

GENERAL PLAN OF OPERATIONS AND LEGISLATIVE LAND EXCHANGE SCREENING ANALYSIS FOR SPECIAL STATUS SPECIES Resolution Copper

Prepared for:
Tonto National Forest—Globe and Mesa Ranger Districts

Prepared by:
WestLand Resources, Inc. on behalf of Resolution Copper



Project Number: 807.115 05-8985 04

December 2017



WestLand Resources, Inc. • 4001 E. Paradise Falls Drive • Tucson, Arizona 85712 • 520•206•9585

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	ES-1
1. INTRODUCTION AND BACKGROUND	1
2. PROPOSED MINING AND MINING RELATED ACTIVITIES.....	2
2.1. Overview of Mining Activities Proposed in GPO.....	2
2.2. Methods.....	4
2.3. Environmental Setting of the GPO Footprint.....	6
2.3.1. West Plant Site.....	6
2.3.2. East Plant Site.....	7
2.3.3. Tailings Storage Facility, Tailings Corridor, and Borrow Areas.....	7
2.3.4. MARRCO Corridor.....	8
2.4. Environmental Setting of the Downstream Areas.....	10
2.4.1. Queen Creek.....	10
2.4.2. Devils Canyon	11
2.5. Results of Special Status Species Screening Analysis – GPO Activities.....	12
2.5.1. GPO Footprint.....	12
2.5.2. Downstream Areas	13
3. LEGISLATIVE LAND EXCHANGE.....	17
3.1. Overview of the Legislative Land Exchange.....	17
3.2. Methods.....	19
3.3. Environmental Setting of Lands Included in the Legislative Land Exchange.....	20
3.3.1. Selected Lands	20
3.3.2. Offered Lands	21
3.3.3. Apache Leap Withdrawal Area	26
3.4. Results of Special Status Species Screening Analysis – Legislative Land Exchange.....	27
4. REFERENCES.....	40

TABLES

Table E1.	GPO Footprint and Downstream Areas, Screening Analysis Results Summary... ES-2
Table E2.	Legislative Land Exchange Analysis Area, Screening Analysis Results Summary for Selected and Offered Lands..... ES-4
Table 3.	Proposed Mining and Mining Related Activity Disturbance Areas4
Table 4.	Biotic Communities within the GPO Footprint.....10
Table 5.	Biotic Communities within the Downstream Areas.....12
Table 6.	GPO Footprint and Downstream Areas Screening Analysis Results Summary13
Table 7.	Summary of Special Status Species with Potential to Occur within the GPO Footprint15
Table 8.	Surface Management, Size, and Location of Lands Involved in the Land Exchange.....19
Table 9.	Biotic Communities within the Land Exchange Analysis Area.....27
Table 10.	Legislative Land Exchange Analysis Area, Screening Analysis Results Summary for Selected and Offered Lands.....28
Table 11.	Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange.....29

FIGURES

(follow text)

- Figure 1. GPO Footprint and Vicinity Map
- Figure 2. Current Surface Management for GPO Footprint and Vicinity
- Figure 3. Post Land Exchange Surface Management for GPO Footprint and Vicinity
- Figure 4. GPO Footprint and Downstream Areas
- Figure 5. Biotic Communities GPO Footprint and Downstream Areas
- Figure 6. Land Exchange Regional Overview
- Figure 7. Turkey Creek Parcel Surface Management
- Figure 8. Tangle Creek Parcel Surface Management
- Figure 9. Cave Creek Parcel Surface Management
- Figure 10. East Clear Creek Parcel Surface Management
- Figure 11. Apache Leap South End Parcel Surface Management
- Figure 12. Lower San Pedro River Parcel Surface Management
- Figure 13. Dripping Springs Parcel Surface Management
- Figure 14. Appleton Ranch Parcel Surface Management
- Figure 15. Biotic Communities Selected Lands & Mineral Withdrawal Parcels
- Figure 16. Biotic Communities Turkey Creek Parcel
- Figure 17. Biotic Communities Tangle Creek Parcel
- Figure 18. Biotic Communities Cave Creek Parcel
- Figure 19. Biotic Communities East Clear Creek Parcel
- Figure 20. Biotic Communities Lower San Pedro River Parcel
- Figure 21. Biotic Communities Dripping Springs Parcel
- Figure 22. Biotic Communities Appleton Ranch Parcel

APPENDICES

- Appendix A. Potential for Occurrence Table of Special-Status Species within the GPO Footprint and Downstream Areas
- Appendix B. Potential for Occurrence Table of Special-Status Species within the Lands Involved in the Land Exchange
- Appendix C. USFS Region 3 Sensitive Species List and BLM Sensitive Species List
- Appendix D. US Fish and Wildlife Service Information for Planning and Conservation Report (IPaC) Online Queries
- Appendix E. Arizona Game and Fish Department Heritage Database Management System On-Line Review

ACRONYMS AND ABBREVIATIONS LIST

AGFD	Arizona Game and Fish Department
amsl	above mean sea level
AST	Above ground storage tank
BLM	Bureau of Land Management
BTA	Boyce Thompson Arboretum
CNF	Coconino National Forest
EIS	Environmental Impact Statement
EPS	East Plant Site
ESA	Endangered Species Act
ft	feet or foot
GPO	General Plan of Operations
HDMS	Heritage Database Management System
IPaC	USFWS Information for Planning and Conservation System
legislative land exchange	The exchange of lands between the federal government and Resolution Copper Mining, LLC authorized in Section 3003 of the National Defense Authorization Act for Fiscal Year 2015
MARRCO	Magma Arizona Railroad Company
NEPA	National Environmental Policy Act
NDAA	National Defense Authorization Act
Resolution	Resolution Copper Mining, LLC
Special Status Species	Federal special-status species
SR	State Route
TSF	Tailings Storage Facility
TNF	Tonto National Forest
US	United States
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WestLand	WestLand Resources, Inc
WPS	West Plant Site

