spawning season. Furthermore, avoidance distances from the river based on herbicide formulation and application methods would be used to minimize the potential for drift or runoff.

Because of the size and depth of Colorado River, lake and mainstem habitats, any herbicides accidentally entering the system would likely be rapidly diluted. Therefore, residual runoff or drift is unlikely to alter the natural processes of aquatic habitats to an extent that would indirectly affect bonytail.

Potential indirect effects resulting from a loss of bankline vegetation include: a reduction in shade which may increase water temperature, killing fish or leaving them susceptible to disease; reduced bank stabilization leading to increased erosion and sediment loads, which can change a river's morphology and structure by eliminating pool and riffle habitats, changing the width and depth of a system, and changing the flow velocity; increased runoff and pollutants entering the system; loss of microhabitat features; and a temporary decrease in invertebrate prey. However, due to the implementation of conservation measures which limits treatment locations and herbicide application methods in suitable bonytail chub habitat along the Colorado River, and due to the large size of the Colorado River and the small amount of action area occurring along it, bankline vegetation loss and its potential effects would be minimal. Additionally, localized treatment of undesirable vegetation would occur over a number of years, thus there would be no sudden large scale vegetation loss. Project actions would not reduce the volume or timing of water, destroy spawning/nursery habitat, prevent recruitment, greatly impact food sources, contaminate the Colorado River, or increase predation or competition with nonnative fish (USFWS 1994b). Therefore, critical habitat is unlikely to be impacted, and indirect effects to bonytail chub are highly unlikely to occur.

Over time, a reduction in non-native biomass is expected to improve bonytail habitat in terms of water quality, native invertebrate and aquatic forage, and microhabitat elements.

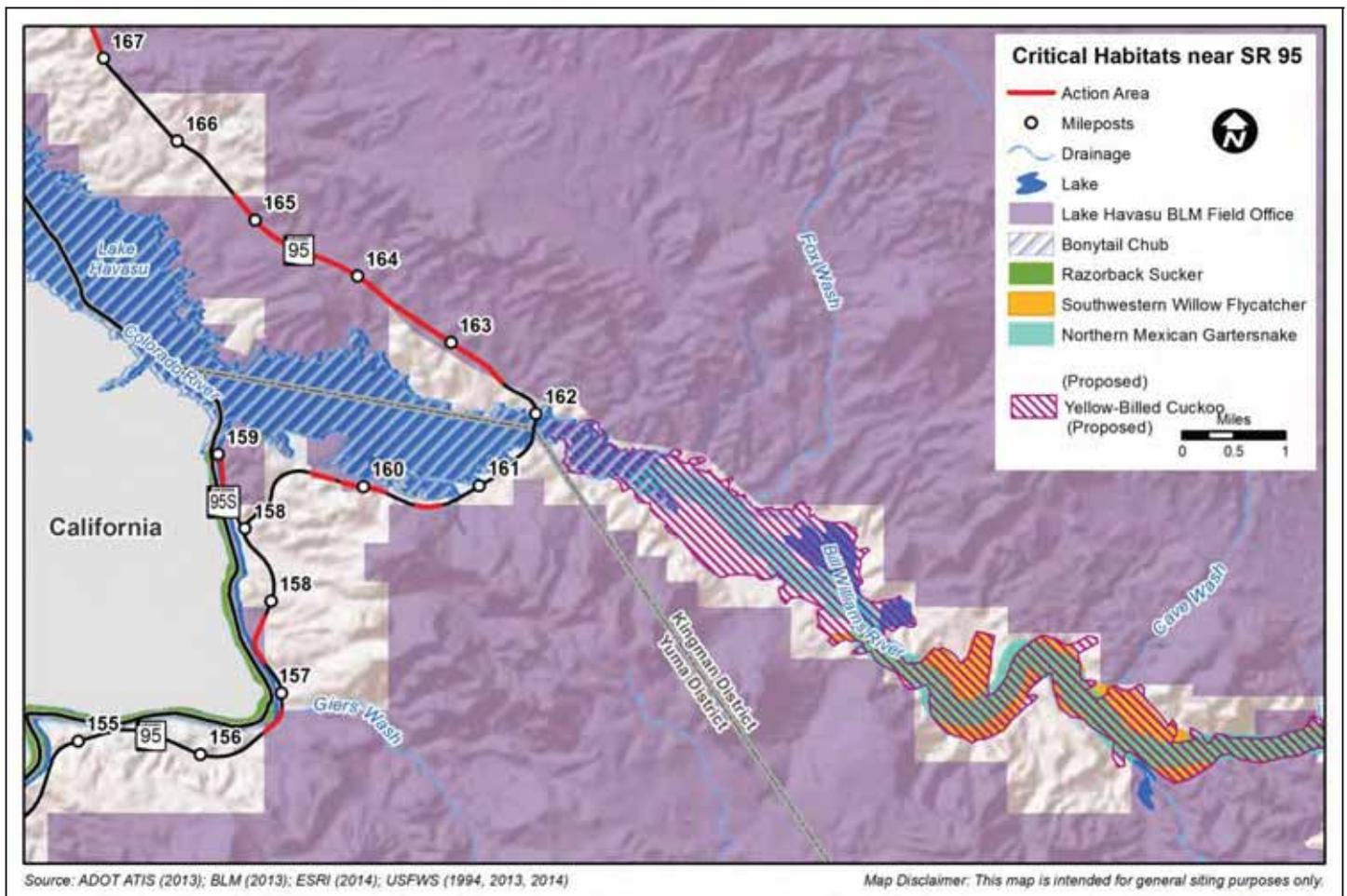


Figure 3 – Critical Habitats near SR 95

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect bonytail.

Bonytail chub are more susceptible to the cumulative effects of future projects due to the rarity of the species. Furthermore, the Colorado River is heavily utilized by private, public, tribal, industrial, and other non-federal entities. Private actions, such as river recreation and development could directly harm bonytail or indirectly affect the species through habitat degradation or loss. Water diversions and pumping for agricultural, utility, and municipal uses could result in decreased aquatic habitat. Actions undertaken on lands upstream and/or adjacent to the Colorado River could indirectly affect bonytail through contamination of the river, alteration in water flows, or introduction of nonnative aquatic animals. In situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Given the extremely rare status of bonytail chub near the action area along with the implementation of SOPs, and conservation measures to prevent herbicide runoff to the Colorado River, the potential for adverse effects of the proposed herbicide program on the species or critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area along with proposed conservation measures may affect the bonytail chub but is not likely to adversely affect the bonytail chub or its designated critical habitat.

### **5.4 Brady Pincushion Cactus**

Endangered Species Act Status:	Endangered, 1979
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	US 89A
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

## Life History

Brady pincushion cactus (*Pediocactus bradyi*) is a small succulent with a single semi-globose stem that measures up to 2.50 inches tall and two inches wide. This cactus has elliptic, densely white or yellow villous areoles with no central spine and 13 to 16 closely set comb-like radial spines (AGFD 2001b). Flowers are straw-yellow in color and about one inch in diameter. Fruit is top-shaped with a constricted base and slightly convex apex. Once mature the green fruit turns reddish-brown and dehisces by a vertical slit (USFWS 2012a).

Brady pincushion cactus occurs on sloped benches in exposed, sparsely vegetated areas of the Great Basin Desertscrub plant community between 3,400 and 5,200 feet in elevation (AGFD 2001b). This species is restricted to specific soil characteristics including Kaibab limestone chips overlaying soil derived from shale, mudstone and siltstone of the Moenkopi Formation; and from chert and quartz pebbles eroded from the Shinarump Conglomerate Member of the Chinle Formation (AGFD 2001b, USFWS 2012a). Where this species is found, the rock chips that overlay the soil have a white color that appears distinct from adjacent brown limestones.

As is typical with several *Pediocactus*, this species responds to extreme hot and cold temperatures, and drought conditions, by retracting into the soil where it spends most of its time (summer and winter months) dormant, below ground level. Typically, Brady pincushion cactus will expand above the soil during summer rains, and if conditions are favorable, between March and April (USFWS 2012a). From late March to April, one to five flowers are produced on cacti that are greater than 0.59 inches in diameter. When sunny, flowers will open during mid-morning and close in the evening for up to four or five successive days. Due to self-incompatibility this species is typically cross-pollinated by insects, especially sweat bees (*Dialictus spp.*) (USFWS 2012a). Mature fruit is produced in late May to early June and the cactus shortly after enters dormancy in response to drought conditions (AGFD 2001b).

## Distribution in Arizona

Brady pincushion cactus occurs along both rims of approximately 25 miles of Marble Canyon, in Coconino County. Scattered populations have also been found on tributary canyons from below Lee's Ferry to Bedrock Canyon on the west side of Marble Canyon, and to Tanner Wash on the east side of Marble Canyon. All plants have been located within one to three miles from canyon rims. In 1992, the Marble Canyon Area of Critical

Environmental Concern (ACEC) was designated by the BLM for the protection of Brady pincushion cactus (AGFD 2001b).

### Status within the Action Area

The action area along US 89A between MP 538.00 and MP 551.00 is located within the range of Brady pincushion cactus as defined by USFWS. Known populations occur within the action area and the Marble Canyon ACEC is located directly adjacent to the action area between MP 542.20 and MP 544.50 and at MP 546.60 (Figure 4).

### Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Brady pincushion cactus in suitable habitat along United States Highway 89A during the survey season prior to treatment.
  - If Brady pincushion cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E)
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.



action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Brady pincushion cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Brady pincushion cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Brady pincushion cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

### Determination

Due to the implementation of SOPs, and conservation measures, herbicide will not be applied near Brady pincushion cactus and would only be applied by hand application methods within occupied habitat, thus the potential for negative effects on the species is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Brady pincushion cactus but is not likely to adversely affect the Brady pincushion cactus.

### **5.5 California Condor**

Endangered Species Act Status:	Endangered, 1967 (experimental nonessential population in Arizona)
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip, Kingman, Safford Field Offices
ADOT District Occurrence on BLM lands:	Flagstaff, Kingman, Holbrook Districts
Occurrence within Action Area:	I-15, SR 389, US 89A, US 93, I-40, SR 66
Critical Habitat:	Designated 1976, none designated in Arizona
Determination:	May affect, not likely to adversely affect species

### Life History

The California condor (*Gymnogyps californianus*) is the largest flying land bird in North America, with a wingspan approaching ten feet and an adult weight of 20-22 pounds. Mature birds have blackish plumage, a yellow-orange head, and white triangular patches under their wings. Immature birds are more brownish in color with a gray head. California condors are carrion consumers, feeding on the carcasses of both domestic and wild animals, and regularly travel long distances (25-30 miles) from roost sites each day in search of food (Glinski 1998).

### Distribution in Arizona

Historically, California condors occupied diverse habitats over much of western North America from British Columbia south to Baja California (USFWS 1996). The last historical confirmed sighting of a California condor within Arizona was near Williams in 1924, and by the 1940s, the species was known to be only in southern California (Glinski 1998). Reintroductions to the Vermillion Cliffs and Hurricane Cliffs in northern Arizona began in 1996.

Presently, this species occupies specific habitats including high desert canyon lands and plateaus near the Vermillion Cliffs, the Grand Canyon, Echo Cliffs, and Hurricane Cliffs at various elevations (AGFD 2008). Nesting habitat includes various types of rock formations such as crevices, overhung ledges, and potholes, although most California condor foraging occurs in open terrain. Roost sites include cliffs and tall trees, including snags (USFWS 1996).

#### Status within the Action Area

The action area north of Interstate 40 (I-40), west of US 191, and southeast of Interstate 15 (I-15) is within the experimental population boundary for California condor, in which the potential for transient flyovers and opportunistic foraging exists. Some of the condors reintroduced to Arizona are fitted with radio transmitters, and their activities are closely monitored by various government agencies and private organizations. The greatest concentration of condor activity occurs throughout the Grand Canyon and north onto the Kaibab and Paria plateaus. Mitigation areas were developed in coordination with the USFWS Arizona Ecological Services Office to provide guidelines for the level of protective measures necessary according to suitable and occupied habitat and potential for condor presence (Figure 5).

The action area along SR 389 and US 89A occurs within Mitigation Area 1, where condor nesting, roosting and foraging are most likely to occur. The action area along US 89A between MP 539.00 and MP 566.00 borders the base of the Vermillion Cliffs between the Kaibab and Paria plateaus, within the core area of condor use (USFWS 2007a). The action area along SR 389 is just west of the Kaibab Plateau. Due to the lack of cliffs and tall trees within the action area, suitable nesting and perching habitat is not present. However, suitable nesting habitat is located at least 1.50 miles away from the action area. Consequently, frequent flyovers and foraging are likely given the close proximity of suitable and occupied habitat. Condors may opportunistically feed within the action area if prey items such as roadkill are present. The most protective level of mitigation would be implemented within Mitigation Area 1.

The action area along I-15, US 93 north of Kingman, SR 66 and I-40 west of Flagstaff is within Mitigation Area 2, where condor flyovers and opportunistic foraging may also occur. Only a small portion of the action area along I-40 east of Flagstaff is within Mitigation Area 3. Based on the lack of records of condors occurring within Mitigation Area 3, condor encounters are less likely.

The re-introduced condors are an "experimental nonessential population" as characterized under Section 10(j) of the ESA. An experimental nonessential population is treated as a proposed threatened species, except when located outside of the experimental population boundary or within National Park System or National Wildlife Refuge System lands, where the species is treated as endangered under the ESA. Although it is less likely due to the species current distribution, individuals could occur within the action area along I-15, I-40, US 93 or SR 68, outside of the experimental population boundary. California condor encountered outside of the experimental population boundary will be treated as an endangered species.

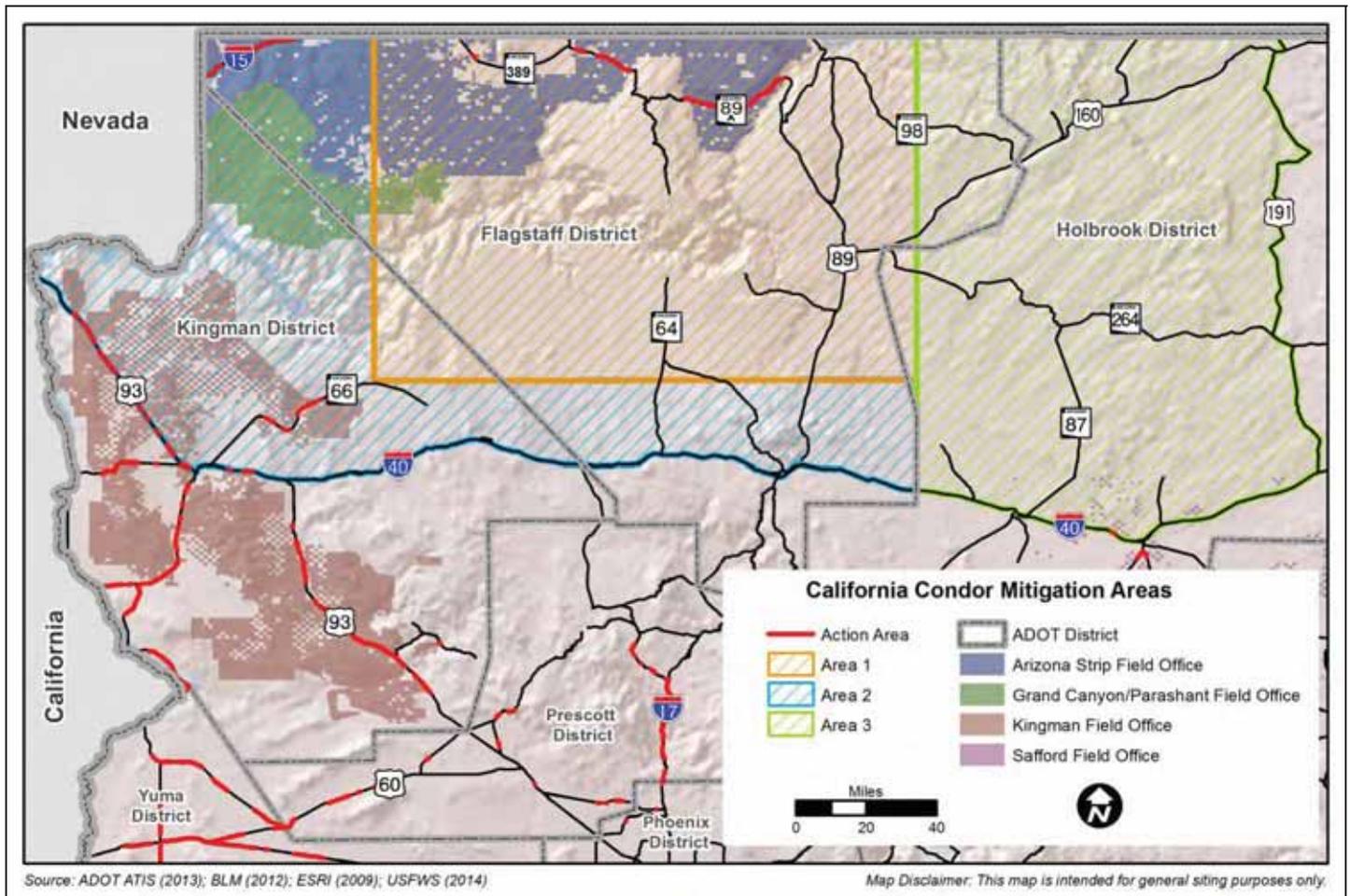


Figure 5 – California Condor Mitigation Areas

### Species-specific Conservation Measures

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for experimental populations (#17) and for California condor (#46) (BLM 2007; USFWS 2007f).

The following measures will be implemented in Mitigation Area 1:

- Three days prior to herbicide application along State Route 389 and United States Highway 89A, the applicator shall contact the USFWS Field Office in Flagstaff (928.226.0614) to determine the nesting and roosting locations and status of any condors within 1 mile of the action area.
- Do not conduct herbicide treatments within ¼ mile of currently occupied nests, roosts or release sites.
- Do not use dicamba in Mitigation Area 1.
- Do not use 2,4-D or diuron in Mitigation Area 1 unless the action area has been surveyed for roadkill within 2 days prior to treatment and all carrion/roadkill has been removed prior to spraying.
- Do not broadcast spray clopyralid, diuron, glyphosate, hexazinone, picloram, or triclopyr within Mitigation Area 1; do not broadcast spray these herbicides in areas adjacent to California condor nesting or roosting habitat under conditions when spray drift onto the nesting or roosting habitat is likely.
- Where feasible, avoid use of the following herbicides within Mitigation Area 1: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.

The following measures will be implemented in Mitigation Areas 1, 2, and 3:

- The applicator shall avoid any interaction with condors and shall immediately contact the USFWS Field Office in Flagstaff (928.226.0614) if a condor is present within the action area. Any activity that could result in harm to condors shall cease and shall not resume until the condor leaves on its own accord or as a result of individuals working under an appropriate permit from USFWS.
- Do not use dicamba in Mitigation Areas 1, 2 or 3.
- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or adjacent to California condor nesting or roosting habitat, apply at the typical, rather than the maximum, application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in California condor nesting or roosting habitat, utilize the typical, rather than the maximum, application rate.

### Effects Analysis

Direct spray of condors is unlikely due to the requirement to avoid interaction with condors as well as their ability of flight. The disturbance caused by the presence of personnel and boom trucks during spraying operations would not exceed typical disturbances caused by traffic along US 89A. However, condors are naturally curious birds and may be attracted to project activities along the roadside, which could result in unintended human-condor interactions, or unintended direct herbicide exposure. If direct spray by 2,4-D, clopyralid, glyphosate, hexazinone, picloram, or triclopyr at the typical application rate, or by imazapyr or metsulfuron methyl at the maximum application rate, did occur, negative health effects could potentially occur, according to the ERAs for these herbicides (BLM 2007).

No critical habitat is designated within Arizona, and suitable nesting and roosting habitat does not occur within the action area. Therefore, the project would not destroy or modify designated critical habitat or condor nesting habitat. However, while foraging in the action area, condors may consume carrion that has been contaminated by herbicides. According to the ERAs, negative health effects to condors could occur if carrion was directly sprayed by 2,4-D or diuron at the typical application rate, or by bromacil or diquat at the maximum application rate (BLM 2007). Conservation measures restricting or limiting the use of these potentially harmful chemicals within California condor habitat would be implemented to avoid or reduce these potential effects (refer to Appendix E).

Herbicide use is unlikely to indirectly affect California condor habitat. Beneficial effects associated with herbicide treatments include reducing the likelihood of wildfires that could destroy large roost trees.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect California condor.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to destroy habitat or affect condor breeding, nesting, and foraging behaviors. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift, pollution of air, soil, or water, or the spread of wildfire all have

the potential to indirectly affect California condor. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Although the action area occurs within the California condor experimental population boundary, there is no critical habitat within Arizona, there is no suitable nesting habitat is within or adjacent to the action area, and the implementation of SOPs and conservation measures would minimize direct exposure or contamination of forage so that adverse effects to the species would be insignificant. The proposed program of herbicide use within the action area along with proposed conservation may affect the California condor but is not likely to adversely affect the California condor.

**5.6 Chiricahua Leopard Frog**

Endangered Species Act Status:	Threatened, 2002
BLM Field Office Occurrence within ADOT ROW:	Tucson Field Office
ADOT District Occurrence on BLM lands:	Tucson District
Occurrence within Action Area:	SR 80, SR 83, SR 90
Critical Habitat:	Designated 2012
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

Life History

The Chiricahua leopard frog (*Lithobates chiricahuensis*) is distinguished from other leopard frogs by dorsolateral folds that are broken toward the rear and angle inward, and cream-colored tubercles covering dark thighs. Adult leopard frogs consume arthropods and other invertebrates, and larvae consume algae, organic debris, plant tissue, and minute organisms. Breeding occurs primarily between February and August, depending upon elevation. Egg masses are attached to submerged vegetation and hatch in eight to 14 days. Larvae become juvenile frogs in three to nine months (USFWS 2012d).

The species is highly aquatic throughout all life stages, and requires permanent to semi-permanent streams, springs, rivers, ponds, stock tanks, and riverine backwaters in oak, mixed oak, and pine woodlands, chaparral, grassland, and desert habitats (AGFD 2006c). Metapopulation dynamics, such as dispersal and re-colonization, are also crucial to the survival of the species, resulting in very dynamic populations. Frogs are known to travel up to one mile overland, three miles along ephemeral or intermittent drainages, and five miles along perennial waterways. Dispersal habitats provide for somewhat protected movements between aquatic sites. Dispersal habitats can be overland areas, but are typically ephemeral, intermittent or perennial drainages that connect aquatic habitats, provide adequate cover from predators, and contain aquatic features to prevent against desiccation. Dispersal habitats do not necessarily provide habitat that is suitable for breeding (USFWS 2012d).

Distribution in Arizona

The range of this species is divided into two geographical areas, with southern populations located in the mountains and valleys south of the Gila River in the southeastern portion of the state, and northern populations found along the Mogollon Rim and White Mountains in central and eastern Arizona. The

Chiricahua leopard frog is extant in seven of eight major drainages of historical occurrence in Arizona (the Salt, Verde, Gila, San Pedro, Santa Cruz, Yaqui/Bavispe, and Magdalena River drainages), but appears to be extirpated from the Little Colorado River drainage on the northern edge of the species' range (USFWS 2012d). For management purposes, the geographic range has been separated into eight Recovery Units, six of which occur in Arizona.

### Status within the Action Area

The northern montane populations of Chiricahua leopard frogs do not occur on or near BLM-administered lands. There is suitable occupied and unoccupied habitat within or near the action area in the southern portion of Arizona. Leopard frogs have been documented in the lower San Pedro River, which crosses the action area along SR 90 in Cochise County (Appendix A). The action area along SR 80 is within the range of known Chiricahua leopard frog populations, although nearby water sources are ephemeral and populations in this area have drastically declined over the years (Appendix A)(USFWS 2007d). However, given the dynamic nature of Chiricahua leopard frog populations, if environmental conditions within the action area are desirable, the presence of frogs is possible.

Figure 6 shows the designated critical habitat in the Las Cienegas National Conservation Area Unit that occurs on BLM land approximately two miles east-northeast of the action area along SR 83 in Pima County. Designated critical habitat also occurs across the road, approximately 2.80 miles west of SR 83, in the Eastern Slope of the Santa Rita Mountains Unit, which is a complex of six tanks and connective drainages (Figure 6). Both complexes are currently occupied. The two complexes are five miles apart, which is more than the one mile overland and three mile ephemeral drainage dispersal distance. The Eastern Slope is one of two known occupied sites that likely supports breeding in the Santa Rita Mountains and the multiple sites in the unit form a metapopulation. Breeding was known to occur at Los Posos Gulch Tank, until it dried up in 2009. Frogs and tadpoles were released into Las Cienegas in 2011 and breeding is known to occur in Empire Gulch. The Las Cienegas is known to act as an isolated population because it is too far from the Eastern Slope population for dispersal to occur (USFWS 2012d). Although it is highly unlikely that Chiricahua leopard frogs disperse between sites, due to occupied habitat being located on ephemeral/intermittent drainages within 3 miles of the action area on SR 83, there is potential for frogs to be present. Conversely, the action area along SR 82 is approximately 6 miles along the ephemeral portion of Cienega Creek upstream of occupied habitat, thus it is well beyond the one mile overland and three mile ephemeral drainage dispersal distance and it is highly unlikely that Chiricahua leopard frogs would disperse to the action area along SR 82 (Figure 6).

### Species-specific Conservation Measures

Applicable conservation measures from the Final BA for the BLM PEIS are incorporated by reference into this analysis, and are included in Appendix E. These species specific conservation measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for Chiricahua leopard frog (#55) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 83, State Route 90, and State Route 80.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable habitat along State Route 83, State Route 90, and State Route 80, to determine if the habitat is occupied by Chiricahua leopard frogs.

- If Chiricahua leopard frogs (adults, tadpoles and eggs) are present within the action area:
  - Do not apply herbicides that rate as Class 1 in the species toxicity group for Aquatic-Amphibian, or as Class 2 or Class 3 for the species toxicity group Aquatic Arthropod and/or Terrestrial Arthropod (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the edge of the annual high water line of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the Chiricahua leopard frog occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet	300 feet
Liquid	30 feet	350 feet*
Ultra-low volume or dust	400 feet	400 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size.		

- Do not apply herbicides that rate as Class 2 in the species toxicity group for Aquatic-Amphibian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the edge of the annual high water line of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the Chiricahua leopard frog occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species occupancy is unknown along State Route 83, State Route 90, and State Route 80, assume that the species is present, delineate suitable Chiricahua leopard frog habitat within the action area and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat.

### Effects Analysis

Due to the absence of a permanent or semi-permanent water source within the action area along SR 83 and SR 80, and the distance between known occupied locations, Chiricahua leopard frog adults, tadpoles, and eggs are unlikely to be present. Adults, tadpoles, and eggs may be present in the San Pedro River within or adjacent to the action area along SR 90. Prior to treatment, Chiricahua leopard frog presence would be determined or

assumed, and avoidance distances based on herbicide formulation and application methods would be used to minimize the potential for exposure to herbicides that may be harmful to amphibians.

Designated critical habitat is at least two miles from the action area; therefore impacts to critical habitat from direct/accidental spray, off-site drift, runoff, or a spill are unlikely to occur. Therefore, direct effects to Chiricahua leopard frog or its critical habitat are not anticipated.

Indirect effects to Chiricahua leopard frog could occur through herbicide drift or runoff into aquatic habitats if treatments are conducted upslope or adjacent to occupied habitat. However, treatments would not occur during high winds or imminent rainfall, and buffer zones would be maintained around perennial water sources. Therefore, the potential for indirect effects to occur as a result of drift or runoff is unlikely. Herbicide treatments could result in reduced cover within the action area, which could lead to increased predation of leopard frogs, if they are present within the action area. However, due to the implementation of SOPs and conservation measures, no treatment would occur within 30 feet of perennial waters, and protective cover along the banks would remain in place. Thus, the potential for increased predation from a loss of cover is unlikely.

Although Chiricahua leopard frog is unlikely to directly benefit from herbicide treatments within the action area, the reduction in nonnative plant biomass may reduce the potential for catastrophic wildfires that could spread to suitable and designated critical habitat and established populations.

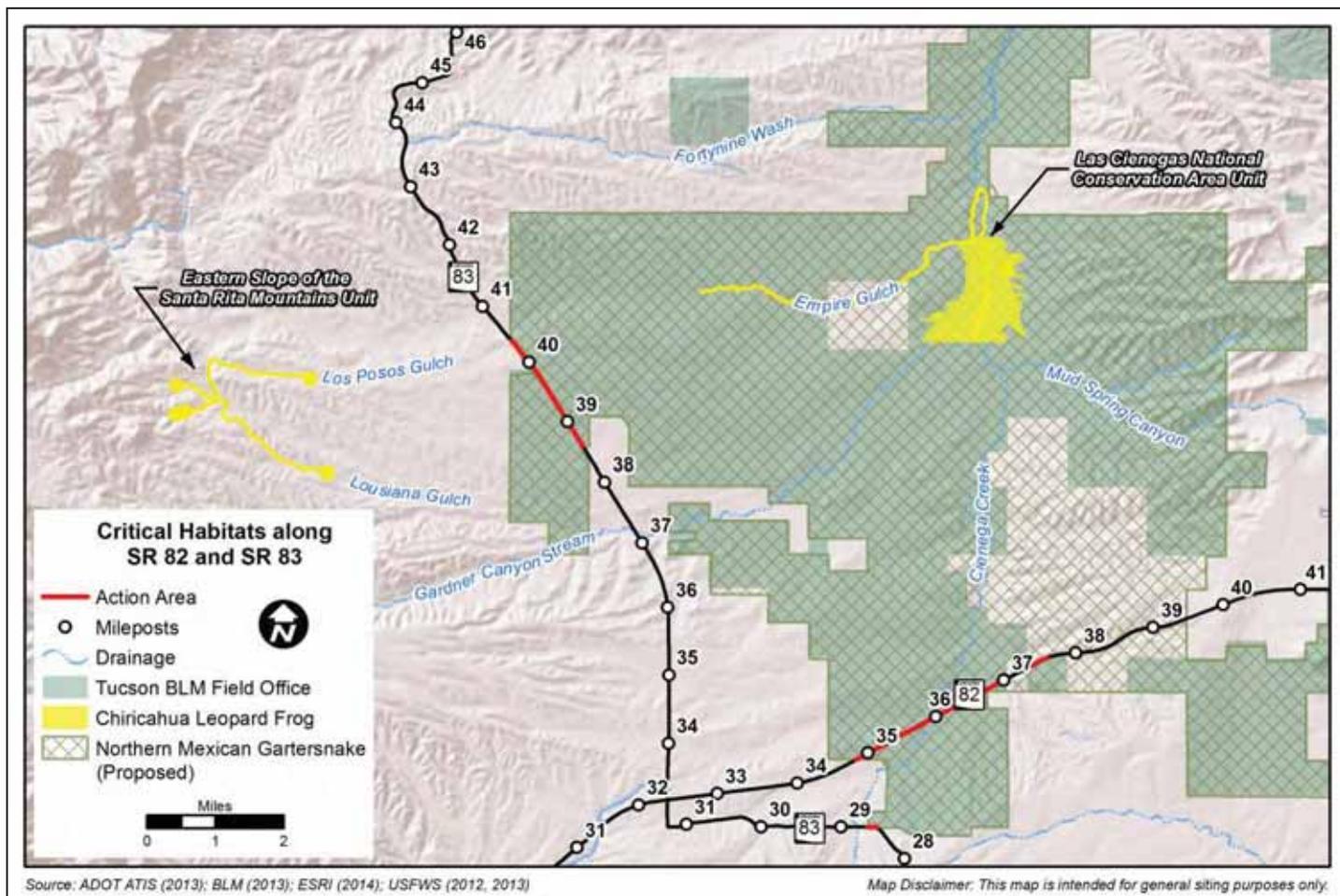


Figure 6 –Critical Habitats along SR 82 and SR 83

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Chiricahua leopard frog.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to kill or injure leopard frogs, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect Chiricahua leopard frog. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicides that are harmful to amphibian would not be applied near or upslope of aquatic habitats (refer to habitat conservation measures for aquatic habitat in Appendix E) and no herbicide would be applied near occupied habitat. Thus the potential for adverse effects to the Chiricahua leopard frog or its critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area along with proposed conservation measures may affect the Chiricahua leopard frog but is not likely to adversely affect the Chiricahua leopard frog or its designated critical habitat.