EXECUTIVE SUMMARY

In 2015, Section 3003 of the National Defense Authorization Act for Fiscal Year 2015 authorized the exchange of lands between the federal government and Resolution Copper Mining, LLC (legislative land exchange). In 2014, The United States Forest Service (USFS) accepted Resolution Copper Mining, LLC's (Resolution) General Plan of Operations (GPO) to conduct mining and mining related activities on National Forest System lands located within Tonto National Forest as administratively complete and sufficient to initiate USFS review under the National Environmental Policy Act (NEPA). On March 18, 2016 the USFS published a Notice of Intent in the federal register to initiate the NEPA review process. WestLand Resources Inc. prepared this screening analysis to determine the potential for occurrence of special-status species and/or the presence of designated or proposed critical habitat within the footprint of these federal actions in support of USFS and Cooperative Agency review of these activities under NEPA. Because of the differences in the decisions to be made by the USFS for these two federal actions: 1) Approval of the GPO and 2) The legislative land exchange, and the differences in geographic scope of the federal activities being evaluated and disclosed by the USFS; we evaluate the GPO and the legislative land exchange independent of each other.

Federal special-status species (Special Status Species) are defined here as including both federally listed species (those species either designated by the United States Fish and Wildlife Service [USFWS] as Endangered, Threatened, proposed for listing, or Candidates for listing under the Endangered Species Act) and sensitive species (species protected under the Bald and Golden Eagle Protection Act and species designated as sensitive by the USFS and the Bureau of Land Management [BLM]).

Mining and mining related activities as described in the GPO include development, operation, and reclamation of the following facilities and features:

- An underground copper mine and related subsidence area;
- New facilities such as shafts, hoists, and attendant features at the East Plant Site;
- New facilities such as a Concentrator, administrative facilities, and a laboratory at the West Plant Site;
- A Tailings Storage Facility and associated Tailings Corridor and Borrow Areas;
- The Magma Arizona Railroad Company Corridor, which would include connecting infrastructure for water pipelines, concentrate pipelines, power lines, pump stations, and a well field;
- A Filter Plant and Loadout Facility; and
- New power lines.

Total direct surface disturbance from development of the mining and mining related activities proposed in the GPO is approximately 6,951 acres of land.

The areas evaluated in this screening for Special Status Species includes the areas of direct surface disturbance (GPO Footprint) and the reaches of Queen Creek and Devils Canyon that occur downstream of the GPO Footprint (Downstream Areas).

Sixty-three Special Status Species were identified for analysis of their potential to occur within the GPO Footprint and Downstream Areas. Of the 63 Special Status Species analyzed, 43 were determined to have no potential to occur within the GPO Footprint, 10 had some potential but were considered unlikely to occur, 3 were considered to have the possibility for occurrence but there are no records available to confirm their presence, and 7 species were determined to have documented records for occurrence in the GPO Footprint (Table E1).

Table E1. GPO Footprint and Downstream Areas, Screening Analysis Results Summary

Analysis Area	Potential to Occur	Federally Listed Species	Sensitive Species
GPO Footprint	None	13	30
	Unlikely	3	7
	Possible	0	3
	Present	1	6
Downstream Areas	None	11	32
	Unlikely	2	7
	Possible	0	3
	Present	3	5

One federally listed species, Arizona hedgehog cactus, is known to occur within the GPO Footprint (i.e., the East Plant Site [EPS] and mine subsidence areas). Three additional federally listed species have some limited potential to occur, Chiricahua leopard frog, yellow-billed cuckoo, and southwestern willow flycatcher. Chiricahua leopard frog and Yellow-billed cuckoo have limited potential to occur (determined unlikely) within the footprint of the Tailings Area, EPS, and mine subsidence area. Southwestern willow flycatcher has limited potential to occur (determined unlikely) within the footprint of the Tailings Area and EPS. A single record of Southwestern willow flycatcher is known from Whitlow Ranch Dam area prior to the Comet Fire of 2012 (Mark Taylor USFS pers. comm). There are also records of willow flycatcher (subspecies not verified) from Boyce-Thompson Arboretum. These records are all outside of the Southwestern willow flycatcher breeding season and thus could be any of the willow flycatcher group (eBird 2017).

Within the Downstream Areas, 43 of the 63 Special Status Species analyzed were determined to have no potential to occur, 9 had some potential but were considered unlikely to occur, 3 were considered to have the possibility for occurrence but there are no records available to confirm their presence, and

8 species were determined to have documented records for occurrence in the Downstream Areas (**Table E1**).

Three federally listed species are known to occur within the Downstream Areas. Arizona hedgehog cactus and southwestern willow flycatcher have been detected in Queen Creek, and yellow-billed cuckoo has been detected in both Devils Canyon and Queen Creek (**Table E1**). Yellow-billed cuckoo and southwestern willow flycatcher detections of within the Downstream Area have been limited, however. Although incidental observations of yellow-billed cuckoo have been recorded, none were recorded during survey in 2017, and no territories were established within the Downstream Areas (WestLand Resources 2017b). Southwestern willow flycatcher occurrence is even further limited, as only a single record of southwestern willow flycatcher has been detected within Queen Creek. One willow flycatcher was observed along Queen Creek near Boyce Thompson Arboretum in 2017, but did not meet the criteria to indicate it was a resident southwestern willow flycatcher (WestLand Resources 2017a).

There is no designated or proposed critical habitat for federally listed species within the GPO Footprint or Downstream Areas.

The National Defense Authorization Act (NDAA) authorizes, directs, facilitates, and expedites the exchange of land between Resolution and the United States. The lands involved in the legislative land exchange and the action analyzed herein (the exchange of those lands) include: the selected lands (federal lands to be acquired by Resolution), offered lands (private lands being offered to the Federal Government), and the Apache Leap Withdrawal Area. The total acreage of lands involved in the legislative land exchange is 9,657 acres comprising 2,422 acres of Federally owned lands to be transferred to Resolution (Selected Lands), 6,538 acres of private lands to become Federal lands (Offered Lands) and 697 acres of unpatented mining claims on the Apache Leap that will be withdrawn from mineral entry.

The geographic scope of analysis for this screening analysis of the legislative land exchange includes the Offered Lands, the Selected Lands, and the Mineral Withdrawal parcels (Legislative Land Exchange Analysis Area). The parcels of land included in the legislative land exchange occur from East Clear Creek on the Coconino National Forest south to the Appleton Ranch parcels adjoining the Appleton-Whittell Research Ranch managed by the Audubon Society less than 18 miles from the US border with Mexico. These parcels are located within a region that from north to south is approximately 200 miles in length and includes three national forests and two BLM districts. Elevation of the parcels included in the legislative exchange range from 2,400 to 6,800 ft and habitats include Plains and Great Basin Grasslands, Mesquite Bosque, Petran Montane Conifer Forest, Great Basin Conifer Woodland, and Sonoran Desert Scrub. Because of the biogeographic diversity of the offered lands parcels, the list of Special Status Species considered in the analysis of the legislative land exchange was derived from the sensitive species lists for the Coconino National Forest, Tonto National Forest, the Coronado National Forests, the BLM Phoenix District and BLM Gila District

and those species that have been designated as Endangered, Threatened, Proposed for listing or Candidate for listing by USFWS.

Two-hundred and ninety-two Special Status Species were identified for analysis of their potential to occur within the Legislative Land Exchange Analysis Area. Of the 292 Special Status Species analyzed, 130 were determined to have no potential to occur within the Legislative Land Exchange Analysis Area, 59 had some potential but were considered unlikely to occur, 63 were considered to have the possibility for occurrence but there are no records available to confirm their presence, and 40 species were determined to have documented records for occurrence in the Legislative Land Exchange Analysis Area. Within the Selected Lands, 41 species were determined to have some potential to occur (unlikely, possible, or present). While on the Offered Lands 162 Special Status Species were determined to have some potential to occur (unlikely, possible, or present) (Table E2).

Table E2. Legislative Land Exchange Analysis Area, Screening Analysis Results Summary for Selected and Offered Lands

Potential to Occur	Federally Listed Species		Sensitive Species	
	Selected Lands	Offered Lands	Selected Lands	Offered Lands
None	42	26	209	104
Unlikely	3	6	11	52
Possible	0	8	19	62
Present	1	6	7	28

Within the Selected Lands one federally listed species, Arizona Hedgehog Cactus, is known to occur. Surveys conducted by WestLand within this area have detected 27 individuals (WestLand Resources 2017d). Three additional federally listed species have some limited potential to occur on the selected lands (determined unlikely), Chiricahua leopard frog, yellow-billed cuckoo, and southwestern willow flycatcher. The selected lands are not part of any proposed or designated critical habitat.

Within the Offered Lands 14 federally listed species are known or have the potential (Possible) to occur and 6 federally listed species had potential but were considered unlikely to occur. The Offered land parcels are within critical habitat for four federally listed species and proposed critical habitat for two federally listed species:

- Jaguar (designated): Appleton Ranch
- Northern Mexican gartersnake (proposed): Appleton Ranch and Lower San Pedro
- Mexican spotted owl (final designated): East Clear Creek and Turkey
- Little Colorado spinedace (final designated) East Clear
- SWFL (final): Lower San Pedro
- YBC (proposed): Lower San Pedro

I. INTRODUCTION AND BACKGROUND

In 2015, Section 3003 of the National Defense Authorization Act for Fiscal Year 2015 (NDAA, or the Act) authorized the exchange of lands between the federal government and Resolution Copper Mining, LLC (Resolution) (the legislative land exchange). In 2014, The United States Forest Service (USFS) accepted Resolution's General Plan of Operations (GPO) to conduct mining and mining related activities on National Forest System lands located within Tonto National Forest as administratively complete and sufficient to initiate USFS review under the National Environmental Policy Act (NEPA). On March 18, 2016 the USFS published a Notice of Intent in the federal register to initiate the NEPA review process. WestLand Resources Inc. (WestLand) prepared this screening analysis to determine the potential for occurrence of special-status species and/or the presence of designated or proposed critical habitat within the footprint of these federal actions in support of USFS and Cooperative Agency review of these activities under NEPA. Because of the differences in the decisions to be made by the USFS for these two federal actions: 1) Approval of the GPO and 2) The legislative land exchange, and the differences in geographic scope of the federal activities being evaluated and disclosed by the USFS; we evaluate the GPO and the legislative land exchange independent of each other.