### **5.7 Fickeisen Plains Cactus**

Endangered Species Act Status:	Endangered, 2013
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	US 89A
Critical Habitat:	Proposed 2012
Determination:	May affect, not likely to adversely affect species or proposed critical habitat.

## Life History

Fickeisen plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*) is a small, globose succulent that can be solitary or occasionally branched with mature stems that measure one to 2.40 inches tall and up to 2.20 inches in diameter. Tubercles containing an areole with corky spines form a spiral pattern around the stem. Each areole has three to seven radial spines and is distinguished from the variety *peeblesianus* by a single spine that is whitish in color and curves upward (USFWS 2012b). Flowers are less than one inch in diameter and are

comprised of cream or yellow tepals with brown-purple mid-stripes, and yellow stamens and stigma. Fruit is green and top-shaped, but turns reddish-brown and dehisces along a vertical slit when mature (AGFD 2011).

Fickeisen plains cactus is restricted to shallow, gravelly loam soils derived from limestone of the Harrisburg member of the Kaibab Formation and Toroweap Formation, Coconino Sandstone and Moenkopi Formation. It is often found in close association with foxtail cactus (*Escobaria vivipara* var. *rosea*) in the Plains, Great Basin desert scrub and Great Basin desert grassland biotic communities (USFWS 2012b). Most populations are located on canyon margins, flat terraces or benches, or the toe of well-drained slopes that are less than 20 percent from 3,985 to 5,940 feet in elevation (AGFD 2011).

Similar to other *Pediocactus*, Fickeisen plains cactus retracts into the soil during winter, summer, and drought conditions. With adequate rainfall, plants will emerge from the soil in April; flowers will bloom in mid-April by opening in the morning for one to two days. Upon anthesis, cross-pollination will occur. Fruit mature in mid-May and seeds are set in June, immediately followed by the plant's retraction into the soil to avoid high temperatures and drought conditions. Cactus may re-emerge for a short period in autumn following monsoonal rains, or may remain retracted for up to three years until favorable conditions are present (USFWS 2012b).

Distribution in Arizona

Endemic to the Colorado Plateau, Fickeisen plains cactus occurs in Coconino and Mohave counties. Populations are scattered throughout House Rock Valley, in the area of Gray Mountain, and along the canyon rims of the Little Colorado and Colorado rivers in Coconino County. In Mohave County, this species is found in Hurricane Valley and Main Street Valley and near Clayhole and Sunshine ridges (AGFD 2011, USFWS 2012b).

Status within the Action Area

The action area along US 89A occurs within the species range defined by USFWS between MP 552.00 and MP 557.00. However, the nearest known occurrence and proposed critical habitat is located in House Rock Valley approximately 2.25 miles south of MP 559.00 on US 89A (Figure 4).

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Fickeisen plains cactus on suitable substrates along United States Highway 89A during the survey season prior to treatment.
  - If Fickeisen plains cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

### Effects Analysis

During broadcast spray applications, Fickeisen plains cactus could be exposed by direct spray if the species is present within the action area or by drift or run-off if plants are adjacent to or down grade of the action area. If OHVs are utilized in herbicide application there is also the potential for cactus to be crushed. However, possible exposure and impacts from application methods would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

Undesirable vegetation, specifically invasive grasses, present particular threats to Fickeisen plains cactus through prolific competition and exposure to high intensity fires (USFWS 2012b). Low recruitment of Fickeisen plains cactus has been recorded at sites occupied by invasive species and mortality in other species of *Pediocactus* has resulted from exposure to high intensity fire. Therefore, herbicide use would likely benefit Fickeisen plains cactus in the long-term, by increasing habitat suitability within the species range, and reducing wildfire fuels and the risk of a catastrophic wildfire.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Fickeisen plains cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Fickeisen plains cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Fickeisen plains cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, and conservation measures, herbicide will not be applied near Fickeisen Plains cactus and would only be applied by hand application methods within occupied habitat, thus the potential for negative effects on the species or proposed critical habitat is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Fickeisen plains cactus but is not likely to adversely affect the Fickeisen plains cactus or its proposed critical habitat.

### **5.8 Gierisch Mallow**

Endangered Species Act Status:	Endangered, 2013
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	I-15
Critical Habitat:	Designated 2013
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

## Life History

The Gierisch mallow (*Sphaeralcea gierischii*) is a flowering perennial that produces many dark red-purple stems, measuring 17 to 41 inches in length, from a wood caudex (AGFD 2013). Bright green, glabrous leaf blades are egg-shaped with a truncate base and three to five lobes. The inflorescence is compound with more than one flower per node. Flowers have green glabrous calyx and orange petals that measure 0.60 to 0.98 inches long (USFWS 2012c).

Gierisch mallow occur primarily on sparsely vegetated gypsum outcrops associated with the Harrisburg Member of the Kaibab Formation, but have also been collected on the limestone rock/soil of the Moenkopi Formation. This species is commonly found in Mohave desertscrub on north facing slopes of five to 30 percent at elevations ranging from 2,715 to 4,262 feet (AGFD 2013).

During winter, the Gierisch mallow will die back to the ground and then re-sprout from its woody base in January to March depending on daytime temperature and rainfall. Because this is a newly discovered species, pollination systems, seed dispersal mechanisms and conditions under which seed germinate are not known. It is assumed like many other *Sphaeralcea* species, the Gierisch mallow is pollinated by the globemallow bee (*Diadasia diminuta*) but other species may aid in pollination as well (USFWS 2012c).

## Distribution in Arizona

A total of 17 populations of Gierisch mallow are located in Arizona. One population is located entirely on Arizona State Land Department lands near the Arizona and Utah State Line. The remaining 16 populations are located on lands managed by the BLM south of Black Knolls with the southernmost boundary on the edge of Black Rock Gulch near Mokaac Mountain (USFWS 2012c).

## Status within the Action Area

The action area along I-15, between MP 25.00 and the Arizona/Utah State Line, is within the species range and critical habitat is designated from MP 26.9 to MP 27.5 (Figure 7). Extensive surveys across this species range have been completed since 2001, but no surveys specific to the action area are known. Suitable habitat was

considered potentially present in the action area between MP 23.00 and MP 26.60 (Figure 7); however, USFWS Arizona species lead Brian Woolridge indicated via e-mail that the correct geological formation for Gierisch mallow is not present in the I-15 ROW; that area is designated as critical habitat to protect pollinators for Gierisch mallow plants located outside the action area (B. Woolridge, personal communication, April 2, 2014).

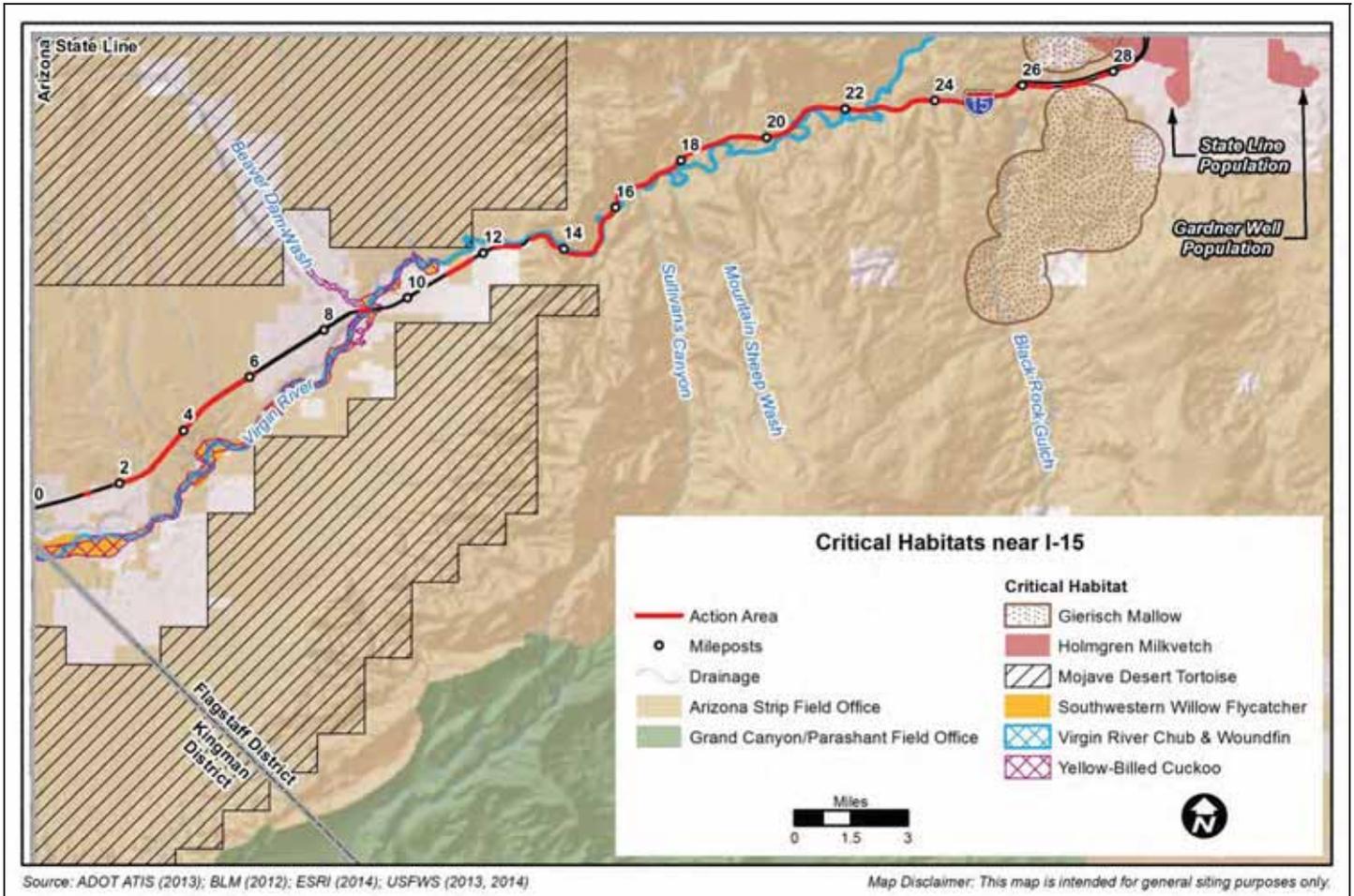


Figure 7 – Critical Habitats near I-15

### Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Spray individual target plants by hand wand only within Gierisch mallow critical habitat along Interstate 15.
- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of Gierisch mallow critical habitat and use only manual applications of these herbicides within ½ mile of the critical habitat to protect pollinators for the Gierisch mallow.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

## Effects Analysis

During broadcast spray applications Gierisch mallow could be exposed by direct spray if this species is present within the action area or by drift or run-off if plants are adjacent to or down grade of the action area. However, the correct geological formation for Gierisch mallow is not present in the action area, and possible exposure would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

One of the main factors impacting this mallow is the spread of nonnative species, particularly red brome (*Bromus rubens*) and cheatgrass, which out-compete native species for water and soil nutrients, disrupt normal pollinator interactions with the Gierisch mallow, and promote wildfires. Gierisch mallow grows in sparsely vegetated communities and is not likely to be adapted to wildfires or the habitat alteration that results from frequent wildfires. In addition, Gierisch mallow populations are small and distributed across a narrow range; thus a wildfire in this species range has the potential to decimate one or all of the populations (USFWS 2012c). Herbicide treatment would likely benefit Gierisch mallow in the long-term, by increasing habitat suitability within the species range, and reducing wildfire fuels and the risk of a catastrophic wildfire.

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Gierisch mallow.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Gierisch mallow, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Gierisch mallow. However, in situations that do not involve a federal nexus, the section 10(a)(1)(B) permit process under the ESA can be used to ensure compliance. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the lack of suitable Gierisch mallow habitat within the action area and implementation of SOPs and conservation measures to prevent drift or runoff to suitable habitat, the potential for adverse effects on the species or designated critical habitat from the proposed herbicide program is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Gierisch mallow but is not likely to adversely affect the Gierisch mallow or its designated critical habitat.

## 5.9 Holmgren Milk-vetch

Endangered Species Act Status:	Endangered, 2001
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	I-15
Critical Habitat:	Designated 2006
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

### Life History

Holmgren milk-vetch (*Astragalus holmgreniorum*) is a small herbaceous member of the pea family that produces prostrate stemless leaves from a perennial caudex. Arising from the thickened root crown and taproot are compound pinnate leaves measuring 1.60 inches to 5.10 inches long and containing 9 to 15 leaflets (AGFD 2006a). Leaflets are broadly obovate, pilose below, and glabrous above, and measure 0.30 to 0.60 inches long (AGFD 2006a, USFWS 2006a). The raceme inflorescence has six to 16 flowers and the peduncle rises directly from the root crown (USFWS 2006a). Flowers have the typical papilionaceous flower shape distinctive of the pea family and are pinkish purple with unique white-tipped wings (AGFD 2006a). Once fruit are produced, the peduncle becomes prostrate due to the weight of the thick, bilocular legume pods (USFWS 2006a).

Although Holmgren milk-vetch is perennial, it is extremely short-lived with low survivorship from germination to reproductive adult, and few plants live past two growing seasons. Plants entering their second growing season emerge first, as early as mid-January, followed by the emergence of seedlings in March. Flowering occurs between March and April. Flowers can self-fertilize, however, optimal pollination occurs by solitary bees especially the species *Anthophora poterae*. Fruit is set by the end of April and will persist until end of May (USFWS 2006a). Plants die back to their roots after the flowering season (late May to mid-June) and if they survive through the winter they will re-emerge the following year (AGFD 2006a).

Preferred habitat of the Holmgren milk-vetch are bare soils (less than 20% living cover) of the Mohave mixed shrub and Mohave Creosote/Bursage biotic communities between 2,480 and 3,000 feet in elevation (USFWS 2006a). It is typically found on the skirt edges of south facing slopes of five to 10 percent grade, above or at the edge of drainage areas (AGFD 2006a). The substrate composition is a limiting factor of habitat suitability for the Holmgren milk-vetch. Occupied soils are defined as Badland; Badland, very steep; Eroded land-Shalet complex, warm; Hobog-rock land association; Isom cobbly sandy loam; Ruesh very gravelly fine sandy loam; Gypill Hobog complex, six to 35 percent slopes; Gypill very cobbly sandy loam, 15 to 40 percent slopes and Hobog-Grapevine complex, two to 35 percent slopes; and the parent materials that support these soils including the Virgin Limestone member, middle red member, and upper red member of the Moenkopi Formation and the Petrified Forest member of the Chinle Formation (USFWS 2006b).

### Distribution in Arizona

Historic range of this species is not known as records are not available. Currently, two populations of Holmgren milk-vetch occur near I-15 on the Utah-Arizona Border. The Gardner Well Population is a small population located east of I-15 near Atkinville Wash. The State Line Population is the largest known population of Holmgren milk-vetch which spans the Utah-Arizona Border along I-15. Individuals have been located within the I-15 median as well as on surrounding slopes (Figure 7) (ADOT 2012).

### Status within the Action Area

Designated critical habitat for Holmgren milk-vetch is located along I-15 from approximately MP 28.70 to the Utah-Arizona Border. No designated critical habitat is located within the action area but is approximately 200 feet to the north. However, the action area between MP 26.90 and MP 28.50 is located within the species general distribution; and suitable habitat including preferred substrates on south facing slopes of less than 20 percent near drainages is present from approximately MP 25.00 to MP 28.50 (Figure 7).

### Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Holmgren milk-vetch within suitable habitat along Interstate 15 during the survey season prior to treatment.
  - If Holmgren milk-vetch is found:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
    - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
    - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species

### Effects Analysis

According to the species Recovery Plan, use of pesticides or herbicides detrimental to milk-vetches or their pollinators is prohibited in the vicinity of all recovery populations (USFWS 2006b). As such, the species range along I-15 (Figure 7) will be surveyed prior to treatment and occupied sites will be buffered based on herbicide formulation and application method. Therefore, no direct effects to Holmgren milk-vetch or critical habitat are anticipated.

One of the main threats to Holmgren milk-vetch is invasion of non-native species especially cheatgrass, red brome, and storksbill (*Erodium cicutarium*), causing competition for resources, displacement, and increasing the risk of a high intensity catastrophic fire within its range (USFWS 2006b). Thus, control or elimination of these undesirable plants would have a beneficial effect on the Holmgren milk-vetch and its habitat

Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Holmgren milk-vetch.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Holmgren milk-vetch, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Holmgren milk-vetch. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide will not be applied near Holmgren milk-vetch; therefore, the potential for adverse effects to the species is so minor as to be discountable. There is no designated critical habitat in the action area. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Holmgren milk-vetch but is not likely to adversely affect the Holmgren Milk-vetch or its designated critical habitat.

**5.10 Huachuca Water Umbel**

Endangered Species Act Status:	Endangered, 1997
BLM Field Office Occurrence within ADOT ROW:	Tucson Field Office
ADOT District Occurrence on BLM lands:	Safford District
Occurrence within Action Area:	SR 82, SR 90
Critical Habitat:	Designated 1999
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

Life History

Huachuca water umbel (*Lilaeopsis schaffneriana* ssp *recurva*) is an herbaceous, semi-aquatic to aquatic perennial plant with slender, erect leaves that grow from creeping rhizomes. The yellow-green or bright green leaves are cylindrical and hollow with septa (thin partitions) at regular intervals, and are generally 0.04–0.12

inches in diameter and up to eight inches tall. Three to 10 very small flowers are borne on an umbel that is always shorter than the leaves. Flowering is typically observed June through August producing red ellipsoid fruits in July through September, though reproduction is primarily asexual from rhizomatous branching (ARPC 2001, USFWS 1999). Dispersal occurs when clumps of plant become dislodge and re-root at different sites along a stream (USFWS 1999).

This species can be found in streams, rivers, cienegas, and springs with perennial water, gentle stream gradients, and small to medium-sized drainage areas within Sonoran Desertscrub, grassland, oak woodland, and conifer forest from 3,500 to 6,500 feet. In stream and river habitats, the plant can occur in backwaters, side channels, and nearby springs. Within these habitats, the species occurs on saturated soil or in standing water from two to 10 inches deep, in shaded or unshaded sites (USFWS 1999, 2003).

Huachuca water umbel seems to require an intermediate level of flooding frequency, but populations can be destroyed with frequent and/or intense flooding. Following a flood event, surviving plants can rapidly recolonize an area until interspecific competition becomes a limiting factor. To increase survival, low densities of water umbel will opportunistically inhabit microsites on the periphery of a stream channel or in small openings of the understory to reduce interspecific competition. Primary constituent elements essential to Huachuca water umbel include a riparian plant community that is fairly stable over time and not dominated by nonnative plant species, a stream channel that is relatively stable but subject to periodic flooding, refugial sites (sites safe from catastrophic flooding), and a substrate that is permanently or nearly permanently wet (USFWS 1999, 2003).

#### Distribution in Arizona

Huachuca water umbel has been documented from 27 sites in Santa Cruz, Cochise, and Pima counties, Arizona, and in adjacent Sonora, Mexico. Of the documented sites, 6 have been extirpated. The 21 extant sites occur in 4 major watersheds, the San Pedro River, Santa Cruz River, Rio Yaqui, and Rio Sonora (USFWS 2007c).

#### Status within the Action Area

The action area along SR 82 between MP 60.00 and MP 62.70 and along SR 90 between MP 327.20 and MP 330.00, in Cochise County is within designated critical habitat within the San Pedro Riparian National Conservation Area (RNCA) which is managed by the BLM (Figure 8). Huachuca water umbel is known to occur throughout the RNCA. The entirety of the San Pedro RNCA is considered potential Huachuca water umbel habitat and is the largest contiguous area of potential habitat within the species range. Surveys conducted during 1995 and 1996 located 43 patches of water umbel at six disjunct sites. Additional plant inventories within critical habitat along the San Pedro River identified 43 populations in 2001 and 30 populations in 2004. Each survey located both previously documented and newly occupied sites. Populations have been documented approximately 1 mile downstream (north) of the SR 82 crossing and 1 mile north and south of SR 90 (USFWS 2007c).

Although Huachuca water umbel populations have not been observed within the ROW boundary, the dynamic nature of the plant and its environment, coupled with potentially suitable habitat and the relatively close proximity to known populations, make it difficult to discount the possibility of its presence at a given time.

## Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in small aquatic habitats (#35), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within 1 mile of suitable habitat along State Route 82 and State Route 90.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable habitat along State Route 82, and State Route 90, to determine if the habitat is occupied by Huachuca water umbel.
- If Huachuca water umbel are present within the action area:
  - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the edge of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the plant occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet*	450 feet*
<b>Alternative Buffer Zones:</b> * An avoidance distance of 350 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size.		

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species occupancy is unknown along State Route 82, and State Route 90, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat.

## Effects Analysis

During broadcast spray applications Huachuca water umbel could be exposed by direct spray if this species is present within the action area or by drift or run-off if plants are adjacent to or down grade of the action area. However, possible exposure would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

The invasion of non-native plant species into wetland habitats is a threat to Huachuca water umbel, especially Bermuda grass (*Cynodon dactylon*) and watercress (*Nasturtium officinale*), which may directly compete with water umbel plants (USFWS 2007c). Therefore, herbicide treatments may have a beneficial effect on the Huachuca water umbel and its critical habitat by eliminating or reducing the density of non-native plant species.

Indirect effects to Huachuca water umbel could occur through habitat loss or degradation due to herbicide treatments. Herbicide treatments conducted in designated critical habitat have the potential to modify the riparian plant community, which could result in sedimentation of refugial sites. To minimize effects to suitable and critical habitat for water umbel, general conservation measures and SOPs pertaining to perennial aquatic habitats would be followed; including limiting herbicide use to selective herbicides applied by hand methods.

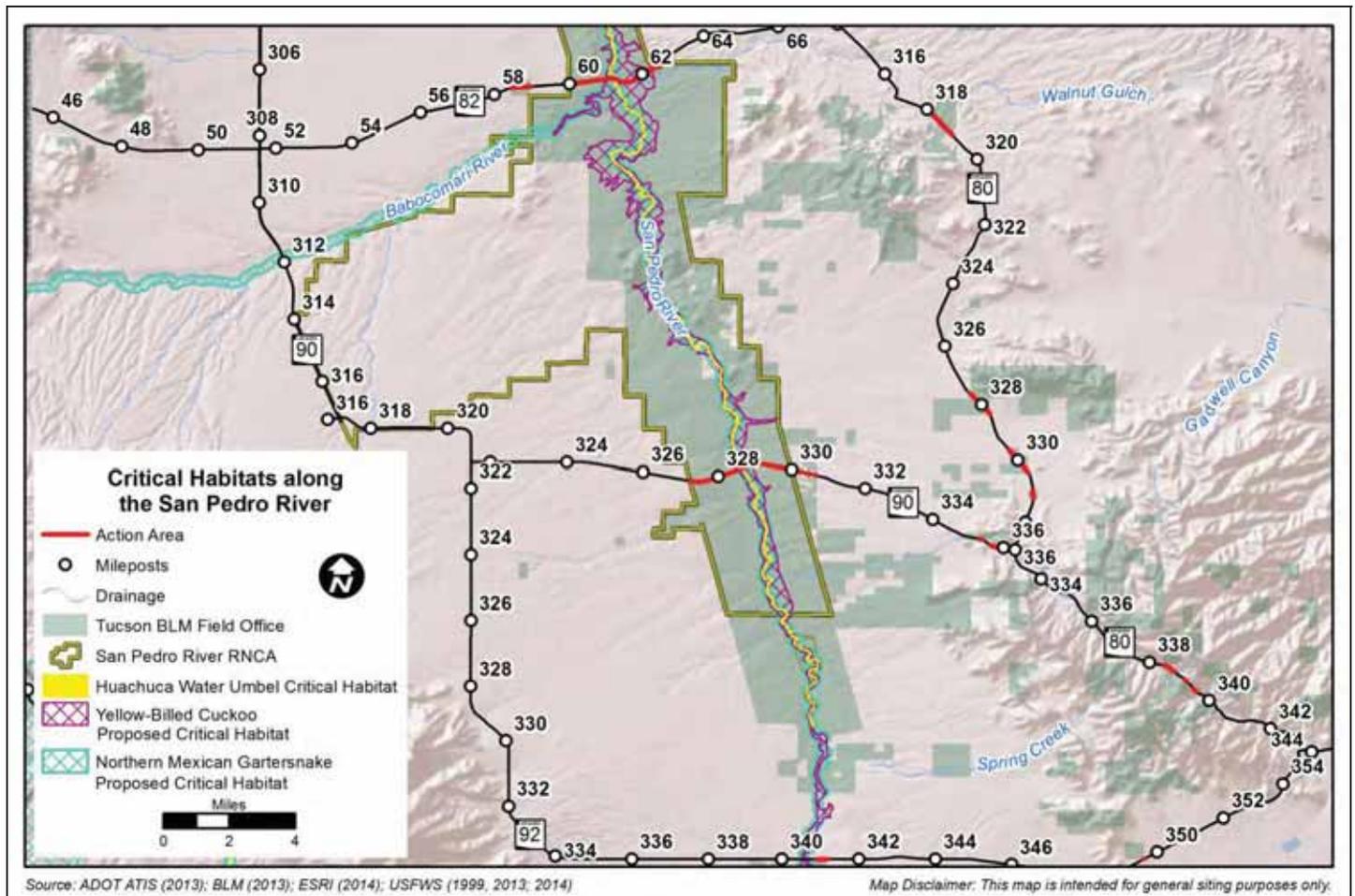


Figure 8 – Critical Habitats along the San Pedro River

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Huachuca water umbel.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Huachuca water umbel, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly

affect Huachuca water umbel. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicides that are harmful to aquatic species would not be applied near or upslope of occupied aquatic habitats and no herbicide would be applied near occupied habitat. Thus the potential for adverse effects on the Huachuca water umbel or its designated critical habitat is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Huachuca water umbel but is not likely to adversely affect the Huachuca water umbel or its designated critical habitat.

**5.11 Mojave Desert Tortoise**

Endangered Species Act Status:	Threatened, 1990
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	I-15
Critical Habitat:	Designated 1994
Determination:	May affect, not likely to adversely affect species. No effect on designated critical habitat.

Life History

The Mojave Desert tortoise (*Gopherus agassizii*) has a high-domed brownish carapace and yellowish, relatively flat unhinged plastron, short tail, and stocky limbs. Both the carapace and plastron exhibit prominent growth lines, and the forelimbs are covered with large conical scales (USFWS 2011b).

Desert tortoises emerge from over-wintering burrows in late winter or early spring and typically remain active through fall, though they spend much of their lives in burrows even during these active periods. Summer heat brings decreased activity, though tortoises often emerge after summer rains. Mating can occur year round except during winter. When active, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (USFWS 2011b).

Distribution in Arizona

The species still occupies its historic range throughout the southwest, although populations are more fragmented and declining. In Arizona, the Mojave Desert tortoise inhabits the creosote, shadscale, blackbush, and Joshua tree series of the Mojave Desert west and north of the Colorado River. Mojave tortoises are found where precipitation ranges from two to eight inches, perennial plant diversity is relatively high, and annual plant production is high. Sandy-gravel soils that are fragile enough for digging burrows, but firm enough so that burrows do not collapse are an important component of the habitat (USFWS 2011b).

## Status within the Action Area

Critical habitat is designated within the Northeast Mojave Recovery Unit within one mile north and south of the action area along I-15 between MP 2.00 and MP 14.00 in Mohave County. Ongoing annual surveys within the Beaver Dam Slope and Gold Butte-Pakoon areas continue to document tortoise presence in this area (Figures 7 and 9) (USFWS 2006c, 2011b).

The entire action area along I-15 is within Mojave desert scrub. Because areas directly adjacent to roads are typically disturbed, high quality habitat used for burrowing is unlikely to be present within the ROW. However, due to the close proximity of known populations, tortoises may enter the action area to forage or to attempt a roadway crossing. The Virgin River creates a partial barrier to tortoise movement from critical habitat to the action area, and the steep slopes along I-15 through the Virgin River Gorge are not suitable for desert tortoise. BLM Category II and III habitats are represented within the action area, suggesting that low to medium density tortoise populations are in the vicinity (Figure 9).

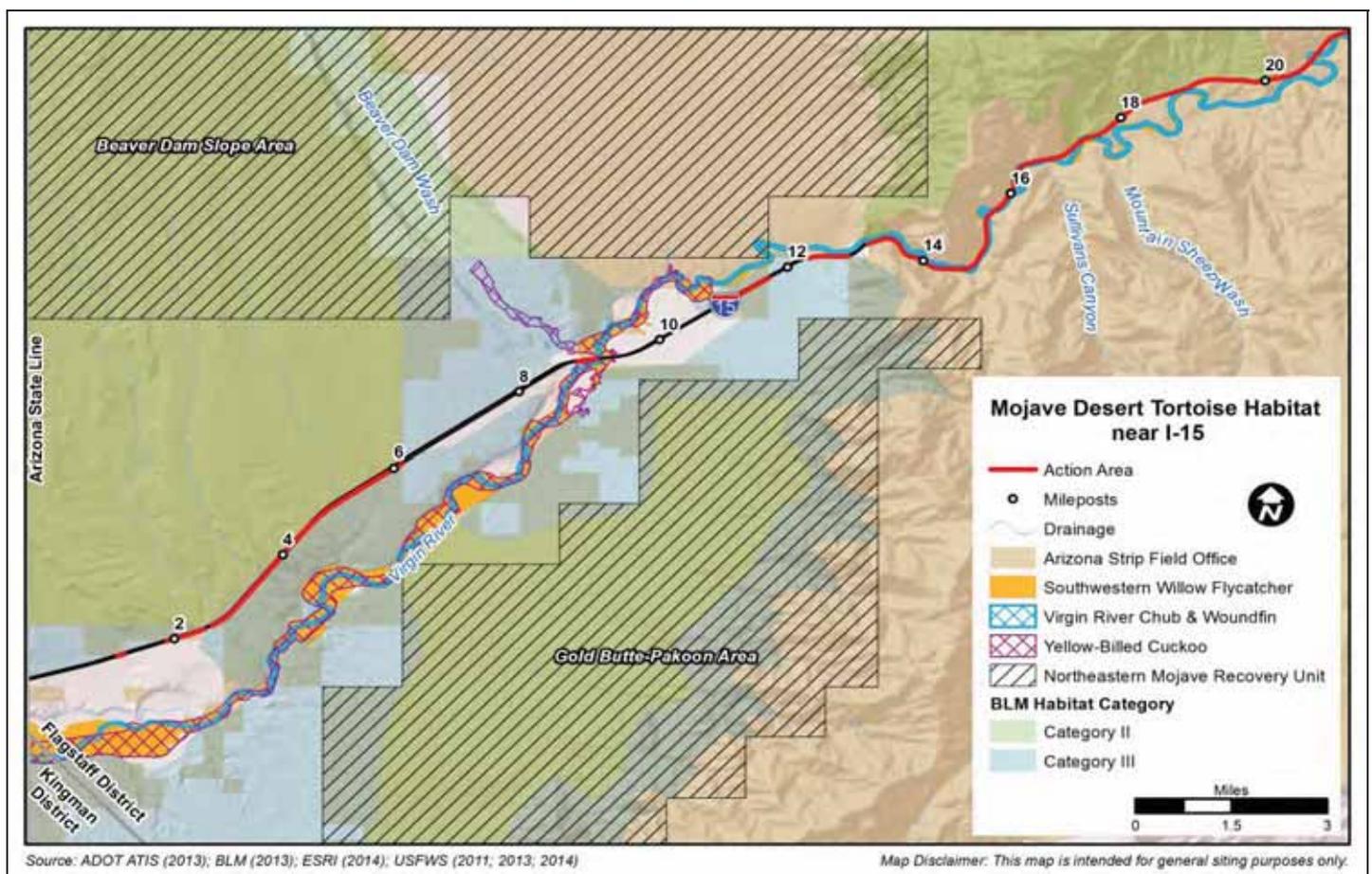


Figure 9 – Mojave Desert Tortoise Habitat near I-15

## Species-specific Conservation Measures

Applicable conservation measures from the Final BA for the BLM PEIS are incorporated by reference into this analysis, and are included in Appendix E. These species specific conservation measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for desert tortoise (#53) (USFWS 2007f).

- In desert tortoise habitat, conduct herbicide treatments during the fall and winter months (October 15 through March 15), when desert tortoises are least active.
- If Mojave Desert tortoises are encountered during herbicide treatments, application shall cease and shall not resume until the tortoise moves over 100 feet from treatment area on its own accord.
- Do not use dicamba within suitable habitat for Mojave Desert tortoise along I-15.
- Use only sprays with coarse droplet sizes within suitable habitat for Mojave Desert tortoise along I-15.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

Known tortoise populations and designated critical habitat occurs within one mile of the action area along I-15. While the action area provides marginal habitat compared to the surrounding area, tortoises may utilize the action area for dispersal, foraging, or burrowing. To avoid direct effects to desert tortoises, herbicide applications would only occur during inactive seasons.

Herbicide use may result in a temporary reduction in herbaceous forage within the action area. However, due to the vast amount of undisturbed forage available within the vicinity, no indirect effects as a result of reduced forage are anticipated. Critical habitat is at least one mile away from the action area; therefore herbicide treatments would have no effect on critical habitat.

Herbicide treatments would benefit Mojave Desert tortoise in the long-term. For example, in 2005 and 2006, over one million acres of vegetation within the Mojave Desert burned due to wildfires that were primarily fueled by invasive grasses. Approximately half of the area was suitable desert tortoise habitat (USFWS 2011b). Using herbicides to reduce or eliminate invasive grasses and other wildfire fuels would lessen the risk of future catastrophic wildfire.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Mojave Desert tortoise.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to kill or injure tortoises, destroy existing burrows and suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect Mojave Desert tortoise. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide will not be applied near Mojave Desert tortoise and herbicides harmful to herpetofauna will not be utilized within action area in their range. Thus, the potential for adverse effects on the species is so minor as to be discountable. There is no critical habitat in the action area. The proposed program of herbicide use within the action area with proposed conservation measures may affect the Mojave Desert tortoise but is not likely to adversely affect the Mohave Desert tortoise and will have no effect on its designated critical habitat.

### **5.12 Narrow-headed Gartersnake**

Endangered Species Act Status:	Threatened,2014
BLM Field Office Occurrence within ADOT ROW:	Safford Field Office
ADOT District Occurrence on BLM lands:	Safford District
Occurrence within Action Area:	US 191, SR 75, US 70
Critical Habitat:	Proposed 2013
Determination:	May affect, not likely to adversely affect species or proposed critical habitat.

## Life History

The narrow-headed gartersnake (*Thamnophis rufipunctatus*) reaches an average length of 44 inches and is distinguished by its high-set eyes on a narrow elongated head. Coloring can range from olive to brown or tan, with distinctive blackish, dark brown, dull brick red, or orange paired spots on the back and sides of its body, fading towards the tail (AGFD 2012b).

Narrow-headed gartersnakes primarily feed on soft-rayed native fishes such as Sonora suckers, desert suckers, speckled dace, roundtail chub, headwater chub, and Gila chub, using ambush tactics. The species is diurnal and evening crepuscular, becoming most active between March and November, though are presumed to be cold tolerant due to their presence in cold, high elevation streams. Young are born in late July to early August. Snakes hibernate in rocky outcroppings or burrows on dry land above the floodline, typically from November to April (USFWS 2014b). While narrow-headed gartersnakes are rarely found more than 300 feet from water (Jennings and Christman 2011), home ranges also include adjacent terrestrial habitats within 600 feet of water that are suitable for gestation, thermoregulation, foraging, and cover. The furthest a narrow-headed gartersnake has been found from water was 650 feet (USFWS 2013a).

## Distribution in Arizona

Historically, this species occupied perennial drainages across the Mogollon Rim from northern and eastern Arizona and southwestern New Mexico. Currently, it may persist in the subbasins of the Upper and Middle Gila River, the San Francisco River, Salt River, Tonto Creek, and the Verde River (USFWS 2014b). The narrow-headed gartersnake is one of the most aquatic gartersnakes and is strongly associated with clear perennial streams exhibiting pool and riffle habitats with cover sites such as cobbles, boulders, and downed logs, and shrub- or sapling-sized trees such as alder, cottonwood, willow, or sycamore lining the banks (AGFD 2012b, USFWS 2014b).

## Status within the Action Area

Proposed critical habitat for narrow-headed gartersnake includes aquatic habitat and adjacent terrestrial habitats within 600 feet lateral extent to either side of bankfull stage (USFWS 2013a). The action area along US 191 at MP 161.0 is near proposed critical habitat along the San Francisco River (Appendix A). Proposed critical habitat along the Gila River is approximately 145 feet north of the action area along US 191 at MP 153.3, and approximately 730 feet south of the action area along SR 75 near MP 398 (Figure 10). Proposed critical habitat along the Gila River is also located near the action area on US 70 at MP 376.1 and SR 75 between MP 383.1 and MP 383.4 (Appendix A). Surveys for narrow-headed gartersnake have not been conducted along the entire length of the Gila River and no known surveys have occurred within the vicinity of the action areas along US 191, SR 75 or US 70; therefore, the status of the snake within the action area is unknown. The species was recorded in the upper Gila River in New Mexico in 2009 and records from the middle-lower reach of the river in 1995 suggest that the species is extant within the Arizona section of the Gila River where suitable habitat is present. Due to the abundance of nonnative species within the Gila River in Arizona, it is assumed that any narrow-headed gartersnake populations persisting in the Arizona portion of the river are likely at low-density and declining (USFWS 2014c).

Other segments of the action area within the range of the narrow-headed gartersnake are at least 1 mile away from suitable and proposed critical habitat and do not provide adequate terrestrial or aquatic habitat characteristics for gartersnake life behaviors.

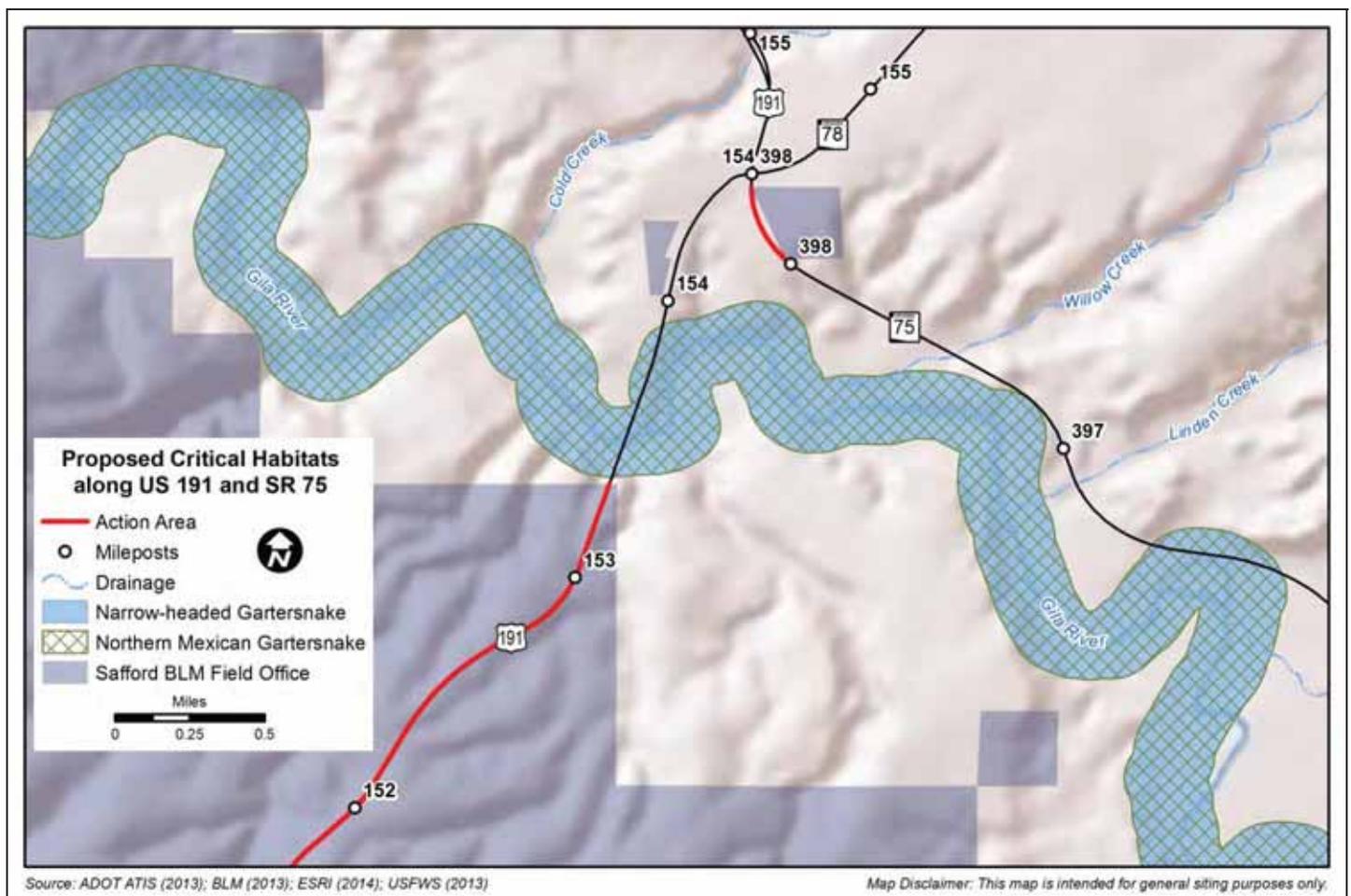


Figure 10 – Proposed Critical Habitats along US 191 and SR 75

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for species in small aquatic habitat or shallows of large waterbodies (#26) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 75, United States Highway 70 and United States Highway 191, or within 1 mile upstream from suitable habitat along any contributing channel, tributary or spring run.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within 1 mile of a perennial waterway along State Route 75, United States Highway 70 and United States Highway 191, to determine if the habitat is occupied by narrow-headed gartersnake.
- If narrow-headed gartersnakes are present:
  - Do not use herbicides that have a species toxicity rating of Class 0 or Class 1 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet*	300 feet
Liquid	30 feet*	350 feet <sup>H</sup>
Ultra-low volume or dust	400 feet <sup>H</sup>	400 feet <sup>H</sup>
<b>Alternative Buffer Zones:</b> * An avoidance distance of 10 feet may be used if the herbicide application and formulation is approved by USFWS <sup>H</sup> An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that have a species toxicity rating of Class 2 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species occupancy is unknown along State Route 75, United States Highway 70 and United States Highway 191, assume that the species is present, delineate suitable narrow-headed gartersnake

habitat within the action area and apply the appropriate species and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat.

### Effects Analysis

Suitable habitat characteristics such as permanent water, riparian vegetation and cover sites are not present within the action area along US 191, US 70 and SR 75, therefore narrow-headed gartersnake adults and young are unlikely to be present. However, given the close proximity of suitable habitat it is possible that gartersnakes could enter the action area. Prior to treatment, narrow-headed gartersnake presence would be determined or assumed, and avoidance distances based on herbicide formulation, application methods and ecotoxicity ratings would be used to minimize the potential for herbicide exposure. In addition, direct application of herbicides to water bodies would not occur. Therefore, direct effects to narrow-headed gartersnake via direct spray, drift, or runoff, are not anticipated.

Indirect effects to narrow-headed gartersnakes could occur through herbicide drift or runoff if treatments are conducted adjacent to or upslope of occupied habitat. In winter months, hibernating gartersnakes would be at a reduced risk of indirect exposure. Treatments would not occur during high winds or imminent rainfall, and buffer zones would be maintained around perennial water sources. Furthermore, due to the size, depth, and current of the Gila River, any herbicides accidentally entering the system would likely be rapidly diluted. Therefore, the potential for indirect effects to occur as a result of indirect exposure through drift or runoff is unlikely.

Herbicide applications have the potential to alter the water chemistry of a system beyond tolerable limits for gartersnakes and their prey base, and to remove, diminish, or alter the structural complexity of terrestrial habitat features within 600 feet of aquatic habitat (USFWS 2013a). Water chemistry is unlikely to be altered because as previously mentioned, no direct spray of herbicides into aquatic systems would occur. Any residual herbicides entering a system through runoff or drift would likely be diluted. Proposed critical habitat is not located within the action area; therefore, the current vegetation structure and complexity in proposed critical habitat would not likely be altered due to treatment. Due to close proximity, herbicide could runoff or drift into proposed critical habitat, although because SOPs, general conservation measures and species-specific conservation measures will be implemented, herbicide drift to proposed critical habitat is highly unlikely. In addition, due to the small amount and infrequent occurrence of herbicide potentially entering proposed critical habitat throughout the treatment duration, modification of terrestrial habitat features to the point of hindering life behaviors such as thermoregulation or gestation, or basic needs such as shelter and cover, is unlikely. Narrow-headed gartersnake is unlikely to directly benefit from herbicide treatments conducted within the action area, although the potential for catastrophic wildfires that could affect suitable and proposed critical habitat and extant populations may decrease from a reduction in nonnative plant biomass.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect narrow-headed gartersnake.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to kill or injure gartersnakes, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect narrow-headed gartersnake. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide drift to suitable habitat is highly unlikely and no herbicide would be applied near occupied habitat. Thus potential adverse effects of the proposed herbicide program on narrow-headed gartersnake or its proposed critical habitat are so minor as to be discountable. The proposed program of herbicide use within the action area with proposed conservation measures may affect the narrow-headed gartersnake but is not likely to adversely affect the narrow-headed gartersnake or its proposed critical habitat.

**5.13 Northern Mexican Gartersnake**

Endangered Species Act Status:	Threatened,2014
BLM Field Office Occurrence within ADOT ROW:	Tucson, Safford Field Offices
ADOT District Occurrence on BLM lands:	Tucson, Safford Districts
Occurrence within Action Area:	SR 82, SR 83, SR 90, SR 92, US 191, SR 75, SR 77
Critical Habitat:	Proposed 2013
Determination:	May affect, not likely to adversely affect species or proposed critical habitat.

Life History

The northern Mexican gartersnake (*Thamnophis eques megalops*) is olive to olive-brown or olive-gray in color with three stripes running the length of the body, of which the middle stripe darkens towards the tail. It has large brown blotches on the back of the head separated from the corner of its mouth by a light green crescent. The northern Mexican gartersnake can be distinguished from other co-occurring gartersnakes by a portion of the lateral stripe occurring on the fourth scale row (USFWS 2014b).

The Mexican gartersnake is surface-active at ambient temperatures ranging from 71° F to 91° F and forages along the banks of waterbodies feeding primarily upon soft-rayed native fish (e.g. Gila topminnow, desert pupfish) and adult and larval native ranid frogs (e.g. lowland leopard frog, Chiricahua leopard frog). It may also supplement its diet with earthworms and vertebrates such as lizards, small rodents, salamanders, and hylid frogs (tree frogs). In environments where native prey is lacking, adult Mexican gartersnakes may prey upon juvenile nonnative bullfrogs and/or bullfrog tadpoles. In Arizona, mating occurs in April and May and live young are born in July and August (USFWS 2014b).

## Distribution in Arizona

Historically, the northern Mexican gartersnake was widespread in the subbasins of Arizona. The current range of the species in Arizona has been reduced to less than ten percent of its historic distribution along main stem rivers. The only reliably detected populations are located along Oak Creek, lower Tonto Creek, the upper Santa Cruz River, the Bill Williams River, and the upper Verde River. The species may be extant in other portions of its historical distribution, although at low to very low population densities. Suitable habitat consists of source area ponds and cienegas; lowland river riparian forests and woodlands; and upland stream gallery forests (USFWS 2014b).

## Status within the Action Area

Proposed critical habitat for northern Mexican gartersnake includes aquatic habitat and adjacent terrestrial habitats within 600 feet lateral extent to either side of bankfull stage (USFWS 2013a). Suitable and proposed critical habitat is present within and directly adjacent to the action area along Cienega Creek, the San Pedro River and Gila River (Figures 6, 8, 10, and 11).

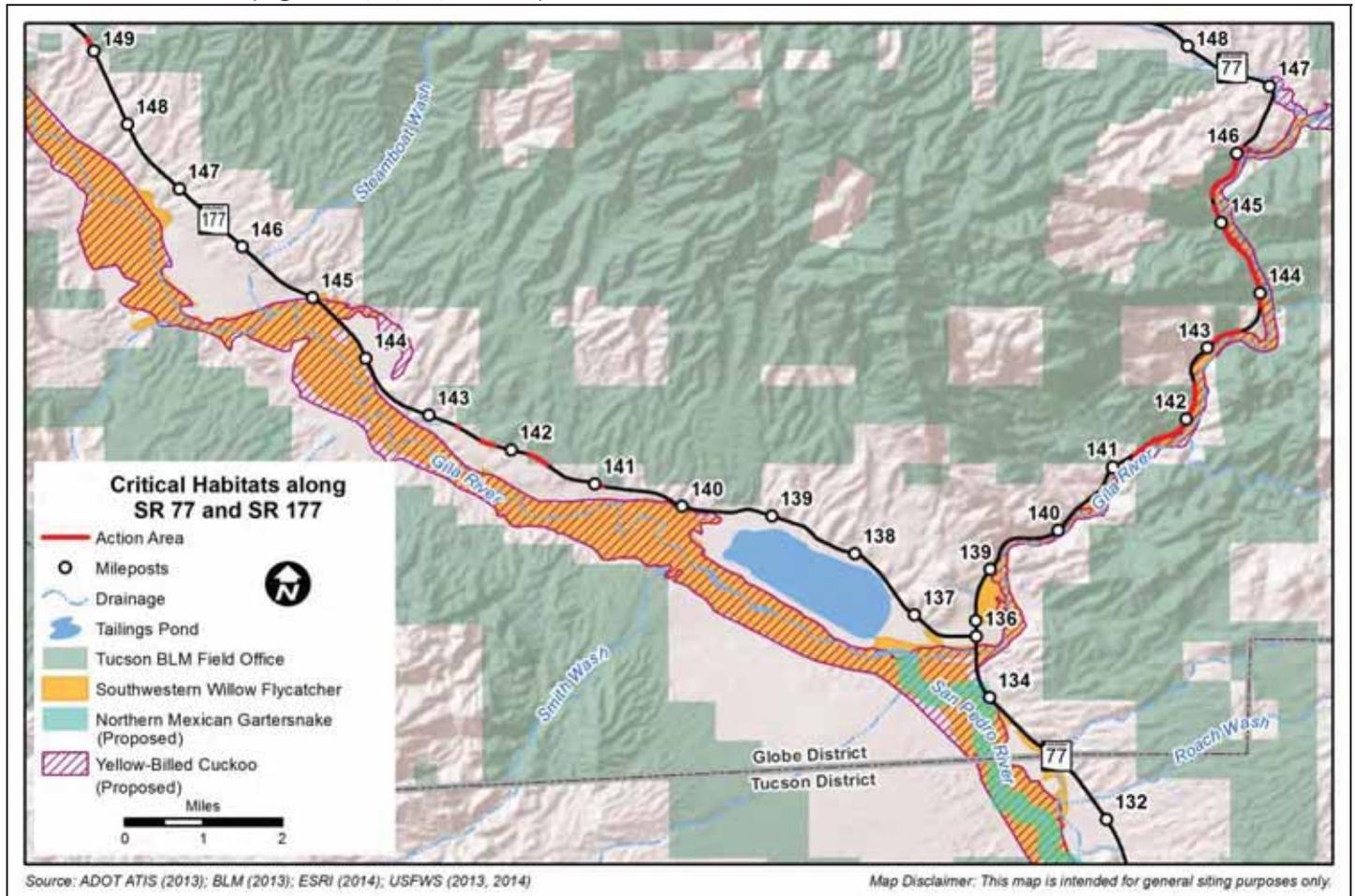


Figure 11 – Critical Habitats along SR 77 and SR 177

Proposed critical habitat along Cienega Creek is located within the Las Cienegas National Conservation Area (NCA) which is managed by the BLM (Figure 6). The species is extant in the perennial reaches of Cienega Creek and may utilize the many tanks, springs, and wetlands in the NCA. Surveys conducted since 1986 have regularly documented the species in the creek and snakes were captured as recently as 2011. In 2012, 40 captive-born northern Mexican gartersnakes were released into the NCA (USFWS 2014c). The headwaters of Cienega Creek cross the action area along SR 83 and SR 82, where the creek is ephemeral and lacks streamside

forest habitat. The lowest perennial reach of Cienega Creek is located approximately 7.5 miles north (downstream) of the action area along SR 82. Additionally, proposed critical habitat extending west along SR 83 consists of small, sparsely vegetated ephemeral washes.

The action area along SR 82, SR 90, and SR 92 intersects proposed critical habitat along the San Pedro River, which also partially occurs within the San Pedro Riparian National Conservation Area (RNCA) (Figure 8). The action area along SR 77 between MP 117 and MP 118, north of Interstate 10 (I-10), is also within 0.2 mile of proposed critical habitat along the San Pedro River (Appendix A). Several historic records document the species' occurrence in the upper San Pedro River south of I-10 (Appendix A), though surveys conducted in 1996, 1998, and 2000 did not result in captures in the upper or lower portions of the system. A predominantly native prey population still exists in the San Pedro River; therefore, northern Mexican gartersnakes are believed to still exist in the San Pedro River in low-density populations (USFWS 2014c). Suitable habitat characteristics such as a riparian corridor and permanent water are present within or directly adjacent to the action area at these locations.

There are no current records of the species occurring within the Arizona section of the Gila River and the snake was last detected in the upper Gila River in New Mexico in 2002. The majority of the Gila River remains unsurveyed for gartersnakes, thus low-density populations may exist where suitable habitat is present (USFWS 2014c). The action area along US 191 and SR 75 are approximately 145 feet and 730 feet, respectively, from proposed critical habitat (Figure 10) and do not exhibit suitable habitat characteristics.

The northern Mexican gartersnake is considered extant in the Bill Williams River and ten snakes were located during a survey in 2012. Proposed critical habitat along the Bill Williams River is at least 1 mile from the action area along SR 95 (Figure 3). Furthermore, due to the abundance of harmful nonnative species in the lower Colorado River and the substantial habitat modification that has occurred, it is highly unlikely that the gartersnake would emigrate to the lower Colorado River from suitable habitat in the Bill Williams River. Northern Mexican gartersnakes have been considered extirpated from the lower Colorado River for many decades (USFWS 2014c).

Other portions of the action area within the range of the northern Mexican gartersnake are over 1 mile away from suitable or proposed critical habitat and do not provide suitable habitat for the gartersnake because no permanent water, riparian woodlands, or dense vegetation is present within the action area.

#### Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for species in small aquatic habitat or shallows of large waterbodies (#26) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, or within 1 mile upstream from suitable habitat along any contributing channel, tributary or spring run.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within 1 mile of a perennial waterway along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, to determine if the habitat is occupied by northern Mexican gartersnake.

- If northern Mexican gartersnakes are present:
  - Do not use herbicides that have a species toxicity rating of Class 0 or Class 1 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet*	300 feet
Liquid	30 feet*	350 feet <sup>H</sup>
Ultra-low volume or dust	400 feet <sup>H</sup>	400 feet <sup>H</sup>
<b>Alternative Buffer Zones:</b> * An avoidance distance of 10 feet may be used if the herbicide application and formulation is approved by USFWS <sup>H</sup> An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that have a species toxicity rating of Class 2 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species occupancy is unknown along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, assume that the species is present, delineate suitable northern Mexican gartersnake habitat within the action area and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat.

### Effects Analysis

Suitable and potentially occupied habitat is present within portions of the action area. Prior to herbicide treatments, northern Mexican gartersnake presence would be determined or assumed, and avoidance distances based on herbicide formulation, application methods and ecotoxicity ratings would be used to minimize the potential for herbicide exposure. Furthermore, direct application of herbicides to water bodies would not occur. Thus, due to the implementation of SOPs, general conservation measures, and species-

specific conservation measures, the potential for direct effects to northern Mexican gartersnake via direct spray, drift, or runoff would be minimized.

Indirect effects to northern Mexican gartersnakes could occur through herbicide drift or runoff if treatments are conducted adjacent to or upslope of occupied habitat. Treatments would not occur during high winds or imminent rainfall, and buffer zones would be maintained around perennial water sources. Furthermore, due to the size, depth, and current of river systems, any herbicides accidentally entering the system would likely be rapidly diluted. Therefore, the potential for indirect effects to occur as a result of indirect exposure through drift or runoff is unlikely.

Herbicide applications have the potential to alter the water chemistry of a system beyond tolerable limits for gartersnakes and their prey base, and to remove, diminish, or alter the structural complexity of shoreline riparian habitats and terrestrial habitat features within 600 feet of aquatic habitat (USFWS 2013a). Water chemistry is unlikely to be altered because no direct spray of herbicides into aquatic systems would occur. Any residual herbicides entering a system through runoff or drift would likely be quickly diluted. However, broadcast and spot treatments occurring within adjacent shoreline and terrestrial habitat could temporarily diminish structural complexity through vegetation removal and a consequent reduction in leaf litter. To minimize effects to suitable habitat, buffer zones based on herbicides formulation and application methods and ecotoxicity ratings would be established around suitable habitats. Within the riparian corridor, no broadcast applications would be used, and only selective herbicides with hand application methods would be permitted. As such, the alteration of riparian habitat would be minor, though vegetation removal would still occur within terrestrial habitat beyond the riparian edge. However, herbicide treatments would not affect structural characteristics such as downed logs or boulders, which are also used by gartersnakes for cover, thermoregulation, and gestation. Herbicide treatments would only occur in the ROW and mostly selective methods would be used within the limits of proposed critical habitat. Therefore herbicide treatments are unlikely to modify habitat features to the point of unsuitability. Over time, herbicide treatments are expected to improve riparian and streamside habitats in terms of water quality and native aquatic prey base.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect northern Mexican gartersnake.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to kill or injure gartersnakes, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect northern Mexican gartersnake. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicides that are harmful to aquatic species would not be applied near or upslope of aquatic habitats and no herbicide would be applied near occupied habitat. Thus the potential for adverse effects on the northern Mexican gartersnake or proposed critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area with proposed conservation measures may affect the northern Mexican gartersnake but is not likely to adversely affect the northern Mexican gartersnake or its proposed critical habitat.

### **5.14 Ocelot**

Endangered Species Act Status:	Endangered, 1982
BLM Field Office Occurrence within ADOT ROW:	Safford, Tucson Field Office
ADOT District Occurrence on BLM lands:	Globe, Safford, Tucson Districts
Occurrence within Action Area:	None Recorded
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

## Life History

The ocelot (*Leopardus pardalis*), is a generally nocturnal, elusive, medium-sized cat with pelage that is grey to cinnamon-brown and round black ears with a central white spot on the back. Individually unique patterns of dark spots form chain-like streaks running obliquely down the sides (AGFD 2010).

The ocelot is a habitat specialist that prefers areas of dense cover or vegetation and high prey populations, while generally avoiding open areas. Their prey base mainly consists of rabbits, small mammals, and birds, but may also include reptiles/amphibians, invertebrates, and fish. Newborn kittens have been reported in every month of the year, although most births are believed to occur from September to January with a gestation averaging 70-80 days. One to two young are born per litter, and reach sexual maturity at 15 – 22 months (AGFD 2010).

## Distribution in Arizona

Ocelots inhabit dense desertscrub biotic communities from southern portions of Arizona and Texas down to tropical and subtropical forests of Central and South America. In Arizona, ocelot occurrences tend to be transient individuals wandering into extreme southeastern Arizona from Mexico (AGFD 2010). Recent photo documented sightings have been confirmed in Arizona in the Huachuca Mountains from 2011 through 2013, Santa Rita Mountains in 2014, as well as a dead specimen that was collected along US-60 between the towns of Superior and Globe in 2010 (USFWS 2014d, USFWS 2010). These recent sightings indicate that ocelots may occupy a larger area and/or more varied habitats than was previously thought.

## Status within the Action Area

Although multiple studies have been conducted within the United States, an estimation of the ocelot current range in Arizona is hard to determine due to their elusive nature and preference for dense vegetation (USFWS 2010). Suitable habitat is present in the Sky Islands, primarily south and east of Tucson in Pima County, Santa Cruz County, and Cochise County; and possibly as far north as portions of Pinal, Graham, and Gila counties. While known sightings across Arizona have not occurred on BLM lands, the action area occurs between areas of suitable habitat and may be traversed by ocelots moving between suitable habitats (Appendix A).