Federal special-status species (Special Status Species) are defined here as those species either designated by the United States Fish and Wildlife Service (USFWS) as Endangered, Threatened, proposed for listing, or Candidates for listing, or species designated as sensitive by the USFS and the Bureau of Land Management (BLM).

The proposed mining and mining related activities described in the GPO will occur on US Forest System, state trust, and private lands (including portions of the Selected Lands identified in the legislative land exchange). Total direct surface disturbance from development of the mining and mining related activities proposed in the GPO is approximately 6,951 acres of land. The proposed mining and associated support activities include development of a deep underground mine, construction of beneficiation facilities, tailings and associated power and transportation infrastructure. A more detailed description of the GPO and related activities is provided in **Section 2**.

The Act authorizes, directs, facilitates, and expedites the exchange of land between Resolution and the United States. Various federal laws and conditions and provisions of the Act govern how the land exchange will take place, and how the various properties will be managed before and after the exchange occurs.

The lands involved in the legislative land exchange and the action analyzed herein (the exchange of those lands) include: the selected lands (federal lands to be acquired by Resolution), offered lands (private lands being offered to the Federal Government), and the Apache Leap Withdrawal Area (federal lands where mineral entry will be withdrawn). The total acreage of lands involved in the legislative land exchange is 9,657 acres comprising 2,422 acres of Federally owned lands to be

transferred to Resolution (Selected Lands), 6,538 acres of private lands to become Federal lands (Offered Lands) and 697 acres of unpatented mining claims on the Apache Leap that will be withdrawn from mineral entry. A more detailed description of the land exchange and the lands involved in the exchange is provided in **Section 3**.

Because of the differences between the decisions to be made by the USFS for these two federal actions and the differences in geographic scope of the federal activities being evaluated and disclosed by the USFS, we evaluate the GPO and the legislative land exchange, independent of each other. This report is organized in three sections. **Section 1** is this introduction; **Section 2** provides a project description and Special Status Species screening analysis for the GPO project; **Section 3** provides the project description and Special Status Species screening analysis for the Legislative Land Exchange; and **Section 4** provides a list of references cited.

2. PROPOSED MINING AND MINING RELATED ACTIVITIES

2.1. OVERVIEW OF MINING ACTIVITIES PROPOSED IN GPO

The mining and mine related activities outlined in the GPO are located in north-central Pinal County, Arizona in non-contiguous areas within the following townships, ranges, and sections:

- Township 1 South, Range 11 East, in portions of Sections 22-27 and 32-36;
- Township 1 South, Range 12 East, in portions of Sections 18-21 and 26-35;
- Township 1 South, Range 13 East, in portions of Sections 28-29 and 31-33;
- Township 2 South, Range 9 East, in a portion of Section 36;
- Township 2 South, Range 10 East, in portions of Sections 1, 11-12, 14-15, 20-22, and 29-31;
- Township 2 South, Range 11 East, in portions of Sections 1-3 and 5-6;
- Township 2 South, Range 12 East, in portions of Sections 1 and 3-6;
- Township 2 South, Range 13 East, in portions of Sections 5-8;
- Township 3 South, Range 8 East, in portions of Sections 24-26 and 35; and
- Township 3 South, Range 9 East, in portions of Sections 1-3, 9-10, 16-17, and 19-20.

Land ownership of the lands to be used for these mining and mine related activities described in the GPO consists of a combination of private, federal, and state trust lands. These lands are principally managed by the TNF, Arizona State Land Department, and Resolution.

Locations of facilities and attendant infrastructure associated with proposed GPO activities, as well as the existing surface management for those locations, are shown in **Figures 1 and 2**. A detailed description of the GPO activities can be found in Section 3 of Resolution Copper Mining's General Plan of Operations (Resolution Copper Mining 2016).

Table 3 summarizes the surface management and disturbance areas of the mining and mining related activities described in the GPO.¹ The total footprint of direct surface disturbance that will result from development of the mining activities outlined in the GPO is 6,951 acres, of which 732 have been previously disturbed. **Figure 3** depicts the post-land exchange surface management of the GPO activities areas. A summary of planned mining and mining related activities is provided as follows.

Resolution proposes to develop a copper-molybdenum deposit located 5,000 to 7,000 ft below ground surface. Underground mining would take place under the Oak Flat parcel. The subsidence area above the underground mine and new facilities such as shafts, hoists, and attendant features would be located at the East Plant Site. Mined ore would be crushed underground and transported via conveyor approximately 2.5 miles from the East Plant Site to a new concentrator facility located at the West Plant Site. Ore would be processed at the West Plant Site to produce copper and molybdenum concentrate. Copper concentrate would be transported through a pipeline as slurry, 22 miles to a Filter Plant and Loadout facility located southwest of Florence Junction, Arizona. Following filtration, copper concentrate would be sent to market via truck or rail. The copper concentrate pipeline would be located along the existing Magma Arizona Railroad Company (MARRCO) corridor. The MARRCO corridor would also contain other mining related infrastructure including water pipelines, power lines, pump stations, and groundwater wells. Molybdenum concentrate would be filtered, dried, and sent to market in trucks directly from the West Plant Site. Tailings from the concentrator would be pumped as a slurry to a new 4,400-acre tailings storage facility located approximately five miles west of the West Plant Site. Reclamation would include closing and sealing the mine shafts, removing surface facilities and infrastructure, and establishing self-sustaining vegetation communities. The tailings storage facility would be reclaimed in place providing permanent storage of mine tailings.