### Species-specific Conservation Measures

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS (BLM 2007)

- Prior to herbicide treatment in the Globe, Safford or Tucson ADOT districts contact USFWS AESO (602.242.0210) to determine if any recent sightings of ocelot have occurred near the treatment area.
- If an ocelot has been sighted within 6 months of the scheduled herbicide treatment:
  - Do not use 2,4-D, bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram and triclopyr within 5 miles of where the ocelot was sighted.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

The ocelot is an elusive species that is most active during the night; therefore the potential for an ocelot to be affected by direct spray is highly unlikely. Ocelots have not been documented on BLM lands or within the action area; however, individuals travel between suitable habitats and may traverse the action area while moving between areas. If an ocelot enters the action area immediately following treatment, there could be a negative effect from dermal contact with vegetation recently sprayed with 2,4-D at a typical application rate, or glyphosate, hexazinone, or triclopyr, at a maximum application rate (BLM 2007). Although it is unlikely, ocelot could opportunistically feed on carrion that has been contaminated with herbicide. Ingestion of prey items sprayed with 2,4-D at the typical application rate, or bromacil, diquat or triclopyr applied at the maximum application rate could potentially result in negative health effects. Indirect ingestion could also occur if an ocelot were to come in direct contact with recently sprayed vegetation and groom itself following that contact. However, due to the limited number of individual ocelots known to occur within Arizona and their elusive nature, exposure due to a transient ocelot crossing the action area directly after treatment or ingesting a prey item that has been sprayed with herbicide is highly unlikely.

Herbicide treatment may benefit the ocelot in the long-term by reducing undesirable plants, restoring native conditions and increasing habitat suitability within the species range. The control or elimination of undesirable plants reduces wildfire fuels and the risk of a wildfire that could destroy the dense habitats preferred by ocelots.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect the ocelot.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to temporarily disrupt ocelot movements within the action area, destroy habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Pesticide or rodenticide applications, encroachment of undesirable vegetation, wildfire, or habitat fragmentation, all have the potential to indirectly affect the ocelot. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B)

permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

No herbicide will be applied near areas where ocelot sightings have recently occurred; thus the potential for adverse effects on the species is so minor as to be discountable. The proposed program of herbicide use within the action area with its proposed conservation measures may affect the ocelot, but is not likely to adversely affect the ocelot.

**5.15 Peebles Navajo Cactus**

Endangered Species Act Status:	Endangered, 1979
BLM Field Office Occurrence within ADOT ROW:	Safford Field Office
ADOT District Occurrence on BLM lands:	Holbrook District
Occurrence within Action Area:	I-40
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

Life History

Peebles Navajo cactus (*Pediocactus peeblesianus* var. *peeblesianus*) is a small, solitary or rarely clustered, globose cactus that measures to one inch in height and 0.6 to one inch in diameter. It lacks central spines and has three to five spongy-fibrous radial spines that form a twisted cross. Large, yellow to yellow-green flowers, bloom in April and May and fruiting occurs from May to June. As is typical with several *Pediocactus*, this species retracts into the soil during dry periods and can remain retracted in the soil for several years. It will emerge again with an adequate amount of winter rain (AGFD 2009, USFWS 2000c).

The Peebles Navajo cactus is a highly endemic habitat specialist that is typically associated with the Plains and Great Basin Grassland biotic community, near the ecotone with the Great Basin Desertscrub biotic community, with sparsely scattered, low shrubs and grasses of the Navajo Desert (AGFD 2009, USFWS 2000c). It grows only in exposed gravelly alluvial soils derived from the Shinarump conglomerate of the Chinle Formation in the Little Colorado River watershed (AGFD 2009). Occupied habitat is located near the crest or on hilltops of gentle slopes from 0 to 30 degrees within elevations ranging from 5,100 to 5,650 feet (AZTEC 2009, AGFD 2009).

Distribution in Arizona

Only two high density population areas are known for Peebles Navajo cactus. One population is located near Joseph City and occurs primarily on BLM lands; the second population is located near Holbrook and occurs on private lands. In 1984, the BLM completed a Habitat Management Plan for Peebles Navajo cactus that brought about the Tanner Wash ACEC (Figure 12). This ACEC encompasses all known Peebles Navajo cactus occupied habitat on Federal land and restricts land use in several areas of its confines for the purpose of protecting the species (USFWS 2008b).

Status within the Action Area

The action area along I-40 between MP 278.50 and MP 279.18 is located within the USFWS defined range of Peebles Navajo cactus and the Tanner Wash ACEC is located just outside of the action area to the northeast (Figure 12). Although the ACEC does not occur within the action area, it is located near and/or directly

adjacent to the I-40 ROW. Therefore, suitable habitat for Peebles Navajo cactus is likely to occur adjacent to the ROW within this reach of the action area.

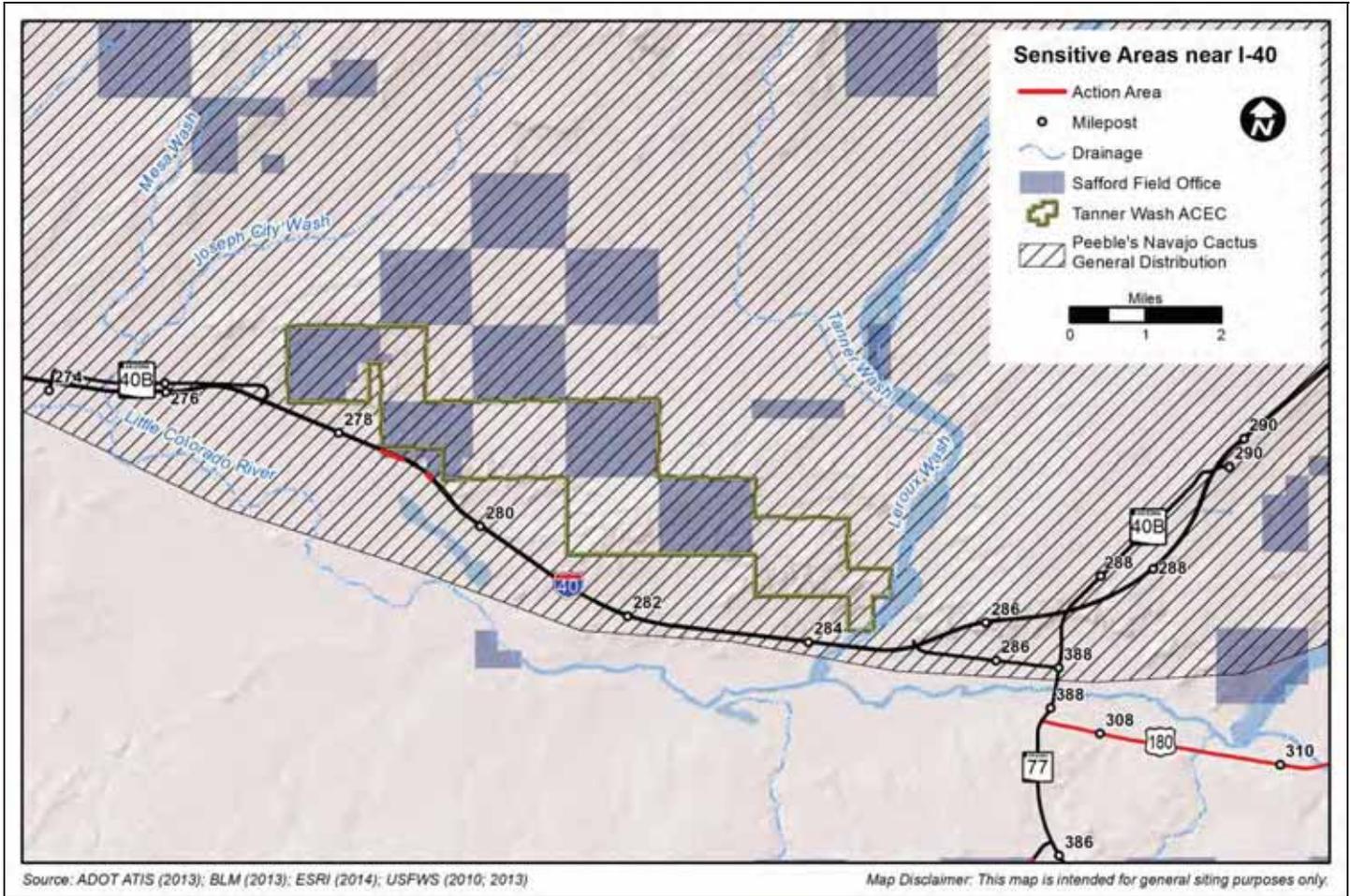


Figure 12 – Sensitive Areas near I-40

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Peebles Navajo cactus on suitable substrates along Interstate 40 during the survey season prior to treatment.
  - If Peebles Navajo cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

### Effects Analysis

During broadcast spray applications, Peebles Navajo cactus could be exposed by direct spray if they are present within the action area or by drift or run-off if they are adjacent to or down grade of the action area. If OHVs are utilized in herbicide application there is also the potential for cactus to be crushed. However, possible exposure and impacts from application methods would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

Rodent and rabbit herbivory on Peebles Navajo cactus was noted as a leading threat to the species in the five-year review (USFWS 2008b). A reduction of herbaceous forage within the range of this species could promote predation on Peebles Navajo cactus. However, due to the significant amount of suitable forage available outside of the action area, compared to the far less suitable foraging areas that would be impacted, a substantial increase of cactus predation is unlikely. The spread of non-native invasive species, most notably camelthorn, was also identified as a potential threat to Peebles Navajo cactus. Camelthorn and other invasive plants may out-compete Peebles Navajo cactus and increase the potential for fire in the species range which is not fire adapted (USFWS 2008b). Herbicide treatment would likely benefit Peebles Navajo cactus through the control and eradication of non-native species. In addition, controlling undesirable plants would also reduce fuels and the risk of a wildfire which could be devastating to the Peebles Navajo cactus due to its lack of fire adaptation and limited distribution.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Peebles Navajo cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Peebles Navajo cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Peebles Navajo cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of

the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs and conservation measures, herbicide will not be applied near Peebles Navajo cactus and would only be applied by hand application methods within occupied habitat. Thus the potential for negative effects on the species is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Peebles Navajo cactus but is not likely to adversely affect the Peebles Navajo cactus.

**5.16 Pima Pineapple Cactus**

Endangered Species Act Status:	Endangered, 1993
BLM Field Office Occurrence within ADOT ROW:	Tucson Field Office
ADOT District Occurrence on BLM lands:	Tucson District
Occurrence within Action Area:	SR 83, SR 86, SR 286
Critical Habitat:	None designated
Determination:	May affect, not likely to adversely affect

Life History

The Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) is a hemispherical cactus up to 18 inches tall and seven inches in diameter. The spines appear in clusters that are situated on tubercles, with one strong central spine that is usually hooked, and six to 15 straight radial spines. The spines are very stout, and are usually straw colored, but can become black with age. The plants can be single-stemmed, multi-headed, or can appear in clusters that are formed when seeds germinate at the base of a mother plant, or when a tubercle of the mother plant roots. The species flowers from early July to August, producing yellow (rarely white) flowers (USFWS 1993a).

The species inhabits semidesert grassland and Sonoran desertscrub below 4,000 feet in relatively flat areas with less than ten percent slope (USFWS 2007e). Suitable soil types range from shallow to deep, and silty to rocky, although silty to gravelly deep alluvial soils appear to be preferred. Associated plant species within pineapple cactus habitat include whitethorn acacia, creosotebush, velvet mesquite, triangle-leaf bursage, thread snakeweed, and chain fruit cholla. Pima pineapple cactus is usually sparsely distributed within their habitat (USFWS 1993a).

Distribution in Arizona

In Arizona, Pima pineapple cactus may be found in the valleys between the Baboquivari Mountains and the western foothills of the Santa Rita Mountains from southern Tucson south to the US/Mexico border (USFWS 2007e).

Status within the Action Area

The action area occurs within the range of and suitable habitat for Pima pineapple cactus along SR 86, SR 286, and SR 83 in eastern Pima County (Appendix A).

## Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Pima pineapple cactus within suitable habitat along State Route 83, State Route 86 and State Route 286 within 3 years prior to treatment.
  - If Pima pineapple cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

## Effects Analysis

During broadcast spray applications Pima pineapple cactus could be exposed by direct spray if this species is present within the action area or by drift or run-off if plants are adjacent to or down grade of the action area. However, possible exposure would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

Invasive grasses, especially buffelgrass, Lehman's lovegrass (*Eragrostis lehmanniana*) and Boer lovegrass (*Eragrostis chloromelas*) are now dominant throughout southeastern Arizona, and may threaten Pima pineapple cactus habitat (USFWS 2007e). Dense stands of buffelgrass can render previously suitable areas into unsuitable habitat, and this plant is quite common in ROW habitats (USFWS 2008a). Therefore, the control or elimination of these undesirable plants would beneficially affect Pima pineapple cactus.

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the

action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Pima pineapple cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Pima pineapple cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Pima pineapple cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide will not be applied near Pima pineapple cactus; therefore, the potential for adverse effects on the species is so minor as to be discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect Pima pineapple cactus but is not likely to adversely affect Pima pineapple cactus.

**5.17 Razorback Sucker**

Endangered Species Act Status:	Endangered, 1991
BLM Field Office Occurrence within ADOT ROW:	Lake Havasu Field Office
ADOT District Occurrence on BLM lands:	Kingman, Yuma Districts
Occurrence within Action Area:	SR 95, SR 95S
Critical Habitat:	Designated 1994
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

Life History

The razorback sucker (*Xyrauchen texanus*) is a medium-sized, olivaceous to brownish-black catostomid with an elongated head and body and a sharp-edged keel behind the head. In lakes, the fish prefers to utilize backwater or open water habitats, and in rivers, a variety of habitats such as pools, eddies, and flooded bottomlands are preferred. Adults move to shorelines with gravel or cobble substrates to spawn. Reproduction in the lower Colorado River Basin may last from January to May depending on water temperature. Larvae feed on zoo-and phytoplankton and detritus and adults feed on planktonic crustaceans, diatoms, filamentous algae, detritus and midge larvae (USFWS 1991).

Distribution in Arizona

Historically, the razorback was found throughout the backwaters and off-channel habitats of larger rivers in the Colorado River and Gila River basins. The natural wild population is now limited to lakes Mead, Mohave, and Havasu, and the mainstem of the lower Colorado River. The remnant population is augmented with repatriated fish that have been reared off-site to improve recruitment. Razorbacks are considered extirpated

from the Gila River Basin, although reintroductions using hatchery stock have been made into the Gila, Salt, and Verde rivers; however a persistent population remains to be established (USFWS 1991).

Status within the Action Area

Only portions of the action area along the Colorado River within La Paz County are within close proximity to suitable and designated critical habitat for razorback sucker. Occupied habitat within Lake Havasu is within 200 to 400 feet of SR 95 between MP 159.60 and MP 160.40. Below Parker Dam, critical habitat is within 200 feet of SR 95S, and within 230 feet of SR 95 between MP 156.60 and MP 157.90 (Figure 3).

Critical habitat is also located along the Gila River which is near the action area on US 191, US 70 and SR 75. However, razorback suckers were extirpated from the Gila River Basin by the 1970s (USFWS 2002b). Reintroduction efforts took place between 1991 and 2003 along the Verde and upper Salt Rivers, which are tributaries to the Gila River greater than 180 overland miles from the action area on US 191, US 70 and SR 75; however, only a few fish are known to have survived longer than a few months after reintroduction and no recruitment was documented (Hyatt 2004).

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Colorado River on State Route 95S and State Route 95 should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Do not conduct herbicide treatments during razorback sucker spawning season (January to May) within ½ mile of the Colorado River along State Route 95 and State Route 95S.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

Direct spray of herbicides into a water body would not occur; therefore direct spray of razorbacks is not anticipated. However, eggs and larvae along shorelines are more susceptible to exposure via accidental direct spray, runoff, or drift. To prevent the potential for direct effects to eggs and larvae, herbicide treatments would not be conducted in close proximity to occupied and critical habitat during the spawning season. Additionally, broadcast applications would not occur within 30 feet of the river and only hand application methods would be implemented to minimize the potential for direct spray, drift, or runoff.

Because of the size and depth of Colorado River, lake and mainstem, habitats, any herbicides accidentally entering the system would likely be rapidly diluted. Therefore, runoff or drift of herbicides is unlikely to indirectly affect razorback suckers.

Potential indirect effects resulting from a loss of bankline vegetation include: a reduction in shade which may increase water temperature, killing fish or leaving them susceptible to disease; reduced bank stabilization leading to increased erosion and sediment loads, which can change a river's morphology and structure by eliminating pool and riffle habitats, changing the width and depth of a system, and changing the flow velocity; increased runoff and pollutants entering the system; loss of microhabitat features; and a temporary decrease in invertebrate prey such as planktonic crustaceans and midge larvae. However, only spot treatments of undesirable vegetation would occur along the Colorado River, and treatment would occur over a number of years. As such, vegetation removal would not occur suddenly or at a large scale. Additionally, due to the large size of the Colorado River and the small amount of action area occurring along it, bankline vegetation loss and its potential effects would be minimal. Project actions would not reduce the volume or timing of water, destroy spawning/nursery habitat, prevent recruitment, greatly impact food sources, contaminate the Colorado River, or increase predation or competition with nonnative fish (USFWS 1994b). Therefore, critical habitat would not be impacted, and indirect effects to razorback sucker are highly unlikely to occur.

Over time, a reduction in nonnative plant biomass is expected to improve razorback sucker habitat in terms of water quality, native invertebrate and aquatic forage, and microhabitat elements.

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect razorback sucker.

The Colorado River is heavily utilized by private, public, tribal, industrial, and other non-federal entities. Private actions, such as river recreation and development could directly harm razorbacks or indirectly affect the species through habitat degradation or loss. Water diversions and pumping for agricultural, utility, and municipal uses could result in decreased aquatic habitat. Actions undertaken on lands upstream and/or adjacent to the Colorado River could indirectly affect razorback suckers through contamination of the river, alteration in water flows, or introduction of nonnative aquatic animals. In situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, no herbicide would be applied near the Colorado or Gila Rivers and herbicide runoff or drift to suitable habitat is highly unlikely. Therefore, the potential for adverse effects from the proposed herbicide program on the razorback or critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area along with proposed conservation measures may affect the razorback sucker but is not likely to adversely affect the razorback sucker or its designated critical habitat.

### **5.18 Siler Pincushion Cactus**

Endangered Species Act Status:	Threatened, 1993
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	SR 89, SR 389
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

## Life History

Siler pincushion cactus (*Pediocactus sileri*) is a small, solitary or occasionally clustered, globose cactus, with three to seven brownish-black central spines and 11 to 16 whitish radial spines per areole (AGFD 2003b). When mature, the cactus measures four to five inches tall and three to four inches in diameter. Flowers are small, may be single stemmed or clustered and have yellowish petals with maroon veins (USFWS 1993b, AGFD 2003b). Flowering occurs in April to mid-May, and flowers will remain open for more than three days. Pollination is carried out within a single day, typically by bees of the *Ashmeadellia* and *Anthophora* species. Fruit is produced from May through June and are greenish yellow with gray seeds and are somewhat enlarged upwards when mature (AGFD 2003b).

Siler pincushion cactus grows on low hills with gypsiferous clay and sandy soils of the Shnabkaib Member and the Middle Red Member of the Moenkopi Formation (USFWS 2008d). The species occurs within elevations ranging from 2,800 to 5,400 feet, on slopes varying from zero to 80 degrees. The cactus is primarily found in the Great Basin Desert Shrub biotic community, but also occurs in Great Basin Conifer Woodland, Plains and Great Basin grassland, and at lower elevations in Mohave Desertscrub (AGFD 2003b).

Distribution in Arizona

The range of the Siler pincushion cactus extends from the vicinity of Pipe Springs and Fredonia in Coconino County, to the west for approximately 70 miles to the north-central Mohave County near the Hurricane Cliffs (USFWS 2008d). Currently within Arizona, the BLM Arizona Strip Field Office has designated approximately 41,345 acres within five ACECs for the protection of Siler pincushion cactus (BLM 2008).

Status within the Action Area

The action area along SR 89 between MP 593.00 and MP 608.00 and along SR 389 between MP 7.00 and MP 9.00, is located within the USFWS defined range and suitable habitat for Siler pincushion cactus. The Shinarump ACEC, which is designated for Siler pincushion cactus protection is, located less than a mile northeast and southwest of the action area along SR 89. No monitoring plots or ACECs for Siler pincushion cactus are located within 5 miles of the action area along SR 389, although, this area is located within the suitable habitat for the cactus (Figure 13).

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Siler pincushion cactus within suitable habitats along State Route 89 and State Route 389 during the survey season prior to treatment.
  - If Siler pincushion cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated suitable habitat area for the species.

### Effects Analysis

During broadcast spray applications, Siler pincushion cactus could be exposed by direct spray if the species is present within the action area or by drift or run-off if plants are adjacent to or down grade of the action area. If OHVs are utilized in herbicide application there is also the potential for cactus to be crushed. However, possible exposure and impacts from application methods would be minimized by implementation of SOPs, general conservation measures, and species-specific conservation measures.

The effect of invasive species on Siler pincushion cactus has not been well recorded. However, high intensity wildfires promoted by invasion of non-native species, particularly grasses, has caused mortality in other species of *Pediocactus*. High intensity wildfires typically encompass large areas of habitat and are especially detrimental to species with limited distributions, such as Siler pincushion cactus. Therefore, herbicide treatment would likely benefit Siler pincushion in the long-term, by reducing wildfire fuels and the risk of a catastrophic wildfire.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with USFWS would occur if future project actions have the potential to affect Siler pincushion cactus.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to damage or kill Siler pincushion cactus, destroy suitable habitat, and introduce or spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. Herbicide or pesticide applications, encroachment of undesirable vegetation, wildfire, and habitat degradation adjacent to the action area all have the potential to indirectly affect Siler pincushion cactus. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

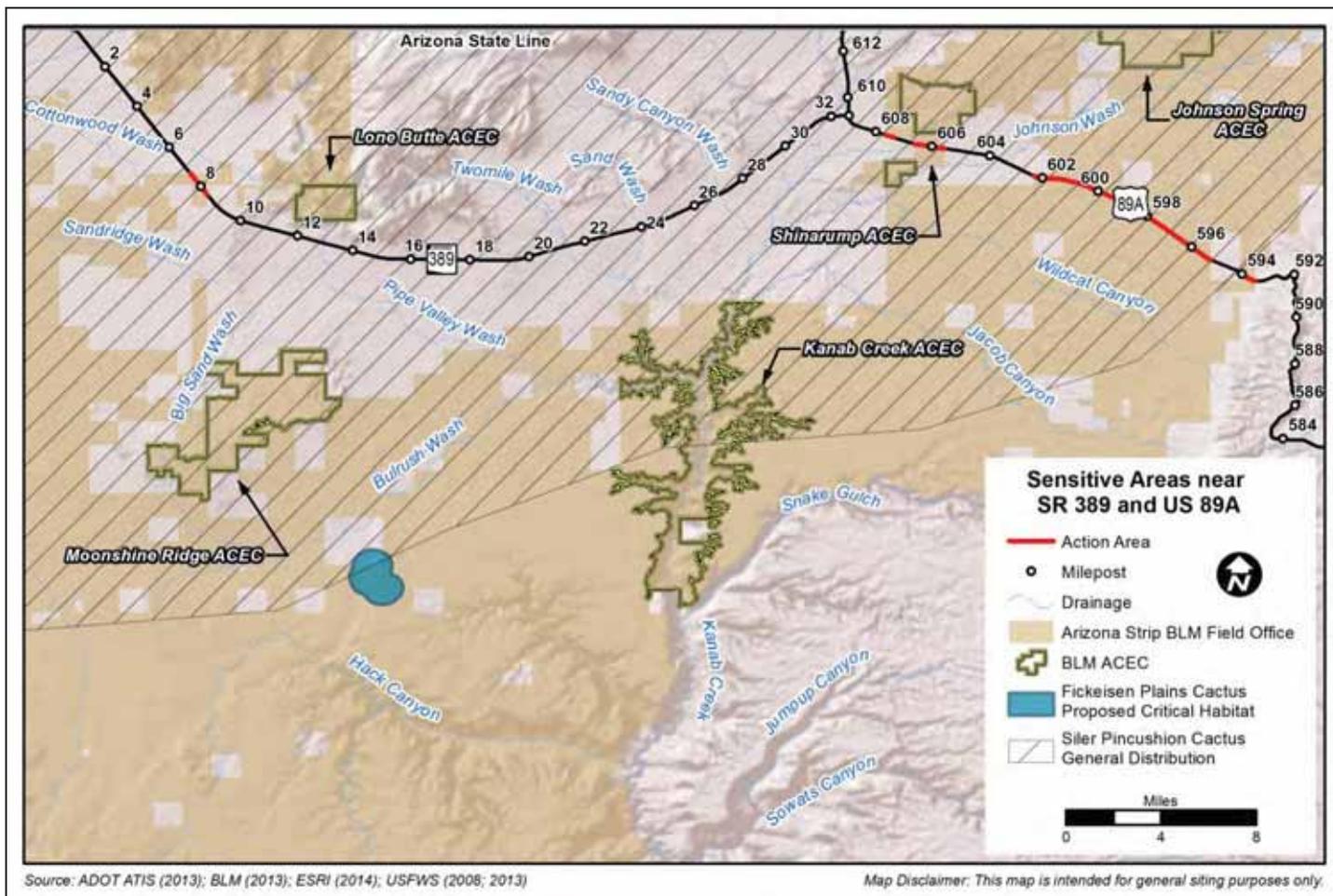


Figure 13 – Sensitive Areas near SR 389 & US 89A

### Determination

Due to the implementation of SOPs, and conservation measures, herbicide will not be applied near Siler pincushion cactus and would only be applied by hand application methods within occupied habitat, thus potential negative affects to the species are discountable. The proposed program of herbicide use on the action area with proposed conservation measures may affect the Siler pincushion cactus but is not likely to adversely affect the Siler pincushion cactus.

### 5.19 Sonoran Pronghorn

Endangered Species Act Status:	Endangered, 1967 (experimental nonessential population)
BLM Field Office Occurrence within ADOT ROW:	Lower Sonoran, Tucson, and Yuma Field Offices
ADOT District Occurrence on BLM lands:	Tucson, Yuma Districts
Occurrence within Action Area:	I-8, I-10, SR 85, SR 86, SR 238, SR 286, US 95
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

## Life History

The fastest land mammal in North America, the Sonoran pronghorn (*Antilocapra americana sonoriensis*) is also the smallest of the five subspecies, with a paler coloration, a pronged horn sheath, and a white rump. The black cheek patch on males helps to distinguish the sexes (AGFD 2002).

The pronghorn requires large tracts of land to obtain adequate forage in desert landscapes, where resources are widely scattered or seasonal. Pronghorn breed from July to September and gestation averages 252 days. Females belong to herds year-round, whereas bucks maintain individual home ranges and join doe herds only during the rut. Pronghorn browse on forbs, shrubs, and cacti fruits (AGFD 2002).

## Distribution in Arizona

The historic range of the subspecies is difficult to determine since the subspecies was not described until after population declines and local extirpations of pronghorn had occurred. In Arizona, they are thought to have ranged throughout the Altar Valley and the Tohono O'odham Indian Reservation. Presently in Arizona, Sonoran pronghorn are found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, Kofa National Wildlife Refuge, the Barry M. Goldwater Gunnery Range, BLM-administered lands south of Ajo, AZ and west of SR 85 and possibly the Tohono O'odham Indian Reservation. Pronghorn inhabit broad alluvial valleys between mountains in palo verde-saguaro associations of the Upland subdivision of Sonoran Desertscrub and creosote-bursage associations of the Lower Colorado subdivision of Sonoran Desertscrub biotic communities (AGFD 2002).

## Status within the Action Area

Population trends are heavily dependent upon yearly rainfall conditions. In 2002, 21 individuals remained in Arizona, a severe decline from survey estimates in the late 1990s. More recent surveys estimate 80-90 pronghorn extant within the current range (USFWS 2011a). The action area and adjacent BLM lands along Interstate 8 (I-8) in Yuma County and along SR 85 in Pima County are within the current geographic range of Sonoran pronghorn and are seasonally occupied (Figure 14).

The action area occurs throughout the experimental population boundary for Sonoran pronghorn which includes an area north of I-8 and south of I-10, bounded by the Colorado River on the west and I-10 on the east; and an area south of I-8, bounded by SR 85 on the west, I-10 and Interstate 19 (I-19) on the east, and the US-Mexico Border on the south (USFWS 2011a) (Figure 14). Beginning in 2013, on-going reintroductions are occurring throughout the experimental boundary.

The pronghorn within the experimental boundary are characterized as an "experimental nonessential population" under Section 10(j) of the ESA. An experimental nonessential population is treated as a proposed threatened species, except when located outside of the experimental population boundary or within National Park System or National Wildlife Refuge System lands, where the species is treated as endangered under the ESA. Although it is less likely due to the species' tendency to avoid high-speed highways, individuals could forage on land within or near the action area. Sonoran pronghorn encountered outside of the experimental population boundary will be treated as an endangered species.

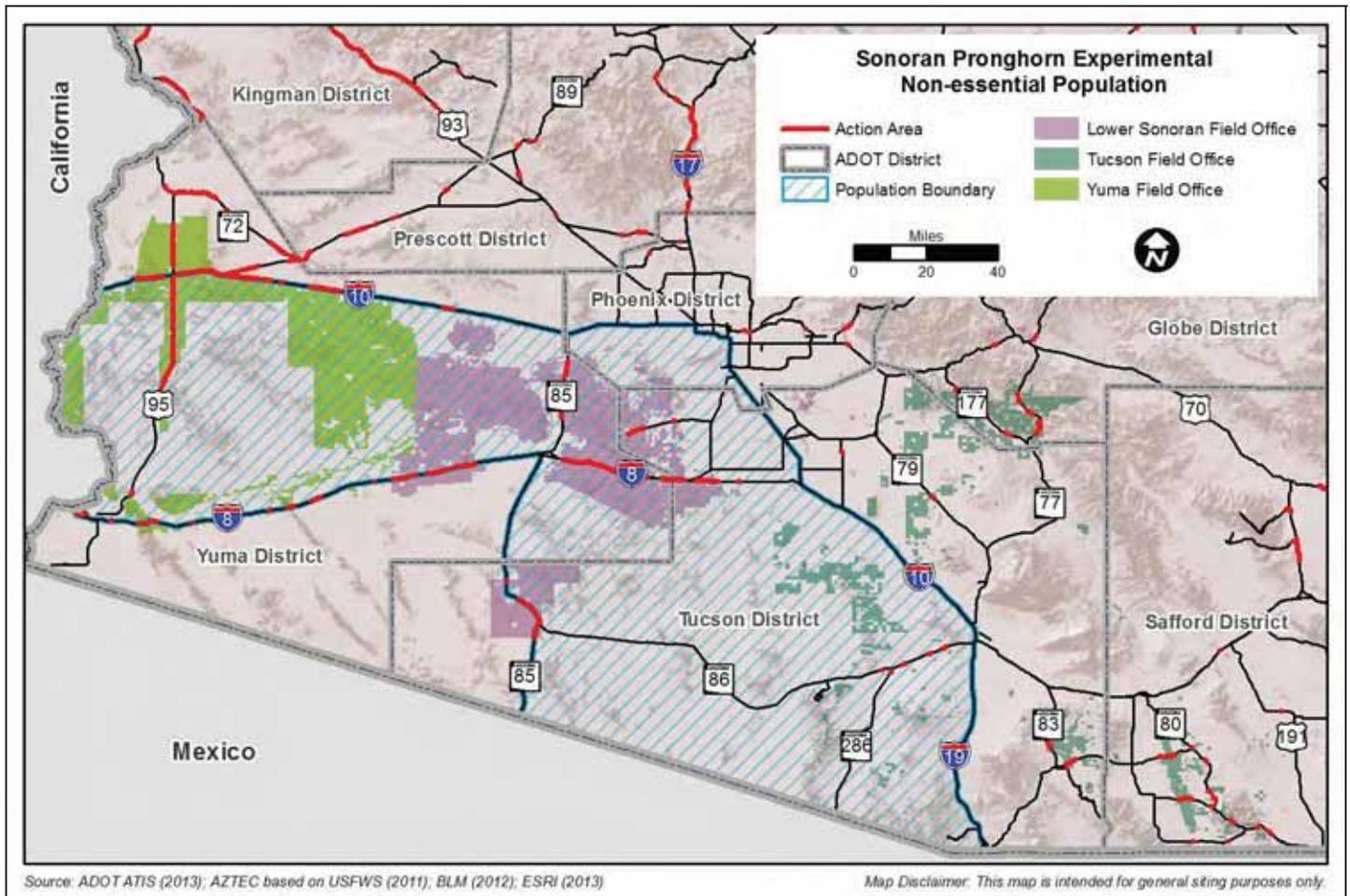


Figure 14 – Sonoran Pronghorn Experimental Non-essential Population Boundary

### Species-specific Conservation Measures

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS (BLM 2007).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within the action area along Interstate 8 in Yuma County and along State Route 85 in Pima County, to determine if action area is sensitive pronghorn habitat, such as foraging and fawning areas.
  - If sensitive pronghorn habitats area present within the action area:
    - Do not conduct herbicide treatments in fawning areas.
    - Do not broadcast spray herbicides in key pronghorn foraging areas.
    - Do not use 2,4-D within ¼ mile of sensitive Sonoran pronghorn habitat.
    - Where feasible, avoid use of the following: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, diflufenzopyr + dicamba, picloram, tebuthiuron, and triclopyr.
    - If broadcast spraying imazapyr, metsulfuron methyl, or tebuthiuron in or near Sonoran pronghorn habitat, apply at the typical, rather than the maximum, application rate
    - If conducting manual spot applications of glyphosate, hexazinone, imazapyr, metsulfuron methyl, tebuthiuron, or triclopyr utilize the typical, rather than the maximum, application rate.
    - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

- If presence of sensitive pronghorn habitat is unknown along Interstate 8 in Yuma County and along State Route 85 in Pima County, assume that sensitive pronghorn habitat is present, delineate sensitive habitat areas within the action area and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the delineated sensitive habitat.

### Effects Analysis

Pronghorn exhibit a strong flight response from humans; therefore direct spray is highly unlikely. Although pronghorn are not known to regularly utilize BLM lands or the action area, given the effort for reintroductions throughout the experimental population boundary and close proximity of known populations, pronghorn could travel through the action area or opportunistically forage within or near its limits. Prior to treatment, sensitive habitats essential to pronghorn biology, such as fawning or foraging areas, will be determined or assumed, and herbicide formulation and application methods would be limited and/or restricted in sensitive habitats to avoid potential negative effects to breeding or foraging pronghorn.

In the absence of key sensitive habitat areas, herbicide treatment would occur. If pronghorn enter the action area immediately following treatment, dermal contact with or ingestion of vegetation recently sprayed with 2,4-D, bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, diflufenzopyr+dicamba, picloram, or triclopyr, imazapyr, or metsulfuron, negative health effects could occur (BLM 2007). However, a pronghorn's diet is unlikely to consist only of contaminated vegetation and consumption of toxic levels of herbicide is unlikely. Therefore, the indirect effects would be so minor as to be discountable.

Herbicide treatments may temporarily reduce the amount of forage available to pronghorn, although given the large amount of suitable foraging habitat available outside of the action area, a temporary reduction of plants within the action area is unlikely to affect pronghorn foraging abilities. Over time, a reduction in nonnative plant fuels would reduce the risk of catastrophic wildfires in Sonoran pronghorn habitat.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Sonoran pronghorn.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to temporarily disrupt pronghorn movements and foraging within the action area, destroy habitat, and introduce and spread invasive plants. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect Sonoran pronghorn. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the lack of occupied habitat and implementation of conservation measures which prevent herbicide application to sensitive habitat areas, the potential for adverse effects on the Sonoran pronghorn is so minor as to be discountable. The proposed program of herbicide use within the action area with its proposed conservation measures may affect the Sonoran pronghorn, but is not likely to adversely affect the Sonoran pronghorn.

### **5.20 Southwestern Willow Flycatcher**

Endangered Species Act Status:	Endangered, 1995
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip, Hassayampa, Kingman, Safford, Tucson
ADOT District Occurrence on BLM lands:	Flagstaff, Globe, Kingman, Prescott, Safford
Occurrence within Action Area:	US 93, SR 177, SR 77, US 60, I-15
Critical Habitat:	Designated 2013
Determination:	May affect, not likely to adversely affect species or designated critical habitat.

## Life History

The Southwestern willow flycatcher (SWFL) (*Empidonax traillii extimus*) is a small songbird with a grayish-green back and wings, white throat, light gray-olive breast, and a pale yellowish belly with two visible wing bars (USFWS 2011c).

SWFL typically arrive at breeding sites in Arizona from late April to mid-June. Nesting typically begins in early May and continues into late August, but is delayed by 1 to 2 weeks at high elevations (McCarthy 2005). A tightly woven, open-cup nest is typically built in the fork of a tree. Average clutch size is three eggs, which generally hatch in 12 days. Fledging usually occurs in 12 days, and fledglings are dependent on parents for food for approximately two weeks. SWFL typically begin their southward migration in early August (USFWS 2001b). Flycatchers predominantly consume flies and other flying insects.

## Distribution in Arizona

SWFL are riparian obligates, breeding only in dense riparian vegetation near a permanent or semi-permanent source of water or saturated soil below 8,530 feet elevation (Sogge et al. 1997). Generally, suitable breeding habitat can be organized into three broad types: native plant species dominated, exotic plant species dominated, and native-exotic mixed. Known low-to mid-elevation native breeding sites are patches of riparian vegetation that can be monotypic, or contain a mixture of tree and shrub species, including Gooding's willow or other willow species, cottonwood, box elder, ash, alder, and buttonbush. These patches are at least 1.48 acres in size, 13.12 feet tall, and 32.81 feet wide; exhibit at least 80 percent canopy cover; and exhibit dense live foliage in the patch interior within the first 9.84 to 13.12 feet above ground. Patches are typically characterized by individual trees of different size classes that often form a distinct overstory with defined subcanopy layers and a dense understory. However, these sites can also consist of tall (>16.40 feet) stands of monotypic willow. Although these sites are dominated by native species, exotic or introduced trees and shrubs may be a rare patch component, particularly in the understory. Known breeding sites are usually located near surface water or saturated soil during some part of the breeding season, including stream reaches, stream backwaters, swampy abandoned channels, marshes, cienegas, and at the margins of impounded water, including inflows into reservoirs (USFWS 2001b).

## Status within the Action Area

Intensive, statewide surveys of known and possible SWFL breeding sites have been conducted on a yearly basis since 1993. Several breeding populations are known to occur near the action area along the San Pedro River, the Virgin River, the Big Sandy River, and the Gila River near Safford and at its confluence with the San Pedro (Ellis et al. 2008). Furthermore, designated critical habitat is present within and directly adjacent to the action area along the Hassayampa, Virgin, Gila, and Big Sandy rivers (Figures 2, 7, 9, 11, 15).

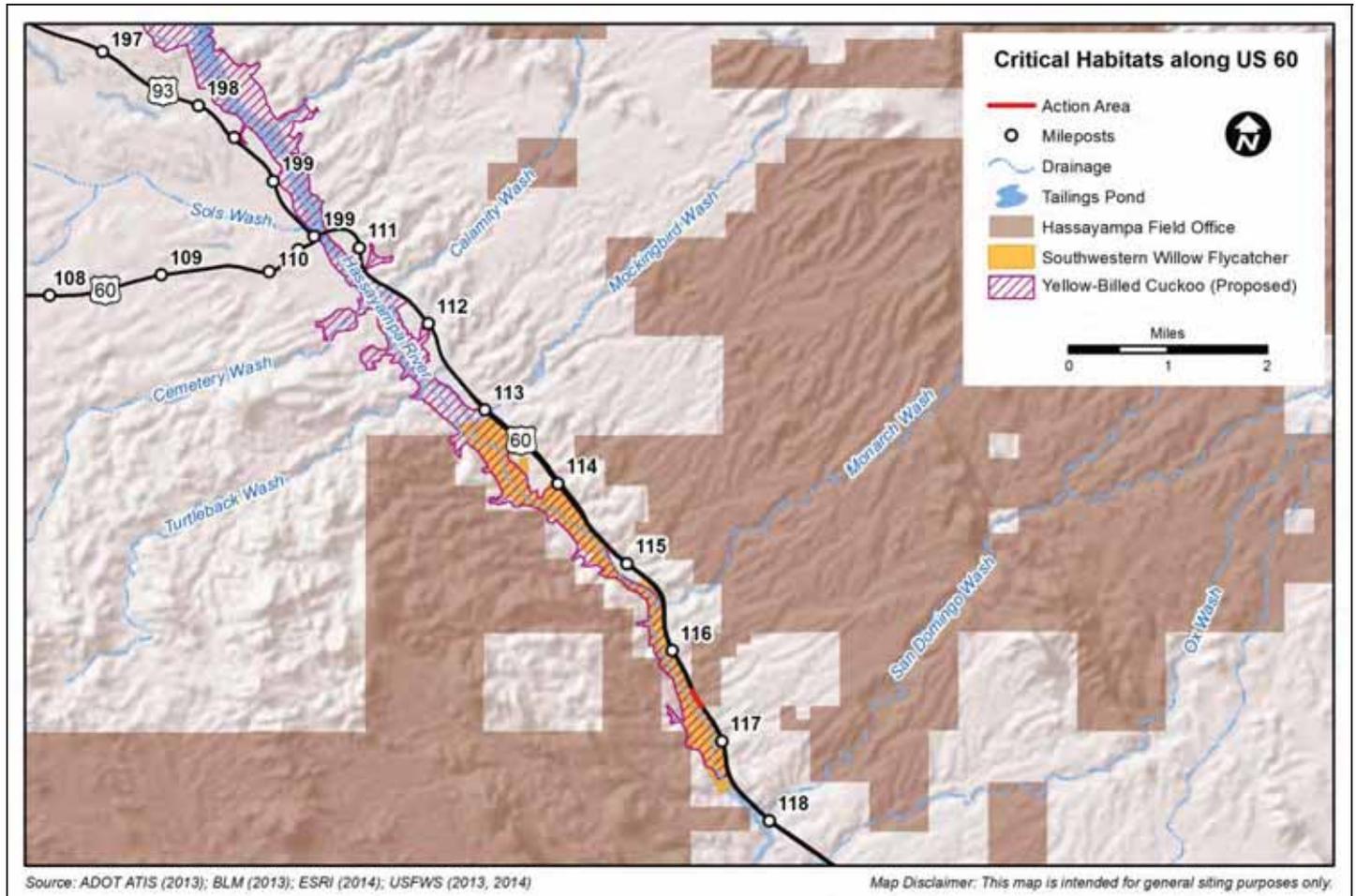


Figure 15 – Critical Habitats along US 60

While it cannot be completely discounted, it is unlikely that SWFL nests are present within the action area due to fragmented habitat and disturbances created by roadways. Given the close proximity of known populations and presence of critical habitat, it is likely that suitable habitat is present and SWFL utilize the action area for foraging, perching, and rearing young.

## Species-specific Conservation Measures

Applicable conservation measures from the Final BA for the BLM PEIS are incorporated by reference into this analysis, and are included in Appendix E. These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for bird species that will not eat granular, pellet or treated seed formulations (#23) (BLM 2007, USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable riparian corridor habitats, to determine if the habitat is occupied by southwestern willow flycatcher.

- If southwestern willow flycatcher are present within or adjacent to the action area:
  - Do not conduct herbicide treatment within occupied riparian corridor habitat.
  - Do not conduct herbicide treatment within ½ mile of the occupied riparian corridor habitat during the southwestern willow flycatcher nesting season.
  - Do not use 2,4-D within occupied riparian corridor habitat, and do not broadcast spray 2,4-D within ¼ mile of the occupied riparian corridor habitat
  - Do not broadcast spray clopyralid, diquat, diuron, glyphosate, hexazinone, picloram, or triclopyr in areas adjacent to occupied habitat under conditions when spray drift onto the habitat is likely.
  - If broadcast spraying imazapyr or metsulfuron methyl adjacent to southwestern willow flycatcher habitat, apply at the typical, rather than the maximum, application rate.
  - Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	none	30 feet*
Liquid	none	30 feet*
Ultra-low volume or dust	80 feet	80 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet*	60 feet*
Liquid	10 feet*	60 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If southwestern willow flycatcher presence is unknown within suitable riparian corridor habitats, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the suitable riparian corridor habitat.

## Effects Analysis

Known SWFL breeding populations occur near the action area. The presence of crews or direct exposure to 2,4-D, clopyralid, glyphosate, hexazinone, picloram, or triclopyr at the typical application rate, or by imazapyr or metsulfuron methyl at the maximum application rate (BLM 2007), could negatively affect nesting SWFL. Due to the mobility of flight, adult SWFL are unlikely to be directly exposed to herbicide unless they are occupying a nest. To avoid direct effects to eggs, flightless young or nesting adults, herbicide applications would not be conducted within known SWFL nesting habitat during the nesting season, in any given year. In addition SWFL occupancy would be determined or assumed prior to treatment and avoidance distances from occupied habitat would be established based on herbicide ecotoxicity ratings, formulations, and application methods.

Because SWFL are migratory, birds are not anticipated to be present within the action area from September to March; therefore herbicide treatments conducted within this timeframe would not directly affect SWFL.

Indirect effects to SWFL could occur if there is substantial vegetation loss, resulting in alteration of vegetative composition, habitat structure, or loss of nesting trees, which could affect the quality and suitability of a riparian corridor. Herbicide treatments conducted in designated critical habitat have the potential to modify primary constituent elements of riparian vegetation, such as the presence of tamarisk, habitat density, structure, and canopy cover (USFWS 2013b). To minimize effects to suitable and critical SWFL habitats, herbicides not approved for riparian use would not be applied within 30 feet of the riparian edge. Within the riparian corridor, no broadcast applications would be used, and only selective herbicides with hand application methods would be permitted. Consequently, some vegetation removal would occur within SWFL habitat; however, because herbicide treatment would only occur in the ROW and selective methods would be used, large scale habitat modification to the point of unsuitability is unlikely.

The removal of nonnative vegetation is expected to improve SWFL habitat by allowing recolonization of native species. Additionally, a reduction in exotic vegetation would potentially reduce the risk of future wildfires in riparian habitats.

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect SWFL.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to directly affect SWFL adults, eggs, and young, destroy habitat, or affect SWFL breeding, nesting, and foraging behaviors. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect SWFL. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on

private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs and conservation measures, no herbicide treatment would occur within ½ mile of occupied habitat during the nesting season and avoidance distances and application method restrictions will be implemented year round at occupied riparian corridors to prevent adverse effects on riparian habitat. Therefore, the potential for adverse effects on the SWFL or critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area with its proposed conservation measures may affect Southwestern willow flycatcher but is not likely to adversely affect the Southwestern willow flycatcher or its designated critical habitat.

**5.21 Virgin River Chub**

Endangered Species Act Status:	Endangered, 1989
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	I-15
Critical Habitat:	Designated 2000
Determination:	May affect, not likely to adversely affect species or designated critical habitat

Life History

The Virgin River chub (*Gila seminuda*) is a silvery minnow with embedded or absent scales, averaging eight inches in total length. The fish is omnivorous, consuming debris, filamentous algae and macroinvertebrates. Within the water column, this chub is most often found in deep runs or pool habitats with large boulders or other forms of cover below 4,500 feet elevation. Breeding occurs in spring and early summer during periods of declining spring flows, in pool habitats associated with vegetative cover (USFWS 2009b).

Distribution in Arizona

Within Arizona, the Virgin River chub is endemic to the Virgin River (USFWS 2009b).

Status within the Action Area

The entire Virgin River channel and 100-year floodplain within Arizona is designated critical habitat for Virgin River chub. Annual surveys have been conducted at specific locations throughout critical habitat within the Virgin River since 1976. The nearest sampling location to the action area is at the Beaver Dam Wash confluence, approximately 0.10 mile north of I-15 near MP 9.00, where Virgin River chub are consistently caught (USFWS 2008e). The action area along I-15 crosses critical habitat at MP 22.49 and MP 22.55, and parallels the river within close proximity between MP 8.90 and MP 22.49 (Figures 7 and 9).

Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Virgin River on I-15 should use either liquid streams or relatively coarse sprays to minimize spray drift.

- Do not conduct herbicide treatments during Virgin River chub spawning season (April through July) within ½ mile of the Virgin River along Interstate 15.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

Due to the close proximity of the Virgin River to the I-15 action area, and the potential for offsite herbicide drift or runoff, herbicide treatments would not be conducted during Virgin River chub spawning season. Therefore, no direct effects to eggs or larvae would occur.

Outside of the spawning season, direct application of herbicides to water bodies would not occur. Broadcast applications would be restricted to beyond 100 feet of the Virgin River, and additional buffer zones would be established based on herbicide ecotoxicity ratings, formulations and application methods. Due to the implementation of SOPs, and conservation measures, herbicide runoff or drift to the Virgin River is unlikely. However, if herbicide runoff or drift were to occur in the vicinity of the Virgin River, due to perennial flows the low volumes of herbicide that may accidentally enter the system would be quickly dispersed and diluted (ADOT 2013). Therefore, direct effects to Virgin River chub via direct spray, drift, or runoff, is not anticipated.

Potential indirect effects as a result of a loss of bankline vegetation include: a reduction in shade which may increase water temperature, killing fish or leaving them susceptible to disease; reduced bank stabilization leading to increased erosion and sediment loads, which can change a river's morphology and structure by eliminating pool and riffle habitats, changing the width and depth of a system, and changing the flow velocity;

increased runoff and pollutants entering the system; loss of microhabitat features; and a temporary decrease in invertebrate prey. However, only spot treatments of undesirable vegetation would occur along the Virgin River bankline, and treatment would occur over a number of years. As such, vegetation removal would not occur suddenly or at a large scale. Additionally, due to the small amount of vegetation that is present and the limitations to herbicide formulations and application methods based on SOPs and conservation measures, bankline vegetation loss and its potential effects would be minimal. Project actions would not substantially change river structure, habitats or flow regimes, or introduce nonnative species (USFWS 2000b). Therefore, indirect effects to Virgin River chub and critical habitat are highly unlikely to occur.

Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Virgin River chub.

The Virgin River is heavily utilized by private, public, tribal, industrial, and other non-federal entities. Private actions, such as river recreation and development could directly harm Virgin River chub or indirectly affect the species through habitat degradation or loss. Water diversions and pumping for agricultural, utility, and municipal uses could result in decreased aquatic habitat. Actions undertaken on lands upstream and/or adjacent to the Virgin River could indirectly affect chub through contamination of the river, alteration in water flows, or introduction of nonnative aquatic animals. In situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide runoff or drift into suitable habitat is highly unlikely and herbicide would not be applied along I-15 during the Virgin River chub spawning season. Thus, the potential for adverse effects from the proposed herbicide program on Virgin River chub or critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area along with proposed conservation measures may affect the Virgin River chub but is not likely to adversely affect the Virgin River chub or its designated critical habitat.

**5.22 Woundfin**

Endangered Species Act Status:	Endangered, 1970
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip Field Office
ADOT District Occurrence on BLM lands:	Flagstaff District
Occurrence within Action Area:	I-15
Critical Habitat:	Designated 2000
Determination:	May affect, not likely to adversely affect species or designated critical habitat

## Life History

Woundfin (*Plagopterus argentissimus*) are small, silvery fish with a flat head and belly and a prominent dorsal spine. Woundfin feed on algae, detritus, tamarisk seeds, and aquatic insects. They prefer runs and calm waters adjacent to riffles in cooler rivers with sandy, gravelly substrates. Spawning occurs primarily between April and July. Backwaters with dense filamentous algal growth are important for larval rearing habitat (USFWS 1994c).

## Distribution in Arizona

Historically, woundfin were much more widespread, from the confluence of the Salt and Verde rivers to the Gila River in Yuma, and throughout the mainstem Colorado River in Arizona. Upon discovery of the severe population declines, stockings of woundfin into the Hassayampa River, Salt River, Sycamore Creek, and Paria River occurred in the 1970's, although severe flooding and unknown causes wiped out each population. The species range is now constricted to only parts of the Virgin River (USFWS 1994c, 2008e). Woundfin were last stocked in spring of 2008, although this population is considered functionally extirpated (USFWS 2013d).

## Status within the Action Area

Annual sampling efforts are conducted along the Virgin River, the nearest of which is at the Beaver Dam Wash confluence, approximately 0.10 mile north of the action area along I-15 near MP 9.00. Declines in capture rates at this station have been noted since the mid 1980's (SNWA 2012). The action area along I-15 crosses critical habitat at MP 22.49 and MP 22.55, and parallels the river within close proximity between MP 8.90 and MP 22.49 (Figure 7 and 9).

## Species-specific Conservation Measures

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for species in large aquatic habitats (#27) (USFWS 2007f).

- Do not conduct herbicide treatments during woundfin spawning season (April through July) within ½ mile of the Virgin River along Interstate 15.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish(Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Virgin River floodplain along Interstate 15.

<b>Herbicide Formulations</b>	<b>Herbicide Application Method</b>	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).

### Effects Analysis

Due to the close proximity of the Virgin River to the I-15 action area, and the potential for offsite herbicide drift or runoff, herbicide treatments would not be conducted during woundfin spawning season. Therefore, no direct effects to eggs or larvae would occur.

Outside of the spawning season, direct application of herbicides to water bodies would not occur. Broadcast applications would be restricted to beyond 30 feet of the Virgin River, (General Conservation Measures, Appendix E), and undesirable vegetation within that buffer would be spot treated using selective herbicides with hand application methods only. Due to the implementation of SOPs, and conservation measures, herbicide runoff or drift to the Virgin River is unlikely. However, if herbicide runoff or drift were to occur in the vicinity of the Virgin River, due to perennial flows the low volumes of herbicide that may accidentally enter the system would be quickly dispersed and diluted (ADOT 2013). Therefore, direct effects to woundfin via direct spray, drift, or runoff, is not anticipated.

Potential indirect effects as a result of a loss of bankline vegetation include: a reduction in shade which may increase water temperature, killing fish or leaving them susceptible to disease; reduced bank stabilization leading to increased erosion and sediment loads, which can change a river’s morphology and structure by eliminating pool and riffle habitats, changing the width and depth of a system, and changing the flow velocity; increased runoff and pollutants entering the system; loss of microhabitat features; and a temporary decrease in invertebrate prey. However, only spot treatments of undesirable vegetation would occur along the Virgin River, and treatment would occur over a number of years. As such, vegetation removal would not occur suddenly or at a large scale. Additionally, due to the small amount vegetation that is present and the limitations to herbicide formulations and application methods based on SOPs and conservation measures, bankline vegetation loss and its potential effects would be minimal. Project actions would not substantially change river structure, habitats, or flow regimes (USFWS 2000b). Therefore, critical habitat would not be altered or destroyed, and indirect effects to woundfin are highly unlikely to occur.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the

action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect woundfin.

Woundfin are more susceptible to the cumulative effects of future projects due to their extremely rare status. The Virgin River is heavily utilized by private, public, tribal, industrial, and other non-federal entities. Private actions, such as river recreation and development could directly harm woundfin or indirectly affect the species through habitat degradation or loss. Water diversions and pumping for agricultural, utility, and municipal uses could result in decreased aquatic habitat. Actions undertaken on lands upstream and/or adjacent to the Virgin River could indirectly affect woundfin through contamination of the river, alteration in water flows, or introduction of nonnative aquatic animals. In situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicide runoff or drift to suitable habitat is highly unlikely and herbicide would not be applied along I-15 during the woundfin spawning season. Thus, the potential for adverse effects from the proposed herbicide program on woundfin or critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area along with proposed conservation measures may affect the woundfin but is not likely to adversely affect the woundfin or its designated critical habitat.

**5.23 Yellow-billed Cuckoo**

Endangered Species Act Status:	Threatened, 2014
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip, Hassayampa, Kingman, Tucson
ADOT District Occurrence on BLM lands:	Flagstaff, Globe, Kingman, Prescott, Safford, Tucson
Occurrence within Action Area:	I-15, SR 77, SR 82, SR 90, SR 177, US 60, US 93
Critical Habitat:	Proposed 2014
Determination:	May affect, not likely to adversely affect species or proposed critical habitat.

Life History

The yellow-billed cuckoo (YBCU) (*Coccyzus americanus*) is a medium-sized bird with a slender, long-tailed profile, zygodactyl feet, and a stout, slightly down-curved bill that is blue-black above and yellow on the base of the lower mandible. Plumage is grayish brown above and white below, with red primary flight feathers and tail feathers that are boldly patterned with black and white below (USFWS 2001a).

YBCUs winter in Central and South America, and migrate north to northern Mexico and southern Canada to breed. YBCU’s generally arrive in Arizona in mid- to late May and few remain in Arizona after mid-September. Peak nesting occurs from July to mid-August, and may continue into September in southeastern Arizona to coincide with increased numbers of cicadas, katydids, caterpillars, and other large invertebrate prey that constitute the bulk of the cuckoo’s diet (USFWS 2013c, Corman 2005).

## Distribution in Arizona

Historically, the species was widespread and locally common in Arizona. Currently, YBCU are found in the southern, central, and extreme northeast portions of the state, below 6,500 feet in remaining large blocks of riparian habitat; particularly cottonwood-willow, mesquite, ash, sycamore, and tamarisk forests with dense understory foliage. Available information suggests that large trees with a relatively dense understory of smaller trees and shrubs are important components of suitable YBCU nesting habitat (Corman and Magill 2000; USFWS 2001a).

## Status within the Action Area

In 1998 and 1999, statewide surveys covering 265 miles of river and creek bottoms throughout Arizona known to historically support YBCUs resulted in the detection of 168 YBCU pairs and 80 single birds with the majority of the population occurring near the San Pedro, Verde, and Agua Fria rivers and Cienega and Sonoita Creeks (USFWS 2001b). Suitable habitat is present near the action area at the Burro Creek crossing on US 93. Proposed critical habitat is present within and directly adjacent to the action area along the Gila, Virgin, Hassayampa, and San Pedro rivers (USFWS 2014a) (Figures 7, 8, 9, 11 and 15). Proposed critical habitat along the Colorado and Bill Williams rivers is located more than 0.5 mile from the closest parts of the action area and therefore would not be affected by the action.

While it cannot be discounted, it is unlikely that YBCU nests are present within the action area due to the fragmented habitat and noise created by roadways. However, given the close proximity of known populations, and presence of proposed critical habitat, it is likely that suitable habitat is present and YBCU may utilize the action area for foraging, perching, and rearing young.

## Species-specific Conservation Measures

These measures are based USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for bird species that will not eat granular, pellet or treated seed formulations (#23) (USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable riparian corridor habitats, to determine if the habitat is occupied by yellow-billed cuckoo.
- If yellow-billed cuckoo are present within or adjacent to the action area:
  - Do not conduct herbicide treatment within the occupied riparian corridor habitat.
  - Do not conduct herbicide treatment within ¼ mile of the occupied riparian corridor habitat during the yellow-billed cuckoo nesting season.
  - Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	none	30 feet*
Liquid	none	30 feet*
Ultra-low volume or dust	80 feet	80 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian(Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet*	60 feet*
Liquid	10 feet*	60 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
- If yellow-billed cuckoo present is unknown within suitable riparian corridor habitats, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the suitable riparian corridor habitat.

### Effects Analysis

Suitable and occupied YBCU habitat is known to occur within and adjacent to the action area. The presence of crews or direct exposure to 2,4-D, clopyralid, glyphosate, hexazinone, picloram, or triclopyr at the typical application rate, or by imazapyr or metsulfuron methyl at the maximum application rate (BLM 2007) may impact nesting YBCU. To avoid direct effects to eggs, flightless young, or nesting adults, a pretreatment habitat assessment would be conducted within dense riparian habitats located in the action area. Herbicide applications would not be conducted during the nesting season within any habitats determined suitable for YBCU nesting.

Because YBCU are migratory, birds are not anticipated to be present within the action area from October through April; therefore herbicide treatments conducted within this timeframe would not directly affect YBCU.

Indirect effects to YBCU could occur if a substantial amount of vegetation is lost, resulting in alteration of vegetative composition, habitat structure, or loss of nesting trees, which could affect the quality and suitability of a riparian corridor. To minimize effects to suitable YBCU habitats, herbicides not approved for riparian use would not be applied within 30 feet of the riparian edge. Within the riparian corridor, no broadcast applications would be used, and only selective herbicides with hand application methods would be permitted. Consequently, some vegetation treatment could occur adjacent to occupied habitat or within un-occupied suitable habitat; however, because herbicide treatment would only occur in the ROW and selective methods would be used, large scale habitat modification to the point of unsuitability is unlikely.

The removal of nonnative vegetation is expected to improve YBCU habitat by allowing recolonization of native species. Additionally, a reduction in exotic vegetation would potentially reduce the risk of future wildfires in riparian habitats.

## Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect YBCU.