¹ Mining activities summarized include portions of the Selected Federal Lands that are to be conveyed to Resolution in accordance with the requirements of Section 3003 of the NDAA of 2015.

Table 3. Proposed Mining and Mining Related Activity Disturbance Areas

Surface Management Categories	Tonto National Forest			Resolution Copper ⁴			State Trust Lands			Other Private			Totals		
	Minimally Disturbed or Previously Disturbed	Previously Disturbed	Total (ac)	Minimally Disturbed or Previously Disturbed	Previously Disturbed	Total (ac)	Minimally Disturbed or Previously Disturbed	Previously Disturbed	Total (ac)	Minimally Disturbed or Previously Disturbed	Previously Disturbed	Total (ac)	Minimally Disturbed or Previously Disturbed	Previously Disturbed	Total (ac)
Tailings Area ¹	4,381	0	4,381	2	0	2	0	0	0	0	0	0	4,383	0	4,383
East Plant Site and Mine Area	9	0	9	1,234	39	1,273	93	0	93	0	0	0	1,336	39	1,375
West Plant Site ²	13	7	20	18	410	428	0	0	0	0	5	5	31	422	453
Filter Plant and Concentrate Loadout Facility	0	0	0	363	190	553	0	0	0	0	0	0	363	190	553
MARRCO Corridor ³	35	30	65	11	9	20	59	39	98	1	3	4	106	81	187
TOTALS	4,438	37	4,475	1,628	648	2,276	152	39	191	1	8	9	6,219	732	6,951

¹ Tailings Storage Facility, Tailings Corridor, and Borrow Areas

² The core building which includes 10.6 acres of development was left out of Table 1.5-2 and 1.5-3 of the GPO.

³ Includes areas inside and outside of the existing MARRCO right-of-way.

⁴ Includes portions of the Selected Lands to be transferred to Resolution in accordance with the requirements of Section 3003 NDAA of 2015.

In summary, the GPO activities include development, operation, and reclamation of the following facilities and features:

- The subsidence area above the underground mine and new facilities such as shafts, hoists, and attendant features at the East Plant Site (EPS);
- New facilities such as a Concentrator, administrative facilities, and a laboratory at the West Plant Site (WPS);
- A Tailings Storage Facility (TSF) and associated Tailings Corridor and Borrow Areas;
- The MARRCO Corridor, which would include connecting infrastructure for water pipelines, concentrate pipelines, power lines, pump stations, and a well field;
- A Filter Plant and Loadout Facility; and
- New power lines.

Mining activities are anticipated to have a total operational life of approximately 40 years, not including initial site construction and final reclamation work (demolition, regrading, and revegetation).

2.2. METHODS

In determining the scope of analysis for the biological evaluation of the mining and mining related activities proposed in the GPO we relied upon USFS NEPA policy and guidelines and considered potential direct and indirect effects of the GPO activities. Therefore, the area evaluated in this screening for Special Status Species includes areas of direct surface disturbance (GPO Footprint) and the reaches

of Queen Creek and Devils Canyon that occur downstream of the GPO Footprint (Downstream Areas) (**Figure 4**). The list of Special Status Species considered in this analysis was derived from the sensitive species lists for the Tonto National Forest (**Appendix C**) because TNF is the federal land manager within the GPO Footprint; as well as those species that have been designated as Endangered, Threatened, Proposed for listing or Candidate for listing by USFWS (collectively referred to as USFWS listed species), as determined by the Information for Planning and Conservation (IPaC) resource lists for Pinal County (**Appendix D**).

To complete the screening analysis, the potential for a Special-Status Species to occur in the GPO Footprint and Downstream Areas was determined after: 1) a review of the known geographical and elevational range of the species, 2) a review of occurrence records for the species, 3) a review of the known habitat requirements and natural history of the species, and 4) a review of previous surveys (if available), field observations, and habitat descriptions of the GPO Footprint and Downstream Areas.

The principal resources and references used to inform the screening analysis and make a determination for the potential for Special-Status Species to occur included: 1) the USFWS final and proposed rules as published in the Federal Register; 2) the results of an Arizona Game and Fish Department (AGFD) Heritage Database Management System (HDMS) on-line environmental review tool query (**Appendix E**); 3) AGFD plant and animal species abstracts; 4) published and grey literature; 5) the results of various WestLand surveys and field observations on the physical environments and biological resources of the GPO Footprint (**Section 2.3**) and Downstream Areas (**Section 2.4**); and 6) the USFWS IPaC online mapping tool (**Appendix D**).

The criteria used to classify the potential for occurrence of these species included in this screening analysis are defined as follows:

- Present** The species has been observed during site visits or has been documented based on records from recent, reliable sources (e.g., AGFD, USFWS, museum records), and habitat required by the species is currently present.
- Possible** The species has not been documented. The area is within the known, current geographic and elevational range of the species and the habitat required by the species appears to be present.
- Unlikely** Generally, the area is not within the known, current geographic range of the species, but the range of the species is close enough such that the area may be within the dispersal distance of the species, and the required habitat characteristics of the species may be present, or the area is within the geographic range of the species, but contains limited suitable habitat required by the species.