Actions most likely to occur in the action area include typical ADOT maintenance or construction projects. Such actions have the potential to directly affect YBCU adults, eggs, and young, destroy habitat, or affect YBCU breeding, nesting, and foraging behaviors. Cumulative effects could also result from actions unrelated to this project occurring on adjacent nonfederal lands. For example, herbicide or pesticide drift; encroachment of undesirable vegetation; pollution of air, soil, or water; habitat fragmentation; or the spread of wildfire all have the potential to indirectly affect YBCU. However, in situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs and conservation measures, no herbicide treatment would occur within ½ mile of occupied habitat during the nesting season and avoidance distances and application method restrictions will be implemented year round at occupied riparian corridors to prevent adverse effects on riparian habitat. Therefore, the potential for adverse effects to yellow-billed cuckoo or proposed critical habitat is so minor as to be discountable. The proposed program of herbicide use within the action area with proposed conservation measures may affect the yellow-billed cuckoo but is not likely to adversely affect the yellow-billed cuckoo or its proposed critical habitat.

### **5.24 Yuma Clapper Rail**

Endangered Species Act Status:	Endangered, 1967
BLM Field Office Occurrence within ADOT ROW:	Arizona Strip, Kingman, Lake Havasu
ADOT District Occurrence on BLM lands:	Flagstaff, Kingman, Yuma
Occurrence within Action Area:	I-15, SR 95, SR 95S
Critical Habitat:	None Designated
Determination:	May affect, not likely to adversely affect

## Life History

The Yuma clapper rail (YCRA) (*Rallus longirostris yumaensis*) is a medium-sized marsh bird with long legs, a slender slightly decurved bill in which the upper mandible fades from dark grey to orange, gray scapulars and head, brownish-orange neck, and a white upper throat and chin.

With the exception of the Phoenix population on the Gila River, the majority of the YCRA population is thought to be non-migratory in Arizona, likely due to low elevation and an ample winter prey base (USFWS 2009c). In Arizona nesting occurs from March through August, though eggs are typically laid in May (Wise-Gervais 2005). Nests are built on stable substrates in shallow water near shore, or in the interior of marshes over deeper

water, using surrounding cattail stems and dense vegetation as overhead cover. The clutch size varies from 6-8 eggs which hatch in 21-23 days, typically during the first week of June. Chicks follow adults into the marsh within 48 hours of hatching, and fledge within 63-70 days. Rails predominately feed on non-native crayfish and other crustaceans, as well as aquatic insects, clams, and amphibians (AGFD 2006b).

### Distribution in Arizona

Historically, the distribution of YCRA is unclear due to confusion between subspecies of clapper rails. However, prior to the damming of the Colorado River, the lower Colorado River was free-flowing, and marsh development was difficult due to high and irregular flows and removal and deposition of sediment. Thus, it is not likely that populations of YCRA were prevalent along the lower Colorado River prior to the installment of small diversion and large water storage dams along the Colorado River (USFWS 2009c).

Currently, YCRA occur in freshwater marshes in tall, dense cattail and bulrush vegetation, along the lower Colorado River from the southern boundary with Mexico to the upper end of Lake Mead, and along the Virgin River. YCRA are also known to occupy suitable habitats in central Arizona near Roosevelt Lake, the lower Gila River, and other localities throughout Arizona.

### Status within the Action Area

In Arizona, multiple surveys have been conducted between 1969 and 2008 along the lower Colorado and Gila rivers and above Lake Mead, with the majority of individuals recorded along the lower Colorado River (USFWS 2009c). Suitable habitat is present near the action area along the Virgin River on I-15, south of the Virgin River gorge and on SR 95 near the lower Colorado River (Appendix A).

While it cannot be discounted, it is unlikely that YCRA nests are present within the action area due to the fragmented habitat and noise created by roadways. However, given the close proximity of known populations, it is likely that suitable habitat is present and YCRA could utilize the action area for foraging.

### Species-specific Conservation Measures

Applicable conservation measures from the Final BA for the BLM PEIS are incorporated by reference into this analysis, and are included in Appendix E. These measures are based on applicable conservation measures from the Final BA for the BLM PEIS; and the USFWS recommended protection measures for species in large aquatic habitats (#27) with avoidance distances based on the ecotoxicity ratings for the Small Avian toxicity group (BLM 2007, USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment along State Route 95S, State Route 95 near the Colorado River and Interstate 15 near the Virgin River, to determine if the habitat is occupied by Yuma clapper rail.
- If Yuma clapper rails are present
  - Do not conduct herbicide treatment within ½ mile of the occupied habitat during the nesting season.
  - Do not use 2,4-D within occupied habitat, and do not broadcast spray 2,4-D within ¼ mile of the occupied habitat
  - If broadcast spraying metsulfuron methyl in or adjacent to Yuma clapper rail habitat, apply at the typical, rather than the maximum, application rate.
  - If conducting manual spot applications of, hexazinone, or triclopyr to vegetation in Yuma clapper rail habitat, utilize the typical, rather than the maximum, application rate.

- Do not broadcast spray clopyralid, diquat, diuron, glyphosate, hexazinone, picloram, or triclopyr in areas adjacent to occupied habitat under conditions when spray drift onto the habitat is likely.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of suitable habitat along the Colorado River shoreline along State Route 95S and State Route 95 or suitable habitat along the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures in Appendix E) of suitable habitat along the Colorado River shoreline along State Route 95S and State Route 95 or suitable habitat along the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures (Appendix E).
- If Yuma clapper rail presence is unknown along the Colorado River along State Route 95S and State Route 95 or along the Virgin River along Interstate 15, assume that the species is present, delineate suitable Yuma clapper rail habitat within the action area, and apply the appropriate species- and herbicide-specific conservation measures (Appendix E) to the suitable habitat.

### Effects Analysis

Suitable and occupied YCRA habitat is present adjacent to the action area, thus it is possible that rails may enter the action area to forage. Because YCRA are not believed to be migratory, rails are anticipated to be present within the action area year-round; YCRA presented will be determined or suitable habitat will be

treated as occupied. The presence of crews or direct exposure to 2,4-D, clopyralid, glyphosate, hexazinone, picloram, or triclopyr at the typical application rate, or by imazapyr or metsulfuron methyl at the maximum application rate (BLM 2007), could negatively affect YCRA. However, due to the mobility of flight, it is unlikely that adult YCRA would be directly exposed to herbicides. Since YCRA nest on stable substrates within aquatic habitats, direct exposure to nesting YCRA, eggs, and fledglings are also unlikely because direct application of herbicides to water bodies and aquatic habitats would not occur.

Indirect effects to YCRA could occur through herbicide drift or runoff, or if there is substantial vegetation loss, which alters vegetative composition, density and cover, thereby affecting the quality and suitability of freshwater marshes. To minimize the potential for drift or runoff, hand application methods would be used and broadcast treatments would not occur within 30 feet of perennial waters. To minimize effects to suitable YCRA habitats, buffer zones based on herbicide ecotoxicity ratings, formulation and application methods would be established around suitable habitats. Consequently, some vegetation removal would occur within YCRA habitat; however, because herbicide treatment would only occur in the ROW and selective methods would be used, large scale habitat modification to the point of unsuitability is unlikely.

Herbicide application crews may indirectly affect eggs, flightless young, or nesting adults by causing an increase in noise that could result in minor behavioral modifications, such as adults potentially fleeing the nest. To avoid potential indirect effects, herbicide applications would not be conducted within known YCRA nesting habitat in the Virgin and lower Colorado rivers during the nesting season in any given year.

Wildfires are a common threat throughout YCRA suitable habitat. The removal of exotic species within the action area reduces the likelihood of wildfires, thus preventing destruction of suitable YCRA habitat. Furthermore, after a wildfire event, species that typically dominate the post-fire recovery include tamarisk and arrowweed (BLM 2007), which are not preferred by YCRA.

### Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the Endangered Species Act (USFWS and NMFS 1998). Projects occurring on BLM lands within and adjacent to the action area would be subject to NEPA review and consultation with the USFWS would occur if future project actions have the potential to affect Yuma clapper rail.

The Virgin River and lower Colorado River are heavily utilized by private, public, tribal, industrial, and other non-federal entities. Private actions, such as river recreation or development could directly harm Yuma clapper rail or indirectly affect the species through habitat degradation or loss. Water diversions and pumping for agricultural, utility, and municipal uses could result in decreased suitable habitat. Actions undertaken on lands upstream and/or adjacent to the Virgin or Colorado Rivers could indirectly affect clapper rails through contamination of food sources; alteration in water flows; introduction of nonnative aquatic animals; encroachment of undesirable vegetation; habitat fragmentation; or the spread of wildfire. In situations that do not involve a federal nexus, compliance with the ESA can be accomplished through coordination with USFWS on conservation measures to avoid take or use of the section 10(a)(1)(B) permit process in cases where take cannot be avoided. Some actions on private lands may require federal permits, such as a Clean Water Act Section 404 permit, and thus would be subject to Section 7 consultation.

## Determination

Due to the implementation of SOPs, general conservation measures and species-specific conservation measures, herbicides that are harmful to aquatic species would not be applied near or upslope of occupied aquatic habitats and no herbicide treatment would occur within ½ mile of occupied habitat during the breeding season. Thus the potential for adverse effects on Yuma clapper rails is so minor as to be discountable. The proposed program of herbicide use within the action area with its proposed conservation measures may affect Yuma clapper rail but is not likely to adversely affect the Yuma clapper rail.

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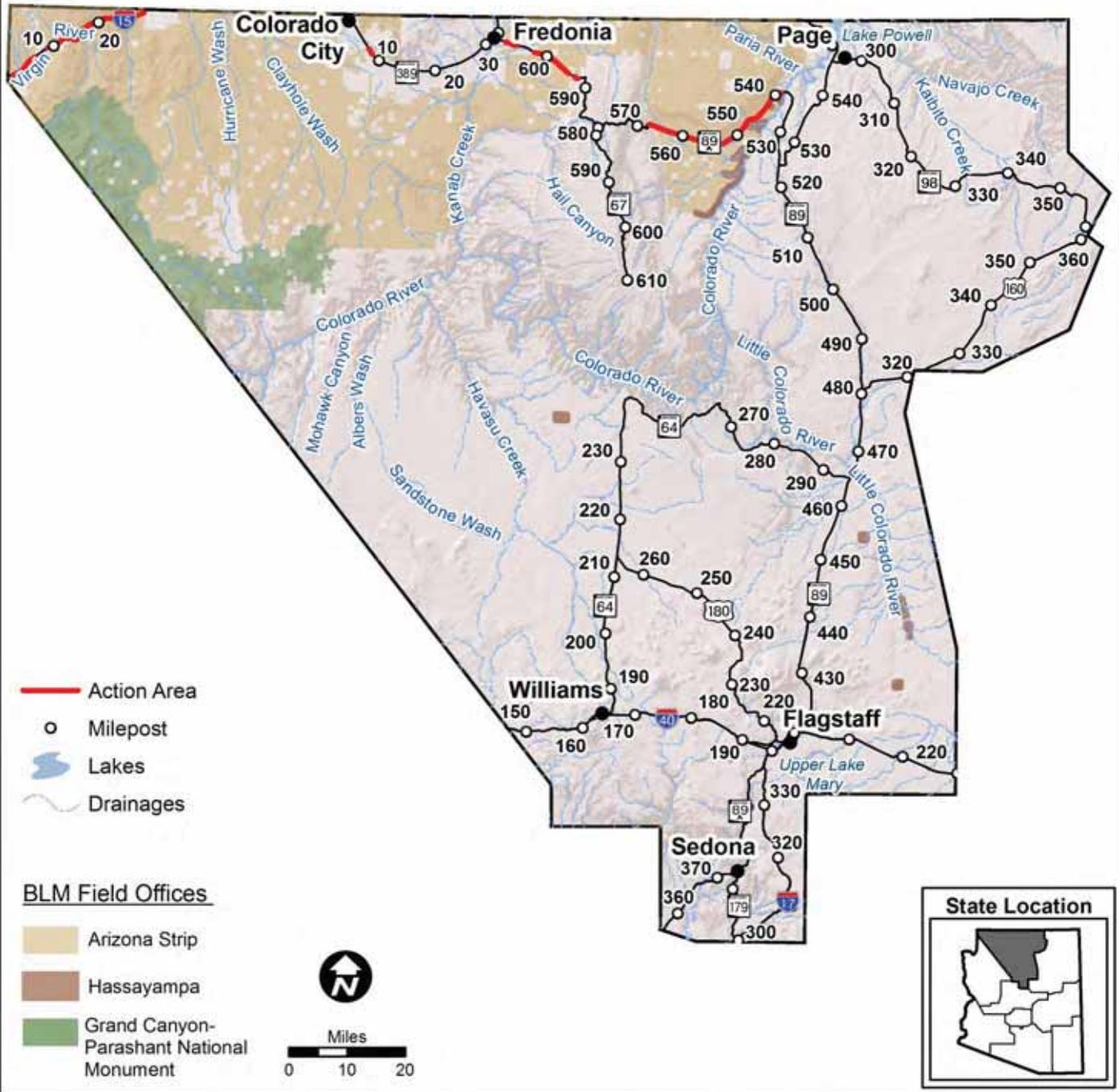
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# **Appendix A**

## Project Area Maps by ADOT District

# Flagstaff District

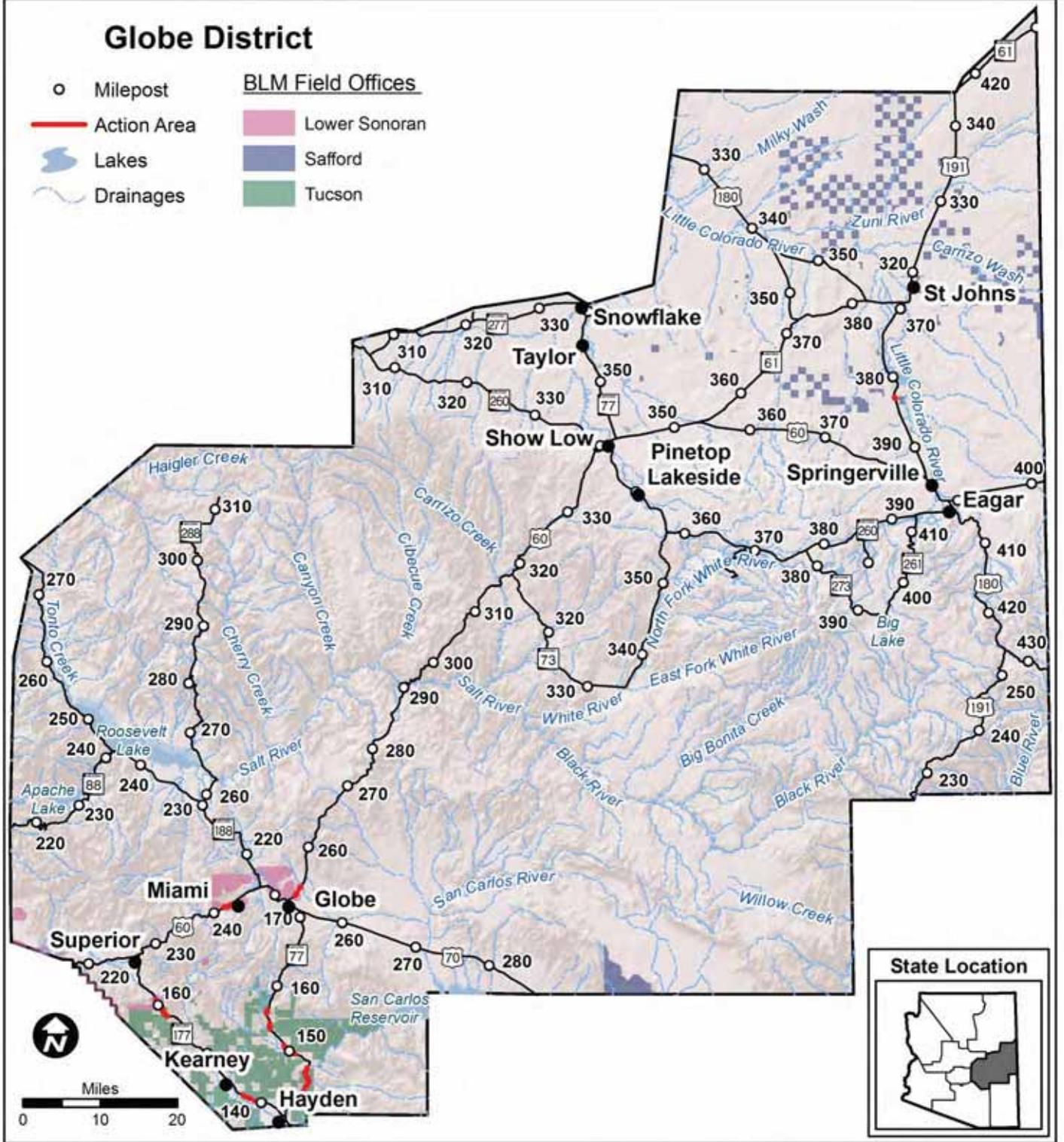


Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

Map Disclaimer: This map is intended for general siting purposes only.

# Globe District

- Milepost
- Action Area
- ☁ Lakes
- ~ Drainages
- BLM Field Offices
- Lower Sonoran
- Safford
- Tucson



Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

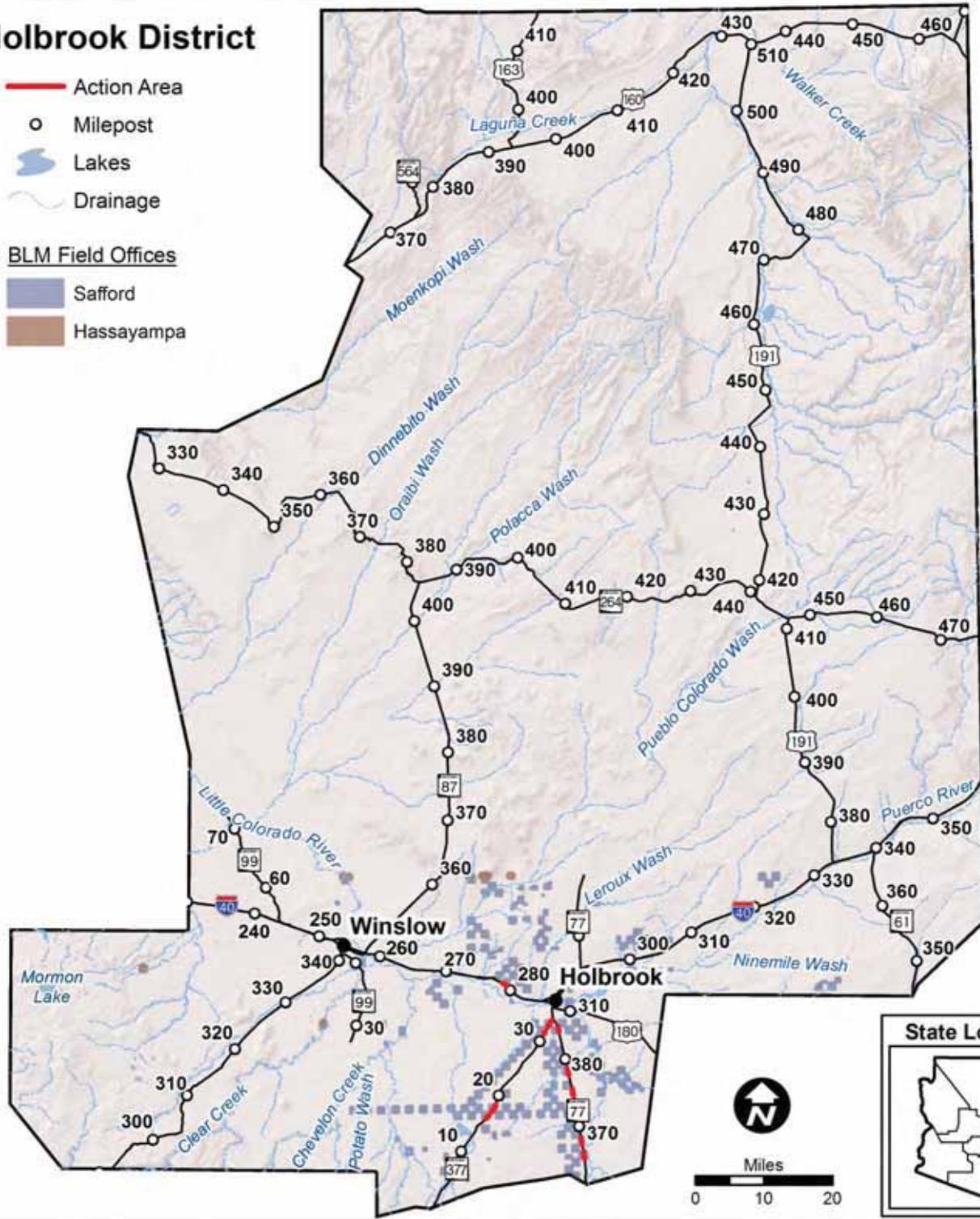
Map Disclaimer: This map is intended for general siting purposes only.

# Holbrook District

- Action Area
- Milepost
-  Lakes
-  Drainage

## BLM Field Offices

-  Safford
-  Hassayampa



Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

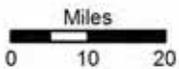
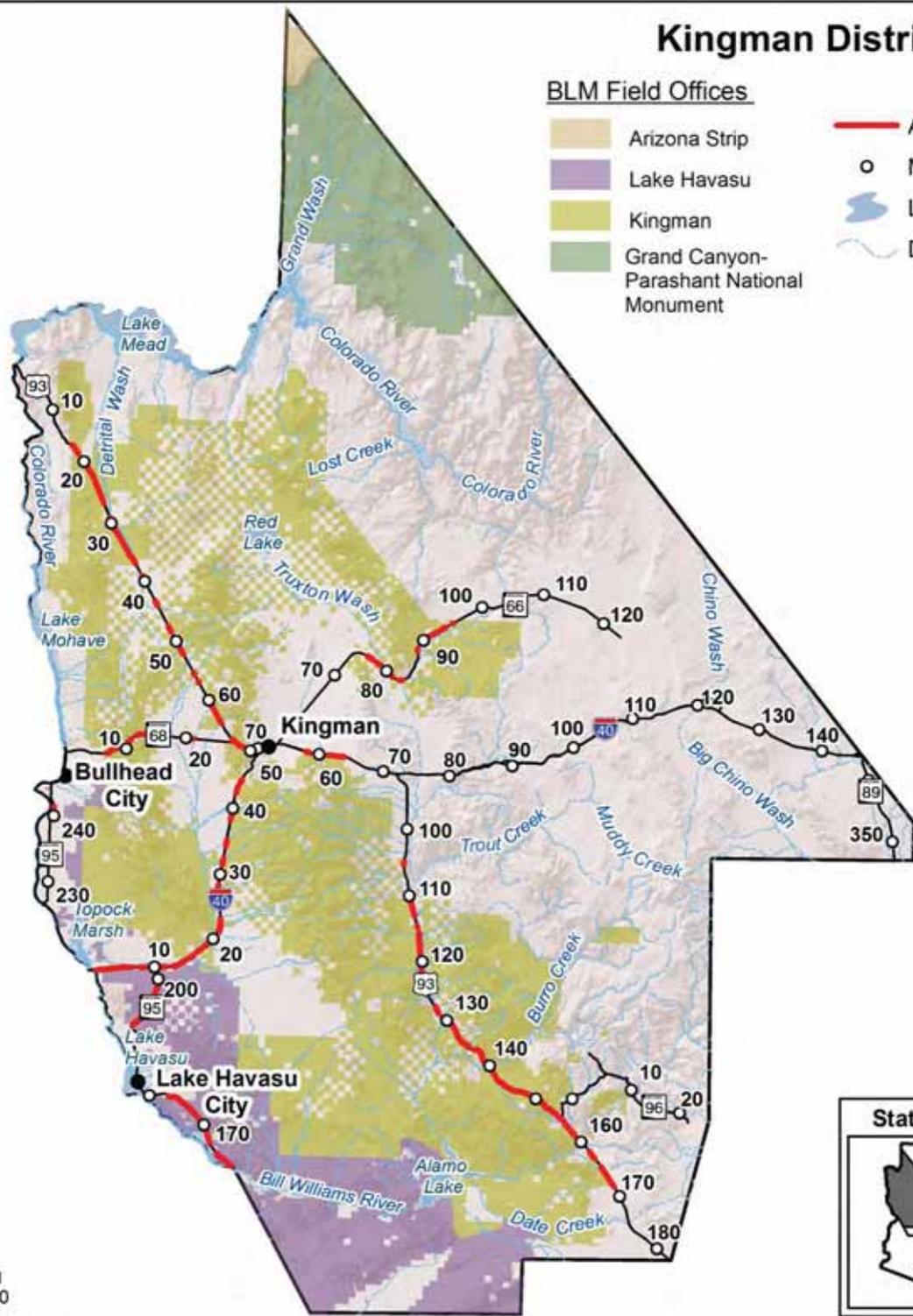
Map Disclaimer: This map is intended for general siting purposes only.

# Kingman District

## BLM Field Offices

- Arizona Strip
- Lake Havasu
- Kingman
- Grand Canyon-Parashant National Monument

- Action Area
- Milepost
- Lakes
- Drainages

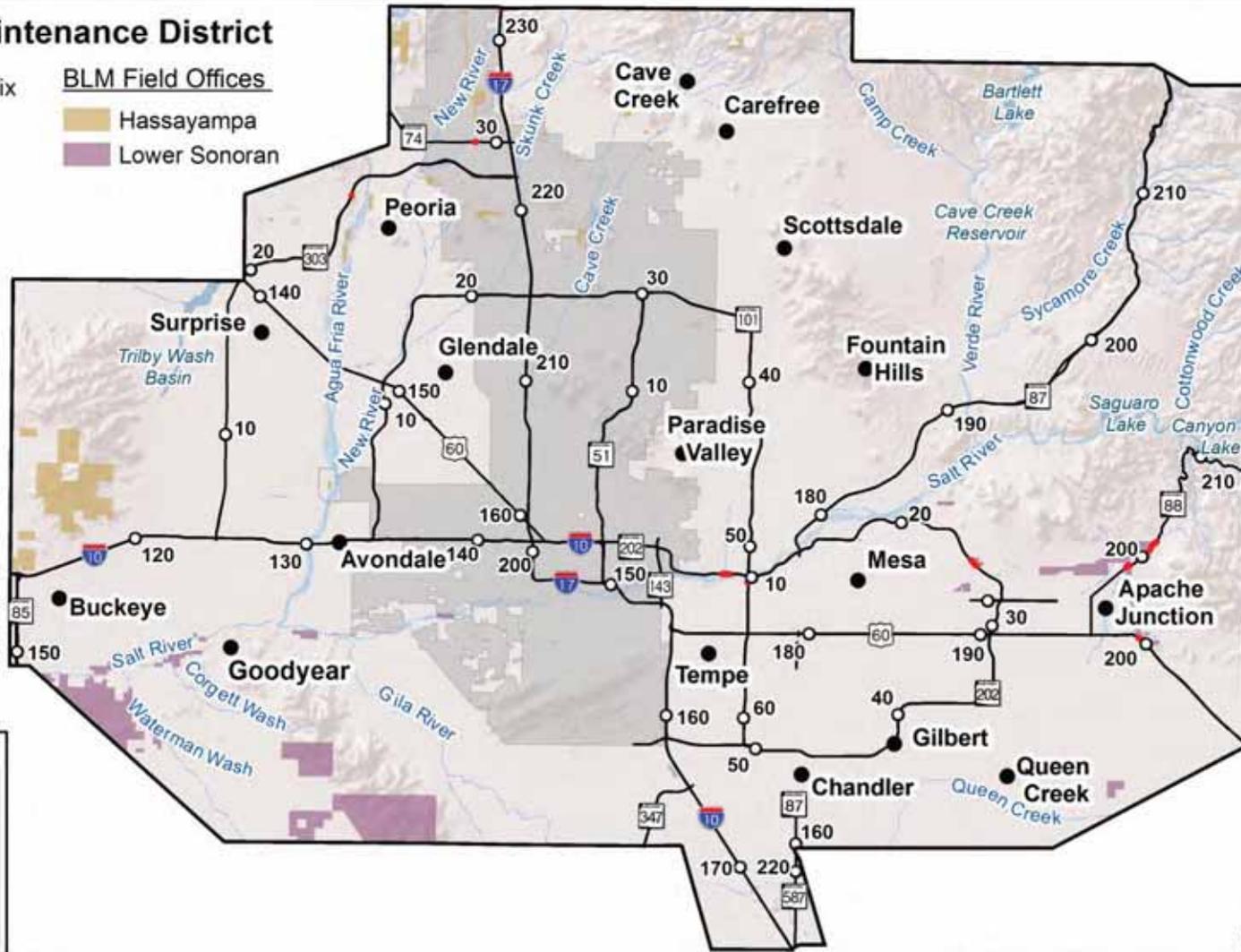


Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

Map Disclaimer: This map is intended for general siting purposes only.

# Phoenix Maintenance District

- City of Phoenix
- BLM Field Offices
- Milepost
- Hassayampa
- Lower Sonoran
- Action Area
- Drainages
- Lakes

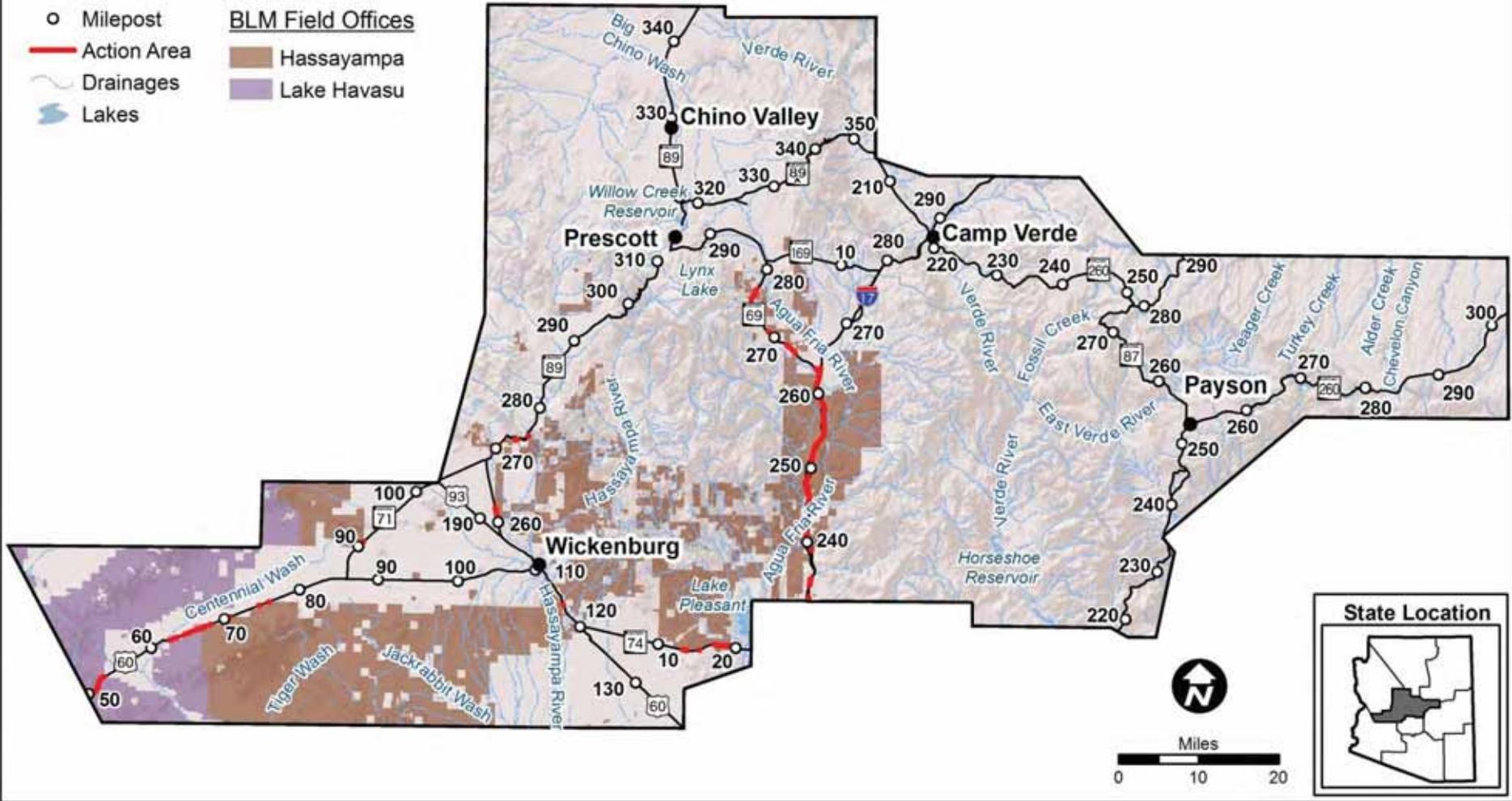


Source: ADOT ATIS (2010); BLM (2012)

Map Disclaimer: This map is intended for general siting purposes only.