None Area is outside the known geographic and/or elevational range of the species and the habitat required by the species is not present; or the area is within a broad or general geographic range for the species, but does not contain required habitat characteristics of the species; or the area is outside of the species' known geographic range where the likelihood of dispersal is rare, even if suitable habitat characteristics of the species occurs.

2.3. ENVIRONMENTAL SETTING OF THE GPO FOOTPRINT

To facilitate discussion and description the GPO Footprint we have divided it into seven distinct areas:

- WPS,
- EPS and Mine Area,
- TSF, Tailings Corridor, and Borrow Areas, and
- MARRCO Corridor, Filter Plant and Load Out Facility (further subdivided in to an Upper and Lower Corridor).

Each area is discussed in the sections that follow.

2.3.1. West Plant Site

The majority of WPS is located on previously disturbed, privately owned lands (approximately 428 acres); however, the northern most portion (approximately 25 acres) of WPS is located on National Forest System lands and is relatively undisturbed (**Figure 2; Table 3**).

WPS is situated at the eastern edge of the Basin and Range Physiographic Province and is immediately adjacent to and transitional with the Central Highlands Province to the east (**Figures 1 and 2**). Basin and Range topography is generally characterized by a series of valley basins separated by relatively isolated mountain ranges (Chronic 1983). The southwestern part of the site is moderately sloped, with a base elevation of approximately 2,680 ft above mean sea level (amsl). The site ascends into deeply incised canyons and rocky slopes along the northern portion of WPS up to an elevation of approximately 3,400 ft amsl.

While previous mine development activities have removed much of the native vegetation from WPS, it occurs within the Arizona Upland subdivision of Sonoran desertscrub (Turner and Brown 1994) (**Table 4; Figure 5**). Native vegetation, including saguaro (*Carnegiea gigantea*), paloverde (*Parkinsonia* spp.), and jojoba (*Simmondsia chinensis*), is found on the steeper slopes at the northern end of WPS. Non-native species, such as salt cedar (*Tamarix* sp.), red brome (*Bromus rubens* L.), fountaingrass (*Pennisetum setaceum*), common Mediterranean grass (*Schismus barbatus*), Bermudagrass (*Cynodon dactylon* L.), and Sahara mustard (*Brassica tournefortii*) have become established in low numbers within the disturbed areas. Plant species found within the WPS include non-native species intentionally planted for landscaping purposes.

The WPS is within the Queen Creek watershed. No perennial surface water features are present on or adjacent to WPS. All of the drainages are ephemeral, flowing only briefly in direct response to storm events (WestLand Resources 2011).

2.3.2. East Plant Site

The existing EPS area includes shafts and support facilities associated with the Magma Mine, a mining facility that operated until the mid-1990s. Some of these mining facilities that are still in use include a decline portal, electrical substation, transmission lines, storage facilities, and Shaft 9. The Number 9 Shaft includes existing dewatering operations and a potable water system for existing mining activities. Both the Number 9 and Number 10 Shafts are currently under construction. There are also offices, roads, and stormwater management control and containment measures on EPS.

The environmental setting is generally the same with regards to topography, vegetation, and geology as those on Oak Flat (refer to **Section 3.3.1.**)

2.3.3. Tailings Storage Facility, Tailings Corridor, and Borrow Areas

The proposed tailings storage facility (TSF), Tailings Corridor, and Borrow Areas (collectively Tailings Area) are located entirely on undisturbed or minimally disturbed National Forest System lands and is approximately 4,381 acres in size. This facility is situated at the eastern edge of the Basin and Range physiographic province (**Figures 1 and 2; Table 4**). The topography of areas proposed for construction of the TSF, Tailings Corridor, and Borrow Areas is characterized by south or southwest-trending ridges with intervening drainages that discharge to Queen Creek. In the northern portions of the Tailings Area, the landscape transitions into steeper-sloped peaks and ridges with areas of bare rock and small cliffs. Exposed bedrock and outcrops occur along some canyons as well as in the northern portions of the Tailings Area. Elevations within the Tailings Area range from approximately 2,150 ft amsl in the southwest to approximately 3,050 ft amsl where the Tailings Corridor enters into the WPS (**Figure 2**).

The TSF occurs within the Arizona Upland subdivision of the Sonoran desertscrub biotic community as mapped by Brown and Lowe (Brown 1994a) and described by Turner and Brown (Turner and Brown 1982) (**Figure 5; Table 4**). Brown and Lowe's (1980) mapping classifications were made on a large scale and do not show finer scale variations of vegetation associations within a relatively small area such as the Tailings Area. WestLand (WestLand Resources 2014a) provided a fine-scale vegetation map identifying seven major upland plant associations that occur within the Tailings Area². These associations included: 1) Jojoba-Paloverde Shrubland, 2) Ocotillo-Paloverde/Mixed Cacti Shrubland, 3) Jojoba-Paloverde/Triangleleaf Bursage Shrubland, 4) Single Whorl Burrobrush

² Includes a much broader area – East and West Tailings Alternatives.

Shrubland, 5) Mesquite-Catclaw Acacia Wash Shrubland, 6) Rock Outcrop, and 7) Crucifixion Thorn Shrubland.

There are cliff faces with several shallow rock overhangs located in the Tailings Area. These features range from approximately 31 to 69 ft in length, from approximately 6 to 23 ft in height and from approximately 13 to 26 ft in depth. Structures associated with historical mining activities include several mine adits and shafts that occur within the Tailings Area, several of which are located along Roblas Canyon (e.g., Bomboy Mine) and Happy Camp Canyon.

The principal drainage features within the Tailings Area are Hewitt Canyon, Roblas Canyon, Bear Tank Canyon, Potts Canyon, Rice Water Canyon, Happy Camp Canyon, and Silver King Wash. All seven drainages discharge to Queen Creek and are ephemeral for all or the vast majority of their length. There are several springs in the area including Perlite Spring, Bear Tank Canyon Spring, Benson Spring, Happy Camp Spring, and Lower Bear Tank Canyon Spring. Perlite Spring was visited in February 2013 by Montgomery and Associates (Montgomery & Associates 2013) as part of hydrological investigations of portions of the Proposed Action Area. At the time of the site visit, three ponds were present on the surface of a perlite outcrop: the uppermost contained by an earthen berm, and the lower two within depressions formed as a result of historic quarrying of the perlite. Montgomery and Associates could find no evidence of groundwater inflow or seepage and concluded the ponds resulted from the collection and retention of surface water runoff (Montgomery & Associates 2013) and appear to not be sourced by any natural spring-fed seepage or inflow. The unnamed tinaja, located adjacent to USFS road 1903 (Mark Taylor, USFS, pers. comm.), could be considered perennial, though its hydrologic source is currently unknown. Happy Camp and Bear Tank Canyon springs were noted by Montgomery and Associates (Montgomery & Associates 2013) to have active discharge and some riparian vegetation. Both springs are at least partially modified for use in stock watering with active discharge measured at outlet pipes constructed into the springs. A stock pond is present in association with Happy Camp Spring. Benson Spring has also been modified with a pump, discharge pipe, and stock tank for livestock watering. Observations of Benson Spring (Montgomery & Associates 2013) were unable to identify baseflow in the area or a source of seepage from the pools associated with the spring. Cattle tanks have been constructed in portions of the Tailings Area. These tanks appear to hold water for part of the year but do not appear to be perennial. No wetlands or other special aquatic sites were identified within the Tailings Area (WestLand Resources 2014b).

2.3.4. MARRCO Corridor

The MARRCO Corridor extends southwest from its eastern terminus at WPS to its western terminus west of Florence Junction, approximately 27 miles (**Figure 2**). Land ownership along the MARRCO Corridor is a combination of federal lands managed by the TNF, private inholdings (Resolution and others), and Arizona State Trust lands (**Figure 2**).

The MARRCO Corridor and Filter Plant and Loadout Facility occur at the eastern edge of the Basin and Range physiographic province in Arizona. Elevations in this corridor range from a minimum of approximately 1,520 ft amsl at that terminus near the Magma Town Site to a maximum of 3,000 ft amsl at WPS. Topography in the western portions of the MARRCO Corridor is dominated by a broad, flat alluvial plain transitioning to gently rolling topography occurring in a lower alluvial fan (i.e., bajada) between SR 79 and US 60. The MARRCO Corridor then transitions into the steeper foothills of the Pinal Mountains in the eastern section. There are no known natural caves, mine shafts or adits within the Corridor and its associated facilities.

For purposes of discussion and analysis we have subdivided the MARRCO Corridor into two reaches, the Upper Corridor (WPS west to SR 79) and the Lower Corridor (SR 79 west to near the unincorporated town site of Magma) The Filter Plant and Loadout Facility is located on Resolution private lands located along the Lower Corridor.

The Lower Corridor, including the Filter Plant and Loadout Facility, occur in the Lower Colorado River subdivision of the Sonoran desertscrub biotic community with transitional elements of the Arizona Upland subdivision (Turner and Brown 1982) in the northeastern portion of this site (**Table 4**). Typical upland species encountered along this reach of the MARRCO Corridor included creosote (*Larrea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), and velvet mesquite (*Prosopis velutina*). In the northeastern portion cacti become more prevalent including saguaro (*Carnegiea gigantea*), chain fruit cholla (*Cylindropuntia fulgida*), and Engelmann's prickly-pear (*Opuntia engelmannii*). Undisturbed upland areas within the Filter Plant and Loadout Facility are dominated by widely spaced creosote, triangleleaf bursage, velvet mesquite, and ironwood (*Olneya tesota*) as well as the occasional saguaro, chainfruit cholla, and Engelmann's prickly-pear (WestLand Resources 2015b).

In the southwestern portion of the Upper Corridor (i.e., between SR 79 and US 60) the Sonoran desertscrub community is more typical of the Arizona Upland subdivision but is transitional with the Lower Colorado subdivision. Saguaro (*Carnegiea gigantea*), chain fruit cholla (*Cylindropuntia fulgida*), and Engelmann's prickly-pear (*Opuntia engelmannii*) are commonly encountered here. In the northeastern section of the Upper Corridor (east of US 60), these cacti as well as plants such as desert hackberry (*Celtis pallida*), jojoba (*Simmondsia chinensis*), and ocotillo (*Fouquieria splendens*) are commonly encountered (WestLand Resources 2015a).