# Prescott District

- Milepost
  - Action Area
  - ~ Drainages
  - ☪ Lakes
- | BLM Field Offices   |             |
|---|-------------|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c08040; border: 1px solid black;"></span> | Hassayampa  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #804080; border: 1px solid black;"></span> | Lake Havasu |

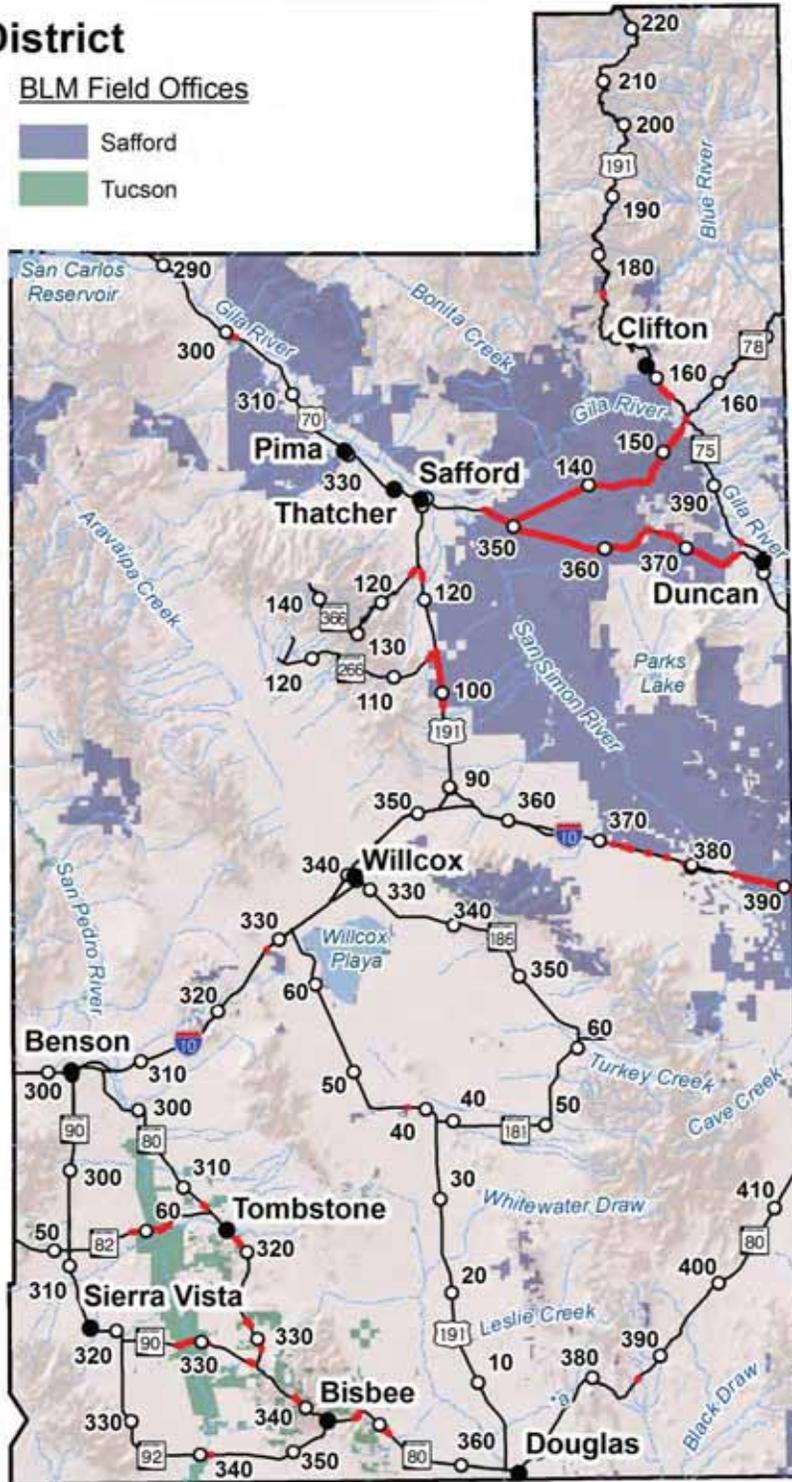


Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

Map Disclaimer: This map is intended for general siting purposes only.

# Safford District

- Action Area
- Milepost
- Lakes
- Drainages
- BLM Field Offices
- Safford
- Tucson



Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

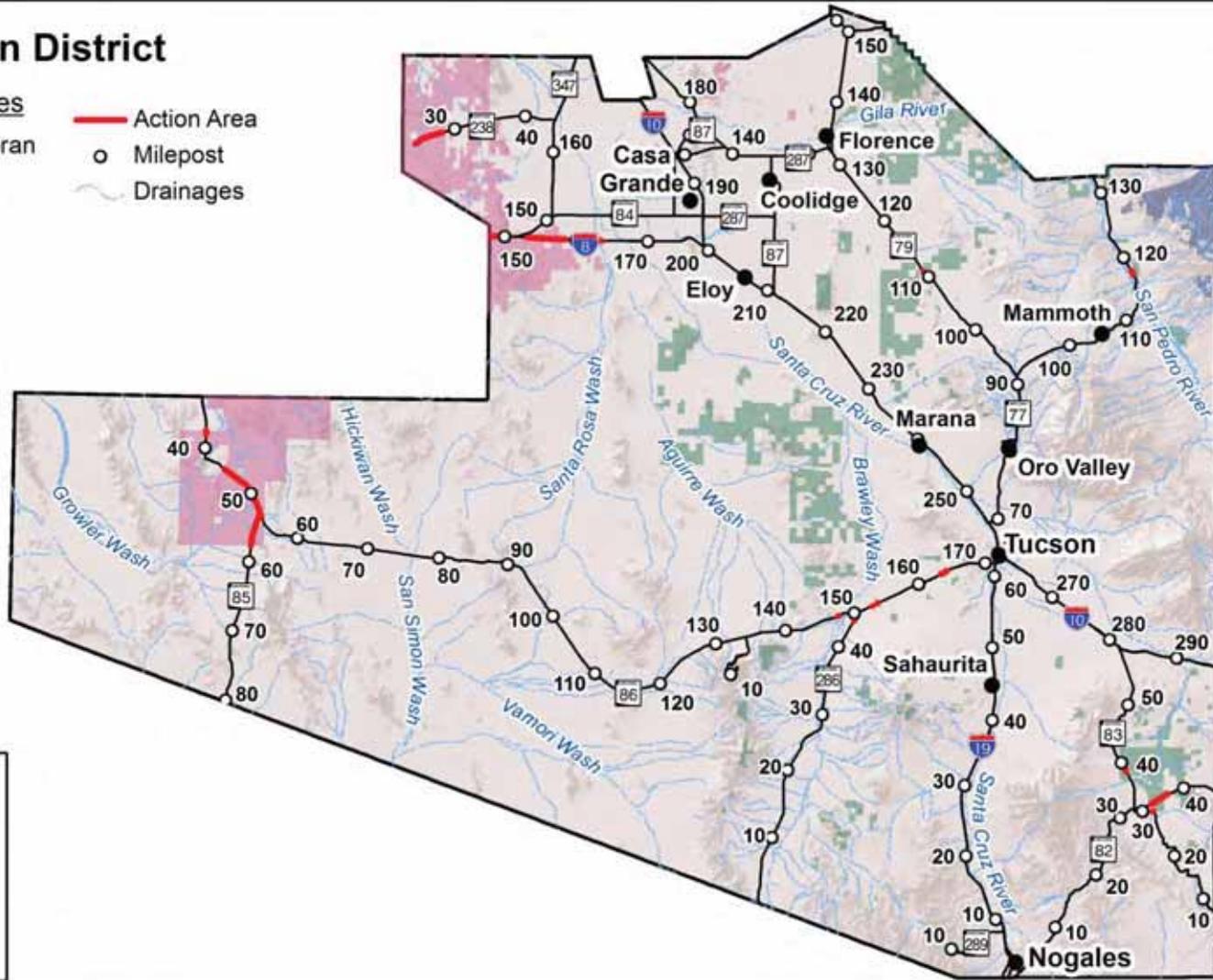
Map Disclaimer: This map is intended for general siting purposes only.

# Tucson District

## BLM Field Offices

- Lower Sonoran
- Safford
- Tucson

- Action Area
- Milepost
- Drainages



Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

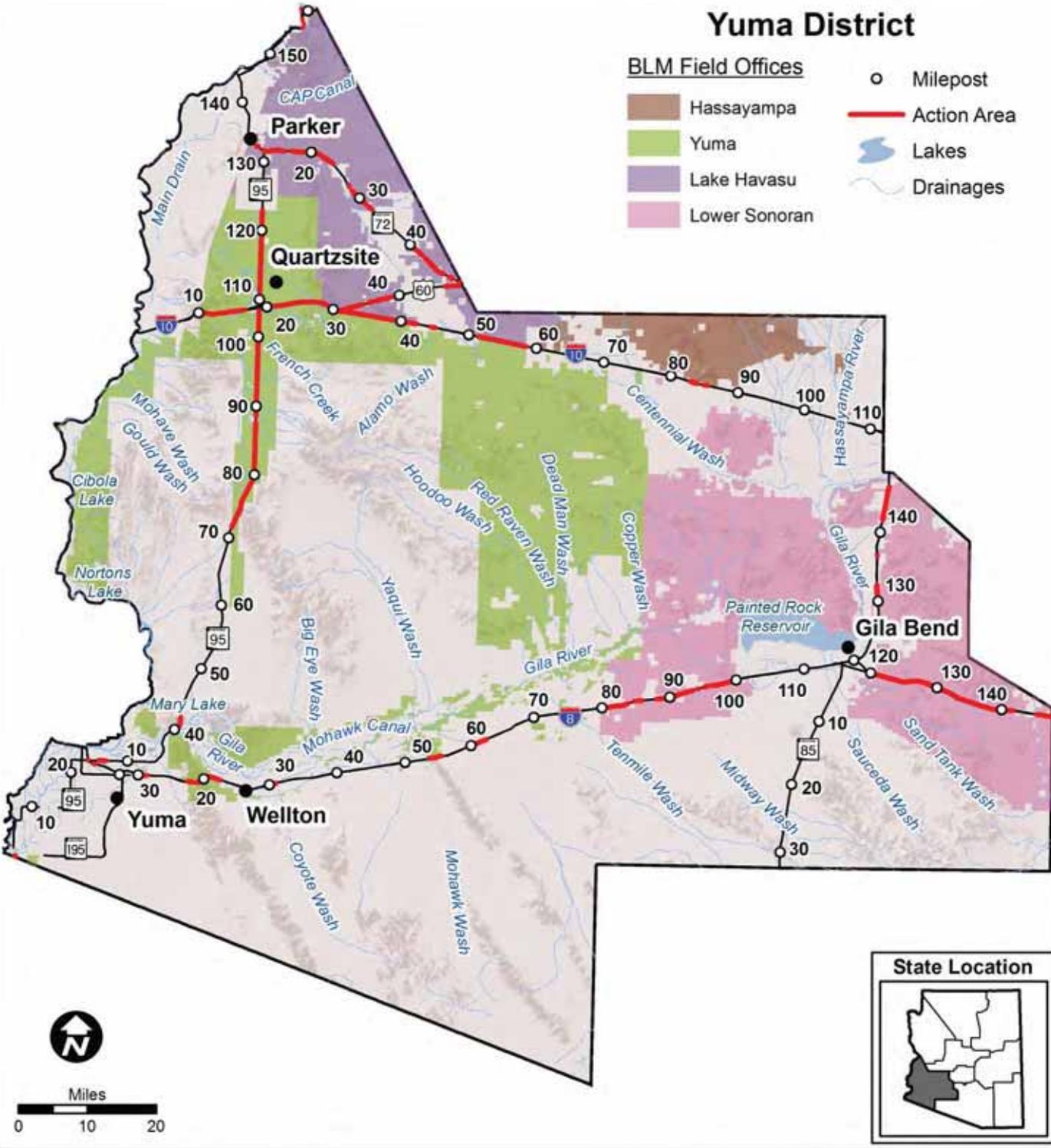
Map Disclaimer: This map is intended for general siting purposes only.

# Yuma District

## BLM Field Offices

- Hassayampa
- Yuma
- Lake Havasu
- Lower Sonoran

- Milepost
- Action Area
- Lakes
- Drainages



Source: ADOT ATIS (2010); BLM (2012); ESRI (2013)

Map Disclaimer: This map is intended for general siting purposes only.

## **Appendix B**

Herbicides and Adjuvants Approved for Use on  
BLM-administered Lands (*from BLM PEIS 2007*)

This appendix includes the characteristics of those herbicides and adjuvants which are approved for use within the action area based on the active ingredient approved for use on BLM Lands under the PEIS Record of Decision (BLM PEIS 2007). For adjuvant manufacturer information and registration numbers, refer to the adjuvant list in *Vegetation Treatments on BLM Lands in 17 Western States Final Biological Assessment* (BLM 2007).

**Characteristics of Herbicides Approved for Use on BLM-Administered Lands (from BLM PEIS 2007)**

Herbicide (Active Ingredient)	Characteristics and Target Species	Species Selective Herbicide	Target Vegetation Types				
			Annual	Perennial	Broadleaf	Grasses	Riparian/ Aquatic
2, 4-D	Foliar absorbed; post-emergent. Targets kochia, mustards, and Russian thistle.	X	X	X	X		X
Bromacil	Inhibits photosynthesis. Targets kochia, Russian thistle, weeds, and brush.		X		X	X	
Chlorsulfuron	Inhibits enzyme activity. Targets biennial thistles, annual and perennial mustards	X	X	X	X	X	
Clopyralid	Mimics plant hormones. Targets knapweeds, mesquite, starthistle, and other thistles.	X	X	X	X		
Dicamba	Growth regulator. Targets knapweeds, kochia, Russian thistle, other thistles, brush, and trees.		X	X	X		
Diflufenzopyr	Post-emergent; inhibits auxin transport. Controls annual and perennial broadleaf weeds and suppresses annual grasses.		X	X	X	X	
Diflufenzopyr +Dicamba	Post-emergent; inhibits auxin transport. Targets knapweeds, kochia, Russian thistle, and other thistles.				X		
Diquat	Foliar applied. Targets giant salvinia, hydrilla, and watermilfoils.						X
Diuron	Pre-emergent control. Targets kochia, Russian thistle, and weeds.		X	X	X	X	
Fluridone	Controls submersed aquatic plants. Targets hydrilla and watermilfoils.						X
Glyphosate	Targets grasses, weeds, woody shrubs, and sedges.		X	X	X	X	X
Hexazinone	Foliar or soil applied; inhibits photosynthesis. Targets mesquite and scrub oak.		X	X	X	X	

Herbicide (Active Ingredient)	Characteristics and Target Species	Species Selective Herbicide	Target Vegetation Types				
			Annual	Perennial	Broadleaf	Grasses	Riparian/ Aquatic
Imazapic	Post-emergent. Targets downy brome, leafy spurge, medusahead, and mustards.	X			X	X	
Imazapyr	Pre-and post-emergent; absorbed through foliage and roots. Targets tamarisk.		X	X	X		X
Metsulfuron methyl	Post-emergent; inhibits cell division in roots and shoots. Targets mustards and biennial thistles.	X	X	X	X		
Picloram	Foliar and root absorption; mimics plant hormones. Targets knapweeds, leafy spurge, and starthistle.	X	X	X	X		
Sulfometuron methyl	Pre-and post-emergent; inhibits cell division. Targets downy brome, mustards, and medusahead.				X	X	
Tebuthiuron	Soil activated; pre-and post-emergent. Targets creosotebush, oak, Russian olive, and sagebrush.		X	X	X	X	
Triclopyr	Growth regulator. Targets mesquite and tamarisk.				X		X

**Adjuvants Approved for Use on Public Lands (from BLM 2007)**

Adjuvant Class	Adjuvant Type	Trade Name
Surfactant	Non-ionic	Spec 90/10
		Optima
		Induce
		Actamaster Spray Adjuvant
		Actamaster Soluble Spray
		Adj.
		Activator 90
		LI-700
		Spreader 90
		UAP Surfactant 80/20
		X-77
		Cornbelt Premier 90
		Spray Activator 85
		R-11
		R-900
Super Spread 90		
Super Spread 7000		

Adjuvant Class	Adjuvant Type	Trade Name
	Spreader/Sticker	Cohere
		R-56
		Attach
		Bond
		Tactic
		Lastick
	Silicone-based	Aero Dyne-Amic
		Dyne-Amic
		Kinetic
		Freeway
		Phase
		Phase II
		Silwet L-77
		Sylgard 309
		Syl-Tac
Oil-based	Crop Oil Concentrate	Crop Oil Concentrate
		Herbimax
		Agri-Dex
		R.O.C. Rigo Oil Conc.
		Mor-Act
	Methylated Seed Oil	Methylated Spray Oil Conc.
		MSO Concentrate
		Hasten
		Super Spread MSO
	Vegetable Oil	Amigo
		Competitor
	Fertilizer-based	Nitrogen-based
Dispatch, Dispatch 111, Dispatch 2N, Dispatch AMS		
Flame		
Bronc, Bronc Max, Bronc Max EDT, Bronc Plus Dry EDT, Bronc Total		
Cayuse Plus		
Special Purpose or Utility	Buffering Agent	Buffers P.S.
		Tri-Fol
	Colorants	Hi-Light, Hi-Light WSP
		Marker Dye
		Signal
	Compatibility/Suspension Agent	E Z MIX
		Support
		Blendex VHC
	Deposition Aid	ProMate Impel
		Pointblank
		Strike Zone DF
		Intac Plus
		Liberate
		Reign
		Weather Gard
Bivert		
EDT Concentrate		
Sta Put		

Adjuvant Class	Adjuvant Type	Trade Name
	Defoaming Agent	Fighter-F 10, Fighter-F Dry
		Foam Buster
		Cornbelt Defoamer
		No Foam
	Diluent/Deposition Agent Foam Marker	Improved JLB Oil Plus
		Align
		R-160
	Invert Emulsion Agent	Redi-vert II
	Tank Cleaner	Wipe Out
		All Clear
		Tank and Equipment Cleaner
		Kutter
		Neutral-Clean
		Cornbelt Tank-Aid
	Water Conditioning	Blendmaster
		Choice, Choice Xtra, Choice Weather Master
		Cut-Rate

## **Appendix C**

### **Ecotoxicity Ratings for Herbicide Active Ingredients Approved for Use on BLM-administered Lands (*from USFWS 2007f*)**

**Ecotoxicity Ratings for Herbicide Active Ingredients Approved for Use on BLM-administered Lands(from USFWS 2007f)**

Herbicide				Species toxicity groups*H §																		
Common Name/ Active Ingredient	Alternative Name/ e.g., trade name®	Use**	CASRN	L-MA	P-MA	S-MA	G-AV	L-AV	P-AV	S-AV	W-AV	REP	A-AM	T-AM	CW-F	WW-F	A-AR	BEE	T-AR	FW-M	PLANT	
Aminopyralid		C,ROW, R/P, U	150114-71-9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	D
Bromacil		C,U	314-40-9	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	NS
Chlorsulfuron		C	64902-72-3	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	0	0	0	0	0	NS
Clopyralid		C,R/P, U	1702-17-6	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	0	0	0	0	0	D
2, 4-D (acid formulations)	Chlorophenoxy-Acetic Acid	C,R/P, U	94-75-7	1e	1e	1e	1e	1e	1e	1e	1e	1e	1	1	1	0	1	0	1	1	1	D
2, 4-D (aquatic amine salt formulations)		W	Various CASRNs	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	2		2	2	2	Daq
2, 4-D (nonaquatic amine salt formulations)		C,R/P, U	Various CASRNs	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	2		2	2	2	D
2, 4-D (aquatic ester formulations)	e.g., Aqua-kleen	W	Various CASRNs	1	1	1	0	0	0	0	0	0	1	1	2	2	3		3	3	3	Daq
2, 4-D (nonaquatic ester formulations)		C,R/P, U	Various CASRNs	1	1	1	0	0	0	0	0	0	1	1	2	2	3		3	3	3	D
Dicamba	Anisic Acid	C,R/P	1918-00-9	2e	2e	2e	2e	2e	2e	2e	2e	2e	1	2e	1	1	1	0	1	1	1	D
Diflufenzopyr		C	109293-97-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	D
Diquat (aquatic)	Diquat dibromide	W	85-00-7	2	1	1	1	1	1	1	1	1	1	1	1	1	2	0	2	2	2	NSaq
Diquat (nonaquatic)	Diquat dibromide	C,U	85-00-7	2	1	1	1	1	1	1	1	1	1	1	1	1	2	0	2	2	2	NS
Diuron (see note below)		C	330-54-1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	0	2	2	2	NS
Fluridone (aquatic)	e.g., Sonar	W	5976-60-4	0	0	0	0	0	0	0	0	0	1	1	1	1	1		1	1	1	NSaq
Fluroxypyr (acid formulation)		C,P	69377-81-7	1	1	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	D
Glyphosate (nonaquatic)	e.g., Roundup	C,R/P, U, W	1071-83-6	1e	1e	1e	1e	1e	1e	1e	1e	1e	1	1	1	1	1	0	1	1	1	NS

**Ecotoxicity Ratings for Herbicide Active Ingredients Approved for Use on BLM-administered Lands(from USFWS 2007f)**

Herbicide				Species toxicity groups*H §																	
Common Name/ Active Ingredient	Alternative Name/ e.g., trade name®	Use**	CASRN	L-MA	P-MA	S-MA	G-AV	L-AV	P-AV	S-AV	W-AV	REP	A-AM	T-AM	CW-F	WW-F	A-AR	BEE	T-AR	FW-M	PLANT
Hexazinone		C,F,R/P	51235-04-2	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	1	0	1	1	NS f
Imazapic		C	1928-43-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS
Imazapyr (technical formulation)		C,ROW, R/P	81334-34-1	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	0	0	0	0	NS
Imazapyr (aquatic)	e.g., Habitat	W	81334-34-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NSaq
Imazapyr (nonaquatic)	e.g., Arsenal	C,ROW, R/P	81334-34-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS
Metsulfuron-methyl (see note below)		C	74223-64-6	1e	1e	1e	1e	1e	1e	1e	1e	1e	1	1e	1	1	1	1	1	0	NS
Picloram (see note below)	e.g., Tordon	C,R/P	1918-02-1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	NS
Rimsulfuron		C	122931-48-0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS
Sulfometuron-methyl	Sulfometuron	R/P,ROW	74222-97-2	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	1	NS
Tebuthiuron		R/P,U	34104-18-1	1	1	1	0	0	0	0	0	0	1	1	1	1	0	1	1	0	NS f
Triclopyr (amine salt formulations)	e.g., Garlon 3A	F,R/P, ROW	55226-06-3	1e	1e	1e	1e	1e	1e	1e	1e	1e	0	1e	0	0	0	0	0	0	D
Triclopyr (ester formulations)	e.g., Garlon 4	F,R/P, ROW	55335-06-3	1	1	1	0	0	0	0	0	0	2	2	2	2	1	0	1	1	D

\*\* C = Cropland, F = Forest, P = Pasture, R/P = Rangeland and/or Pasture, ROW = Right-of-way, U = Urban, W = Water

\* A-AM = Aquatic Amphibian CW-F = Cold Water Fish G-AV= Gallinaceous Avian L-MA= Large Mammal P-MA = Predatory Mammal S-AV = Small Avian T-AM = Terrestrial Amphibian W-AV =Waterfowl Avian  
A-AR = Aquatic Arthropod FW-M = Freshwater Mollusk L-AV = Large Avian P-AV = Predatory Avian REP = Reptile S-MA = Small Mammal T-AR =Terrestrial Arthropod WW-F =Warm Water Fish

H Animal ecotoxicity classes: 0 =practically non-toxic, 1 =slightly to moderately toxic, 2 = highly toxic, 3 =very highly toxic; Plant ecotoxicity classes: D= dicot-specific, NS = non-specific for dicots or monocots

§ Subscripts: aq = aquatic formulation, e = eye irritation rating, f = formulation-dependent

Notes:  
diuron = herbicide may be released as urine into waterbodies by ungulates that have grazed on field-applied  
metsulfuron = metsulfuron is rated as Class 1 in toxicity groups for fish and amphibians due to reported mortality incidents not indicated by toxicity data  
picloram = picloram is used mostly for broad-leaved plants but can harm some grasses and other monocots

## **Appendix D**

Standard Operating Procedures *(from BLM PEIS 2007)*

## Relevant Excerpts from BLM’s Standard Operating Procedures for Applying Herbicides

Standard Operating Procedures (SOPs) were developed in the BLM PEIS to minimize risks to the environment during the implementation of herbicide treatment programs. This appendix includes the SOPs pertinent to this analysis. For the complete list of Standard Operating Procedures for Applying Herbicides, refer to the *Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement*, Record of Decision Appendix B (BLM PEIS 2007).

Resource Category	Standard Operating Procedure
<p>General  <i>Chemical Pest Control</i> (Handbook H-9011-1), <i>Safety</i> (Manual 1112), <i>Chemical Pest Control</i> (Manual 9011), <i>Expenditure of Rangeland Insect Pest Control Funds</i> (Manual 9012), <i>Integrated Weed Management</i> (Manual 9015), and <i>Integrated Pest Management</i> (Manual 9220)</p>	<ul style="list-style-type: none"> <li>• Prepare operational and spill contingency plan in advance of treatment.</li> <li>• Select herbicide that is least damaging to the environment while providing the desired results.</li> <li>• Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures.</li> <li>• Apply the least amount of herbicide needed to achieve the desired result.</li> <li>• Follow herbicide product label for use and storage.</li> <li>• Have licensed applicators apply herbicides.</li> <li>• Use only USEPA-approved herbicides and follow product label directions and “advisory” statements.</li> <li>• Review, understand, and conform to the “Environmental Hazards” section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment.</li> <li>• Minimize the size of application area, when feasible.</li> <li>• Keep a copy of Safety Data Sheets (SDS) at work sites. SDSs are available for review at <a href="http://www.cdms.net/">http://www.cdms.net/</a>.</li> <li>• Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location.</li> <li>• Avoid accidental direct spray and spill conditions to minimize risks to resources.</li> <li>• Take precautions to minimize drift by not applying herbicides when winds exceed &gt;10 mph, or a serious rainfall event is imminent.</li> <li>• Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation.</li> <li>• Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species.</li> <li>• Clean OHVs to remove seeds.</li> </ul>
<p>Wetlands and Riparian Areas</p>	<ul style="list-style-type: none"> <li>• Use a selective herbicide and a wick or backpack sprayer.</li> <li>• Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance.</li> </ul>
<p>Fish and Other Aquatic Organisms  Wildlife and Fisheries Management (Manual 6500) and Habitat Management Plans (Manual 6780)</p>	<ul style="list-style-type: none"> <li>• Use appropriate buffer zones based on label and risk assessment guidance.</li> <li>• Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicides(s) used, and use spot rather than broadcast treatments.</li> <li>• Use appropriate application equipment/method near water bodies if the potential for off-site drift exists.</li> </ul>
<p>Soil  <i>Soil, Water, and Air Management</i> (Manual 7000)</p>	<ul style="list-style-type: none"> <li>• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected.</li> <li>• Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility.</li> <li>• Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.</li> </ul>

Resource Category	Standard Operating Procedure
<p>Water Resources  <i>Soil, Water, and Air Management</i> (Manual 7000)  and <i>Wild and Scenic Rivers</i> (Manual 8351)</p>	<ul style="list-style-type: none"> <li>• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs.</li> <li>• Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments.</li> <li>• Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions.</li> <li>• Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity.</li> <li>• Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction.</li> <li>• Minimize treating areas with high risk for groundwater contamination.</li> <li>• Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body.</li> <li>• Do not rinse spray tanks in or near water bodies.</li> <li>• Do not broadcast pellets where there is danger of contaminating water supplies.</li> <li>• Maintain buffers between treatment areas and water bodies.</li> <li>• Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.</li> <li>• Maintain adequate buffers for Wild and Scenic Rivers (1/4 mile on either side of river).</li> </ul>
<p>Wildlife  <i>Wildlife and Fisheries Management</i> (Manual 6500)  and <i>Habitat Management Plans</i> (Manual 6780)</p>	<ul style="list-style-type: none"> <li>• Use herbicides of low toxicity to wildlife, where feasible.</li> <li>• Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area.</li> <li>• Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.</li> </ul>
<p>Threatened, Endangered, and Sensitive Species  <i>Special Status Species</i> (Manual 6840)</p>	<ul style="list-style-type: none"> <li>• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs.</li> <li>• Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants.</li> <li>• Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.</li> </ul>

## **Appendix E**

### ESA Listed or Proposed Species Conservation Measures

## ***General Conservation Measures***

The general conservation measures included below were developed for general program implementation at the local level, and to provide a framework for the implementation of the programmatic and project-specific conservation measures derived from the BLM PEIS 2007, BLM 2007, and USFWS 2007f documents.

- Use only herbicides that have been approved in the BLM PEIS 2007 (refer to Appendix B)
- Habitat conservation measures must be followed based on special conditions in aquatic and terrestrial habitats
- Establish 30 foot buffer zones (or greater if specified in the species or herbicide-specific conservation measures) around perennial water courses, or wetland and riparian areas.
  - Do not directly apply herbicides to open water or aquatic habitats.
  - Use only manual application methods
  - Use only herbicides that are approved for use in riparian areas, wetlands and aquatic habitats within the buffer zones.
- Within designated buffer zones:
  - Use only specified approved herbicides.
  - Use specified application methods.
  - Do not use vehicle or off highway vehicle equipment off of established roads.
- Vehicles and equipment used during treatment activities shall be washed prior to leaving the equipment storage facility.
- All attached plant/vegetation and soil/mud debris shall be removed from vehicles and equipment prior to leaving a treatment location.
- All pretreatment special status species surveys shall be conducted by a qualified biologist.
- If herbicide treatments are planned within delineated suitable habitat areas for threatened, endangered and proposed (TEP) plants, conduct a species-specific presence/absence survey within 1 to 3 years prior to the treatment per the species-specific conservation measures.
  - Pretreatment surveys shall be conducted per protocol, or in the absence of a protocol, during the season and conditions in which the species is most likely to be encountered (e.g. flowering season, fruiting season). Contact the USFWS Arizona Ecological Services Office (AESO) (602.242.0210) for current approved survey protocols.
  - If individuals are found, the surveyed habitat is considered to be occupied even if the species is absent from the habitat for some portion during the calendar year (e.g. dormant period, subterranean period).
  - If individuals are found, do not apply herbicide within the appropriate avoidance distance specified in the species- or herbicide-specific conservation measures for plants or occupied habitat.
  - If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

- If herbicide treatments are planned within delineated suitable habitat for TEP animals, contact the USFWS AESO (602.242.0210) within 60 days prior to herbicide treatment to determine if the habitat is occupied.
  - If the USFWS requests that pretreatment surveys be conducted, pretreatment surveys shall be conducted per protocol, or in the absence of a protocol, during the season and conditions in which the species is most likely to be encountered (e.g. breeding season). Contact the USFWS Arizona Ecological Services Office (AESO) (602.242.0210) for current approved survey protocols.
  - Delineated suitable habitats are considered to be occupied even if the species is absent from the habitat for some portion during the calendar year (e.g. migration, hibernation).
  - Within occupied habitats, do not apply herbicide within the appropriate avoidance distance specified in the species- or herbicide-specific conservation measures.
  - If species occupancy is unknown and surveys have not been conducted during the most recent appropriate survey season prior to treatment, assume that the species is present, delineate species-specific suitable habitat, and apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat.

### ***Habitat Conservation Measures(from BLM 2007)***

The habitat conservation measures included below are based on programmatic habitat measures identified in *Vegetation Treatments on BLM Lands in 17 Western States Final Biological Assessment*, to protect TEP species or groups of TEP species (i.e. herpetofauna) which occupy Aquatic and/or Terrestrial habitats (BLM 2007).

#### Aquatic Habitats

- Do not use diquat, fluridone, glyphosate, or triclopyr BEE, in habitats where aquatic TEP species or TEP amphibians occur or may potentially occur.
- Avoid using glyphosate formulations that include R-11 in the future, and either avoid using any formulations with POEA, or seek to use the formulation with the lowest amount of POEA available, to reduce risks to aquatic organisms.
- Follow all instructions and SOPs to avoid spill and direct spray scenarios into aquatic habitats. Special care should be followed when transporting and applying 2,4-D, bromacil, clopyralid, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron, and triclopyr.
- Do not broadcast spray diuron, glyphosate, picloram, or triclopyr BEE in upland habitats adjacent to aquatic habitats that support (or may potentially support) aquatic TEP species under conditions that would likely result in off-site drift.
- In watersheds that support TEP species or their habitat, do not apply bromacil, diuron, tebuthiuron, or triclopyr BEE in upland habitats within ½ mile upslope of aquatic habitats that support aquatic TEP species under conditions that would likely result in surface runoff.

#### Terrestrial Habitats

- When conducting herbicide treatments in or near terrestrial habitat occupied by TEP herpetofauna, avoid using the following herbicides, where feasible: clopyralid, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.
- When conducting herbicide treatments in upland habitats occupied by TEP herpetofauna, do not broadcast spray 2,4-D, clopyralid, glyphosate, hexazinone, picloram or triclopyr; do not broadcast spray

these herbicides in areas adjacent to habitats occupied by TEP herpetofauna under conditions when spray drift onto the habitat is likely.

- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in upland habitats occupied by TEP herpetofauna, utilize the typical, rather than the maximum, application rate.
- If spraying imazapyr or metsulfuron methyl in or adjacent to upland habitats occupied by TEP herpetofauna, apply at the typical, rather than the maximum, application rate.

### ***Herbicide-specific Conservation Measures(from BLM PEIS 2007)***

The buffer zone distances included below are conservative estimates, based on the information from the *Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement*, and associated ERAs. A regression analysis model was created to combine herbicide information from the ERAs and site-specific characteristics (soil type, vegetation type, precipitation levels, and treatment method) to develop program specific buffer zones at a local level. If desired, the interactive spreadsheets could be used to calculate more precise, possibly smaller, buffers (BLM PEIS 2007).

#### 2,4-D

- Assess local site conditions when evaluating the risks from surface water runoff to TEP plants located within ½ mile down gradient from the treatment area.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not use 2,4-D in terrestrial habitats occupied by TEP herpetofauna; do not broadcast spray 2,4-D within ¼ mile of terrestrial habitat occupied by TEP herpetofauna.

#### Bromacil

- Do not apply within 1,200 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not apply in upland habitats within ½ mile upslope of aquatic habitats that support aquatic TEP species under conditions that would result in off-site drift.
- Do not apply in upland habitats upslope of aquatic habitats that support (or potentially support) TEP amphibians under conditions that would result surface runoff.

#### Chlorsulfuron

- Do not apply by ground methods within 1,200 feet of terrestrial TEP species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Clopyralid

- Since the risks associated with using a high boom are unknown, use only a low boom during ground applications of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply by ground methods at the typical application rate within 900 of terrestrial TEP species.
- Do not apply by ground methods at the typical application rate within ½ mile of terrestrial TEP species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Dicamba

- If using a low boom at the typical application rate, do not apply within 1,050 feet of terrestrial TEP plant species.

- If using a low boom at the maximum application rate, do not apply within 1,050 feet of terrestrial TEP plant species.
- If using a high boom, do not apply within 1,050 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Diflufenzopyr

- If using a low boom at the typical application rate, do not apply within 100 feet of terrestrial TEP plant species.
- If using a high boom, or a low boom at the maximum application rate, do not apply within 900 feet of terrestrial TEP plant species.
- If using a high boom, do not apply within 500 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Diflufenzopyr+dicamba (Overdrive<sup>®</sup>)

- If using a low boom at the typical application rate, do not apply within 100 feet of terrestrial TEP plant species.
- If using a low boom at the maximum application rate, do not apply within 900 feet of terrestrial TEP plant species.
- If using a high boom, do not apply within 900 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Diquat

- Do not apply by ground methods within 1,000 feet of terrestrial TEP species at the maximum application rate.
- Do not apply by ground methods within 900 feet of terrestrial TEP species at the typical application rate

#### Diuron

- Do not apply within 1,100 feet of terrestrial TEP species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not apply in upland habitats within ½ mile upslope of aquatic habitats that support aquatic TEP species under conditions that would result in off-site drift.
- Do not apply in upland habitats upslope of aquatic habitats that support (or potentially support) TEP amphibians under conditions that would result in surface runoff.

#### Fluridone

- Since effects on terrestrial TEP plant species are unknown, do not apply within ½ mile of terrestrial TEP species.

#### Glyphosate

- Since the risks associated with using a high boom are unknown, use only low boom applications of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate within 50 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate within 300 feet of terrestrial TEP plant species.

- Do not broadcast spray in upland habitats adjacent to aquatic habitats that support (or may potentially support aquatic TEP species under condition that would likely result in off-site drift

#### Hexazinone

- Since the risks associated with using a high boom are unknown, only apply this herbicide using a low boom within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate within 300 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate within 900 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Imazapic

- Do not apply within 25 feet of terrestrial TEP species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Imazapyr

- Since the risks associated with using a high boom are unknown, use only low boom applications of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate, within 900 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate, within ½ mile of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Metsulfuron Methyl

- Since the risks associated with using a high boom are unknown, use only a low boom application of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate within 900 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate within ½ mile of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Picloram

- Do not apply at any application rate, within ½ mile of terrestrial TEP plant species.
- Assess local site conditions when evaluating the risks from surface water runoff to TEP plants located within ½ mile down gradient from the treatment area.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not broadcast spray in upland habitats adjacent to aquatic habitats that support (or may potentially support aquatic TEP species under conditions that would result in off-site drift.

#### Sulfometuron Methyl

- Do not apply within 1,500 feet of terrestrial TEP species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Tebuthiuron

- If using a low boom at the typical application rate, do not apply within 25 feet of terrestrial TEP plant species.
- If using a low boom at the maximum application rate or a high boom at the typical application rate, do not apply within 50 feet of terrestrial TEP plant species.

- If using a high boom at the maximum application rate, do not apply within 900 feet of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not apply in upland habitats within ½ mile upslope of aquatic habitats that support aquatic TEP species under conditions that would result in off-site drift.

#### Triclopyr Acid

- Since the risks associated with using a high boom are unknown, use only low boom applications of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate within 300 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate within ½ mile of terrestrial TEP plant species or aquatic habitats in which TEP plant species occur.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.

#### Triclopyr BEE

- Since the risks associated with using a high boom are unknown, use only a low boom application of this herbicide within ½ mile of terrestrial TEP plant species.
- Do not apply at the typical application rate within 300 feet of terrestrial TEP plant species.
- Do not apply at the maximum application rate within ½ mile of terrestrial TEP plant species.
- In areas where wind erosion is likely, do not apply within ½ mile of TEP plant species.
- Do not apply in upland habitats within ½ mile upslope of aquatic habitats that support aquatic TEP species under conditions that would result in off-site drift.
- Do not apply in upland habitats upslope of aquatic habitats that support (or potentially support) TEP amphibians under conditions that would result in surface runoff.

#### ***Threatened and Endangered Species-specific Conservation Measures (from BLM 2007; USFWS 2007f)***

These measures are derived from the *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service* and individual TEP species conservation measures identified in *Vegetation Treatments on BLM Lands in 17 Western States Final Biological Assessment* (BLM 2007, USFWS 2007f). Avoidance distances for several species are based on herbicide ecotoxicity ratings as determined in Table 2 of the *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service* (USFWS 2007f). Ecotoxicity ratings pertinent to this analysis are included in Appendix C of this document. Refer to the text below for details of the specific protective measure recommendations used for each species.

#### Arizona Cliffrose

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Arizona cliffrose in suitable habitat along US Highway 93 within 3 years prior to treatment.

- If Arizona cliffrose is found:
  - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

### Arizona Hedgehog Cactus

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Arizona hedgehog cactus in suitable habitat along State Route 77 within 3 years prior to treatment.
  - If Arizona hedgehog cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

**Bonytail Chub**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Colorado River on State Route 95S and State Route 95 should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Do not conduct herbicide treatments during bonytail chub spawning season (May through July) within ½ mile of the Colorado River along State Route 95 and State Route 95S.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

**Brady Pincushion Cactus**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Brady pincushion cactus in suitable habitat along United States Highway 89A during the survey season prior to treatment.
  - If Brady pincushion cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
    - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
    - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

### California Condor

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for experimental populations (#17) and for California condor (#46) (BLM 2007; USFWS 2007f).

The following measures will be implemented in Mitigation Area 1:

- Three days prior to herbicide application along State Route 389 and United States Highway 89A, the applicator shall contact the USFWS Field Office in Flagstaff (928.226.0614) to determine the nesting and roosting locations and status of any condors within 1 mile of the action area.
- Do not conduct herbicide treatments within ¼ mile of currently occupied nests, roosts or release sites.
- Do not use dicamba in Mitigation Area 1.
- Do not use 2,4-D or diuron in Mitigation Area 1 unless the action area has been surveyed for roadkill within 2 days prior to treatment and all carrion/roadkill has been removed prior to spraying.
- Do not broadcast spray clopyralid, diuron, glyphosate, hexazinone, picloram, or triclopyr within Mitigation Area 1; do not broadcast spray these herbicides in areas adjacent to California condor nesting or roosting habitat under conditions when spray drift onto the nesting or roosting habitat is likely.
- Where feasible, avoid use of the following herbicides within Mitigation Area 1: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.

The following measures will be implemented in Mitigation Areas 1, 2, and 3:

- The applicator shall avoid any interaction with condors and shall immediately contact the USFWS Field Office in Flagstaff (928.226.0614) if a condor is present within the action area. Any activity that could

result in harm to condors shall cease and shall not resume until the condor leaves on its own accord or as a result of individuals working under an appropriate permit from USFWS.

- Do not use dicamba in Mitigation Areas 1, 2 or 3.
- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or adjacent to California condor nesting or roosting habitat, apply at the typical, rather than the maximum, application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in California condor nesting or roosting habitat, utilize the typical, rather than the maximum, application rate.

Chiricahua Leopard Frog

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for Chiricahua leopard frog (#55) (BLM 2007, USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 83, State Route 90, and State Route 80.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable habitat along State Route 83, State Route 90, and State Route 80, to determine if the habitat is occupied by Chiricahua leopard frogs.
- If Chiricahua leopard frogs (adults, tadpoles and eggs) are present within the action area:
  - Do not apply herbicides that rate as Class 1 in the species toxicity group for Aquatic-Amphibian, or as Class 2 or Class 3 for the species toxicity group Aquatic Arthropod and/or Terrestrial Arthropod (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the edge of the annual high water line of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the Chiricahua leopard frog occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet	300 feet
Liquid	30 feet	350 feet*
Ultra-low volume or dust	400 feet	400 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size.		

- Do not apply herbicides that rate as Class 2 in the species toxicity group for Aquatic-Amphibian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the edge of the annual high water line of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the Chiricahua leopard frog occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species occupancy is unknown along State Route 83, State Route 90, and State Route 80, assume that the species is present, delineate suitable Chiricahua leopard frog habitat within the action area and apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat.

### Fickeisen Plains Cactus

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Fickeisen plains cactus on suitable substrates along United States Highway 89A during the survey season prior to treatment.
  - If Fickeisen plains cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

Gierisch Mallow

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Spray individual target plants by hand wand only within Gierisch mallow critical habitat along Interstate 15.
- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of Gierisch mallow critical habitat and use only manual applications of these herbicides within ½ mile of the critical habitat to protect pollinators for the Gierisch mallow.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

Holmgren Milk-Vetch

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Holmgren milk-vetch within suitable habitat along Interstate 15 during the survey season prior to treatment.
  - If Holmgren milk-vetch is found:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

## Huachuca Water Umbel

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in small aquatic habitats (#35), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within 1 mile of suitable habitat along State Route 82 and State Route 90.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable habitat along State Route 82, and State Route 90, to determine if the habitat is occupied by Huachuca water umbel.
- If Huachuca water umbel are present within the action area:
  - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the edge of the waterbody or wetland, or any contributing channel or tributary to the waterbody or wetland in which the plant occurs.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet*	450 feet*
<b>Alternative Buffer Zones:</b> * An avoidance distance of 350 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size.		

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species occupancy is unknown along State Route 82, and State Route 90, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat.

## Mojave Desert Tortoise

These species specific conservation measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for desert tortoise (#53) (USFWS 2007f).

- In desert tortoise habitat, conduct herbicide treatments during the fall and winter months (October 15 through March 15), when desert tortoises are least active.
- If Mojave Desert tortoises are encountered during herbicide treatments, application shall cease and shall not resume until the tortoise moves over 100 feet from treatment area on its own accord.
- Do not use dicamba within suitable habitat for Mojave Desert tortoise along I-15.
- Use only sprays with coarse droplet sizes within suitable habitat for Mojave Desert tortoise along I-15.

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

Narrow-headed Gartersnake

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for species in small aquatic habitat or shallows of large waterbodies (#26) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 75, United States Highway 70 and United States Highway 191, or within 1 mile upstream from suitable habitat along any contributing channel, tributary or spring run.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within 1 mile of a perennial waterway along State Route 75, United States Highway 70 and United States Highway 191, to determine if the habitat is occupied by narrow-headed gartersnake.
- If narrow-headed gartersnakes are present:
  - Do not use herbicides that have a species toxicity rating of Class 0 or Class 1 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet*	300 feet
Liquid	30 feet*	350 feet <sup>H</sup>
Ultra-low volume or dust	400 feet <sup>H</sup>	400 feet <sup>H</sup>
<b>Alternative Buffer Zones:</b> * An avoidance distance of 10 feet may be used if the herbicide application and formulation is approved by USFWS <sup>H</sup> An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that have a species toxicity rating of Class 2 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species occupancy is unknown along State Route 75, United States Highway 70 and United States Highway 191, assume that the species is present, delineate suitable narrow-headed gartersnake habitat within the action area and apply the appropriate species and herbicide-specific conservation measures to the delineated suitable habitat.

**Northern Mexican Gartersnake**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for species in small aquatic habitat or shallows of large waterbodies (#26) (USFWS 2007f).

- Do not use 2,4-D, diquat, fluridone glyphosate, or imazapyr within suitable habitat along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, or within 1 mile upstream from suitable habitat along any contributing channel, tributary or spring run.
- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within 1 mile of a perennial waterway along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, to determine if the habitat is occupied by northern Mexican gartersnake.
- If northern Mexican gartersnakes are present:
  - Do not use herbicides that have a species toxicity rating of Class 0 or Class 1 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	30 feet*	300 feet
Liquid	30 feet*	350 feet <sup>H</sup>
Ultra-low volume or dust	400 feet <sup>H</sup>	400 feet <sup>H</sup>
<b>Alternative Buffer Zones:</b> * An avoidance distance of 10 feet may be used if the herbicide application and formulation is approved by USFWS <sup>H</sup> An avoidance distance of 300 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that have a species toxicity rating of Class 2 (Appendix C) in the species toxicity groups for Reptile or Warm Water Fish within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures). The avoidance distance applies to the occupied waterway, or any contributing channel, tributary or spring run within 1 mile upstream of the occupied waterway.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	50 feet	350 feet
Liquid	50 feet	350 feet
Ultra-low volume or dust	450 feet	450 feet

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species occupancy is unknown along State Route 75, State Route 77, State Route 82, State Route 83, State Route 90, State Route 92 and United States Highway 191, assume that the species is present, delineate suitable northern Mexican gartersnake habitat within the action area and apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat.

### Ocelot

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS (BLM 2007)

- Prior to herbicide treatment in the Globe, Safford or Tucson ADOT districts contact USFWS AESO (602.242.0210) to determine if any recent sightings of ocelot have occurred near the treatment area.
- If an ocelot has been sighted within 6 months of the scheduled herbicide treatment:
  - Do not use 2,4-D, bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram and triclopyr within 5 miles of where the ocelot was sighted.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

### Peebles Navajo Cactus

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Peebles Navajo cactus on suitable substrates along Interstate 40 during the survey season prior to treatment.
  - If Peebles Navajo cactus are found within the action area:

- Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

Pima Pineapple Cactus

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Pima pineapple cactus within suitable habitat along State Route 83, State Route 86 and State Route 286 within 3 years prior to treatment.
  - If Pima pineapple cactus are found within the action area:
    - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

**Razorback Sucker**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Colorado River on State Route 95S and State Route 95 should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Do not conduct herbicide treatments during razorback sucker spawning season (January to May) within ½ mile of the Colorado River along State Route 95 and State Route 95S.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Colorado River shoreline along State Route 95S and State Route 95.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

**Siler Pincushion Cactus**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), for dicot plant species in open to semi-open canopy plant communities (#34), and for plant species with small pollinating insects (#39) (USFWS 2007f).

- Conduct pretreatment surveys for Siler pincushion cactus within suitable habitats along State Route 89 and State Route 389 during the survey season prior to treatment.

- If Siler pincushion cactus are found within the action area:
  - Do not apply herbicide within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the plant.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	60 feet
Liquid	20 feet	60 feet
Ultra-low volume or dust	150 feet	150 feet

- Do not apply herbicides that rate as Class 2 or Class 3 in the species toxicity group for Bee and/or Terrestrial Arthropod (Appendix C) within 300 feet of the plant and use only manual applications within ½ mile of the plant.
  - Herbicide applications using mechanized ground equipment should use either liquid streams or relatively course sprays to minimize spray drift.
  - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If species-specific presence/absence pretreatment surveys have not been conducted during the specified time-frame and appropriate season prior to the treatment, apply the appropriate species- and herbicide-specific conservation measures to the delineated suitable habitat area for the species.

### Sonoran Pronghorn

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS (BLM 2007).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within the action area along Interstate 8 in Yuma County and along State Route 85 in Pima County, to determine if action area is sensitive pronghorn habitat, such as foraging and fawning areas.
  - If sensitive pronghorn habitats area present within the action area:
    - Do not conduct herbicide treatments in fawning areas.
    - Do not broadcast spray herbicides in key pronghorn foraging areas.
    - Do not use 2,4-D within ¼ mile of sensitive Sonoran pronghorn habitat.
    - Where feasible, avoid use of the following: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, diflufenzopyr + dicamba, picloram, tebuthiuron, and triclopyr.
    - If broadcast spraying imazapyr, metsulfuron methyl, or tebuthiuron in or near Sonoran pronghorn habitat, apply at the typical, rather than the maximum, application rate
    - If conducting manual spot applications of glyphosate, hexazinone, imazapyr, metsulfuron methyl, tebuthiuron, or triclopyr utilize the typical, rather than the maximum, application rate.
    - Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If presence of sensitive pronghorn habitat is unknown along Interstate 8 in Yuma County and along State Route 85 in Pima County, assume that sensitive pronghorn habitat is present, delineate sensitive habitat areas within the action area and apply the appropriate species- and herbicide-specific conservation measures to the delineated sensitive habitat.

## Southwestern Willow Flycatcher

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for bird species that will not eat granular, pellet or treated seed formulations (#23) (BLM 2007, USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable riparian corridor habitats, to determine if the habitat is occupied by southwestern willow flycatcher.
- If southwestern willow flycatcher are present within or adjacent to the action area:
  - Do not conduct herbicide treatment within occupied riparian corridor habitat.
  - Do not conduct herbicide treatment within ½ mile of the occupied riparian corridor habitat during the southwestern willow flycatcher nesting season.
  - Do not use 2,4-D within occupied riparian corridor habitat, and do not broadcast spray 2,4-D within ¼ mile of the occupied riparian corridor habitat
  - Do not broadcast spray clopyralid, diquat, diuron, glyphosate, hexazinone, picloram, or triclopyr in areas adjacent to occupied habitat under conditions when spray drift onto the habitat is likely.
  - If broadcast spraying imazapyr or metsulfuron methyl adjacent to southwestern willow flycatcher habitat, apply at the typical, rather than the maximum, application rate.
  - Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	none	30 feet*
Liquid	none	30 feet*
Ultra-low volume or dust	80 feet	80 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet*	60 feet*
Liquid	10 feet*	60 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If southwestern willow flycatcher presence is unknown within suitable riparian corridor habitats, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures to the suitable riparian corridor habitat.

**Virgin River Chub**

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for species in large aquatic habitats (#27) (USFWS 2007f).

- Herbicide applications using mechanized ground equipment along the Virgin River on I-15 should use either liquid streams or relatively coarse sprays to minimize spray drift.
- Do not conduct herbicide treatments during Virgin River chub spawning season (April through July) within ½ mile of the Virgin River along Interstate 15.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

## Woundfin

These measures are based on the USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14) and for species in large aquatic habitats (#27) (USFWS 2007f).

- Do not conduct herbicide treatments during woundfin spawning season (April through July) within ½ mile of the Virgin River along Interstate 15.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet

**Alternative Buffer Zones:**  
\* An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size

- Do not use herbicides that rate as Class 2 in the species toxicity group for Warm Water Fish (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.

## Yellow-billed Cuckoo

These measures are based USFWS recommended protection measures for herbicide application within or adjacent to right-of-ways (#14), and for bird species that will not eat granular, pellet or treated seed formulations (#23) (USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment within suitable riparian corridor habitats, to determine if the habitat is occupied by yellow-billed cuckoo.
- If yellow-billed cuckoo are present within or adjacent to the action area:
  - Do not conduct herbicide treatment within the occupied riparian corridor habitat.
  - Do not conduct herbicide treatment within ¼ mile of the occupied riparian corridor habitat during the yellow-billed cuckoo nesting season.

- Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	none	30 feet*
Liquid	none	30 feet*
Ultra-low volume or dust	80 feet	80 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of the occupied riparian corridor habitat.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet*	60 feet*
Liquid	10 feet*	60 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance is unnecessary for these formulations if the herbicide is placed in the soil below a 1½-inch depth.		

- Herbicide applications using mechanized ground equipment should use either liquid streams or relatively coarse sprays to minimize spray drift.
- If yellow-billed cuckoo present is unknown within suitable riparian corridor habitats, assume that the species is present, and apply the appropriate species- and herbicide-specific conservation measures to the suitable riparian corridor habitat.

### Yuma Clapper Rail

These measures are based on applicable conservation measures from the Final BA for the BLM PEIS and USFWS recommended protection measures for species in large aquatic habitats (#27) with avoidance distances based on the ecotoxicity ratings for the Small Avian toxicity group (BLM 2007, USFWS 2007f).

- Contact the USFWS AESO (602.242.0210) prior to herbicide treatment along State Route 95S, State Route 95 near the Colorado River and Interstate 15 near the Virgin River, to determine if the habitat is occupied by Yuma clapper rail.
- If Yuma clapper rails are present
  - Do not conduct herbicide treatment within ½ mile of the occupied habitat during the nesting season.
  - Do not use 2,4-D within occupied habitat, and do not broadcast spray 2,4-D within ¼ mile of the occupied habitat

- If broadcast spraying metsulfuron methyl in or adjacent to Yuma clapper rail habitat, apply at the typical, rather than the maximum, application rate.
- If conducting manual spot applications of, hexazinone, or triclopyr to vegetation in Yuma clapper rail habitat, utilize the typical, rather than the maximum, application rate.
- Do not broadcast spray clopyralid, diquat, diuron, glyphosate, hexazinone, picloram, or triclopyr in areas adjacent to occupied habitat under conditions when spray drift onto the habitat is likely.
- Do not use herbicides that rate as Class 1 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of suitable habitat along the Colorado River shoreline along State Route 95S and State Route 95 or suitable habitat along the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	10 feet	50 feet
Liquid	10 feet	80 feet*
Ultra-low volume or dust	150 feet	150 feet
<b>Alternative Buffer Zones:</b> * An avoidance distance of 50 feet may be used if herbicide is applied by a sprayer with low pressure nozzles that deliver a spray ranging from coarse to very coarse in droplet size		

- Do not use herbicides that rate as Class 2 in the species toxicity group for Small Avian (Appendix C) within the following appropriate avoidance distance (or greater if specified in the herbicide-specific conservation measures) of suitable habitat along the Colorado River shoreline along State Route 95S and State Route 95 or suitable habitat along the Virgin River floodplain along Interstate 15.

Herbicide Formulations	Herbicide Application Method	
	Manual	Mechanized Ground
Solid	20 feet	80 feet
Liquid	20 feet	100 feet
Ultra-low volume or dust	200 feet	200 feet

- Establish buffer zones for other special conditions based on the herbicide-specific conservation measures.
- If Yuma clapper rail presence is unknown along the Colorado River along State Route 95S and State Route 95 or along the Virgin River along Interstate 15, assume that the species is present, delineate suitable Yuma clapper rail habitat within the action area, and apply the appropriate species- and herbicide-specific conservation measures to the suitable habitat.

## **Appendix F**

Evaluated ESA Listed or Proposed Species Organized by  
ADOT District and BLM Field Office

**ESA Listed or Proposed Species by ADOT District and BLM Field Office**

Common Name	Scientific Name	Status <sup>1</sup>	ADOT District									BLM Field Office								
			Flagstaff	Globe	Holbrook	Kingman	Phoenix	Prescott	Safford	Tucson	Yuma	Arizona Strip	Grand Canyon-Parashant	Hassayampa	Kingman	Lake Havasu	Lower Sonoran	Safford	Tucson	Yuma
Arizona cliffrose	<i>Purshia subintegra</i>	ESA LE				X											X			
Arizona hedgehog cactus	<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	ESA LE		X															X	
Bonytail chub	<i>Gila elegans</i>	ESA LE				X					X						X			
Brady pincushion cactus	<i>Pediocactus bradyi</i>	ESA LE	X									X								
California condor	<i>Gymnogyps californianus</i>	ESA LE XN	X		X	X						X					X		X	
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>	ESA LT									X								X	
Fickeisen plains cactus	<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	ESA LE	X									X								
Gierisch mallow	<i>Sphaeralcea gierischii</i>	ESA LE	X									X								
Holmgren Paradox milk-vetch	<i>Astragalus holmgreniorum</i>	ESA LE	X									X								
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>	ESA LE									X									X
Mojave desert tortoise	<i>Gopherus agassizii</i>	ESA LT	X									X								
Narrow-headed gartersnake	<i>Thamnophis rufipunctatus</i>	ESA LT										X							X	
Northern Mexican gartersnake	<i>Thamnophis eques megalops</i>	ESA LT										X	X						X	X
Ocelot	<i>Leopardus pardalis</i>	ESA LE		X							X	X							X	X
Peebles Navajo cactus	<i>Pediocactus peeblesianus</i> var. <i>peeblesianus</i>	ESA LE			X														X	
Pima pineapple cactus	<i>Coryphantha scheeri</i> var. <i>robustispina</i>	ESA LE									X									X
Razorback sucker	<i>Xyrauchen texanus</i>	ESA LE				X											X			
Siler pincushion cactus	<i>Pediocactus sileri</i>	ESA LT	X									X								

**ESA Listed or Proposed Species by ADOT District and BLM Field Office**

Common Name	Scientific Name	Status <sup>1</sup>	ADOT District									BLM Field Office							
			Flagstaff	Globe	Holbrook	Kingman	Phoenix	Prescott	Safford	Tucson	Yuma	Arizona Strip	Grand Canyon-Parashant	Hassayampa	Kingman	Lake Havasu	Lower Sonoran	Safford	Tucson
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	ESA LE XN								X	X					X		X	X
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	ESA LE	X	X		X		X	X			X		X			X	X	
Virgin River chub	<i>Gila seminuda</i>	ESA LE	X									X							
Woundfin	<i>Plagopterus argentissimus</i>	ESA LE	X									X							
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	ESA LT	X	X		X		X	X	X		X		X				X	
Yuma clapper rail	<i>Rallus longirostris yumaensis</i>	ESA LE	X			X					X	X							X

<sup>1</sup> Status Definitions: ESA=Endangered Species Act, LE=Listed Endangered, LT=Listed Threatened, XN=Experimental Nonessential Population.

Source: U.S. Fish and Wildlife Service Endangered Act Species List for the State of Arizona. Accessed October 3, 2014 (<http://ecos.fws.gov/ipac/>).