The MARRCO Corridor generally does not support perennial or intermittent surface waters and there are no natural ponds present along the corridor. All of the potential surface water features within the MARRCO are ephemeral drainages, flowing only briefly in direct response to storm events (WestLand Resources 2014b). A small man-made depression associated with the Utilities Pump Station supports wetland vegetation (*Typha* spp.) and WestLand observed Sonoran desert toads and Great Plains toads (*Bufo alvarius*, *B. cognatus*) at this site (WestLand Resources 2015b). There are also several earthen stock tanks adjacent to the corridor, identified from United States Geological Survey 7.5-minute topographic

maps and during field surveys that likely serve as a seasonal aquatic resource for wildlife (e.g., mammals, summer breeding amphibians). A more detailed discussion of the potential for aquatic features associated with the MARRCO is provided in the GPO (Resolution Copper Mining 2016) and in WestLand Resources 2014c.

All of the surface water features within the Filter Plant and Loadout Facility are ephemeral drainages, flowing only briefly in direct response to storm events. No wetlands or other special aquatic sites were identified within the Filter Plant and Loadout Facility (WestLand Resources 2014b). Drainages throughout this area are typical of ephemeral desert washes and support xeroriparian plant communities along their margins (WestLand Resources 2015b). Several, shallow artificial basins created in parts of the Filter Plant and Loadout Facility area could presumably hold ponded water for relatively short periods and therefore serve as a seasonal resource of surface water for wildlife (e.g., mammals, summer breeding amphibians). A more detailed discussion of the potential for surface water features associated with the Filter Plant and Loadout Facility is provided in WestLand Resources 2014c.

Table 4. Biotic Communities within the GPO Footprint

Area	Arizona Upland Subdivision of Sonoran Deserts scrub	Interior Chaparral	Interior Riparian Deciduous Forest	Lower Colorado Subdivision of Sonoran Deserts scrub	Madrean Evergreen Woodland	Disturbed Areas
Filter Plant and Loadout Facility and Lower MARRCO				X		X
Upper MARRCO	X		X			X
Tailings Area	X					X
West Plant Site	X					X
East Plant Site		X	X		X	X

2.4. ENVIRONMENTAL SETTING OF THE DOWNSTREAM AREAS

To facilitate discussion and description the areas downstream from the GPO Footprint, we have divided it into two distinct areas: Queen Creek and Devils Canyon.

2.4.1. Queen Creek

The reach of Queen Creek included in the Downstream Areas is located on a combination of National Forest System lands, private inholdings (Resolution and others), and Arizona State Trust lands. The headwaters of Queen Creek issue from the Superstition Mountains north of US 60 (**Figure 2**). The reach considered in this analysis starts from approximately the US 60 bridge downstream to Whitlow Ranch

Dam, a distance of approximately 16 miles. From the headwaters to the Superior Waste Water Treatment Plant the creek is spatially intermittent with periods of sustained winter streamflow generally beginning in November and lasting through April (Montgomery & Associates 2017). Downstream of the Waste Water Treatment Plant and the Haborlite perlite mine, discharges from these facilities maintain perennial flow for approximately one mile (Montgomery & Associates 2017). Elevations along Queen Creek in the Downstream Areas range from approximately 2,200 ft at Whitlow Ranch Dam to 3,860 ft at US 60 bridge.

Queen Creek occurs within Interior Chaparral, Madrean Evergreen Woodland, and Arizona Upland Subdivision Sonoran Desertscrub mapped biotic communities (Brown and Lowe 1994) (**Figure 5**). Interior Riparian Deciduous Forest occurs along reaches of Upper and Middle Queen Creek, where it is represented by Arizona sycamore (*Platanus wrightii*), Fremont cottonwood (*Populus fremontii*), velvet ash (*Fraxinus velutina*), and bigtooth maple (*Acer grandidentatum*). Although not shown in **Figure 5**, Queen Creek also contains Sonoran riparian scrubland vegetation, and some Sonoran riparian deciduous forest vegetation, present along Middle Queen Creek near Boyce Thompson Arboretum (Golder Associates 2006; WestLand Resources 2012). Vegetation in this reach is supported by effluent from the Superior Wastewater Treatment Plant.

The Boyce-Thompson Arboretum (BTA) occurs immediately adjacent to and includes a short reach of Queen Creek. BTA, an Arizona State Park, is cooperatively managed by the Arizona State Parks Board, Boyce-Thompson Arboretum Board, and the University of Arizona. BTA is an area with unique aquatic and riparian environments that occur there as a result of irrigation and baseflow from the Wastewater Treatment Plant. BTA supports relatively dense stands of tall exotic and native trees that provide a more structurally diverse and developed area of avian nesting, stopover, and foraging habitat relative to what is available in the natural landscape in the immediate area, including Queen Creek. BTA is considered an Important Bird Area by the National Audubon Society (Tucson Audubon Society 2011). There is also an artificial impoundment at BTA, Ayer Lake, that is maintained from wells operated by the BTA Board. Ayer Lake is managed as a refuge site for native fish species (Desert pupfish [*Cyprinodon macularius*] and Gila topminnow [*Poeciliopsis occidentalis occidentalis*] and this artificially maintained system provides aquatic and riparian habitat for other wildlife species.

2.4.2. Devils Canyon

Land ownership along Devils Canyon consists of National Forest System and Arizona State Trust lands. The headwaters of Devils Canyon issue from the Superstition and Pinal Mountains. It is a steep-walled drainage throughout its length that flows north to south. The reach of Devils Canyon in the Downstream Areas extends from approximately the US 60 bridge downstream to its confluence with Mineral Creek, a distance of approximately 9 miles. This reach of Devils Canyon contains stretches that are ephemeral and/or intermittent, and areas that are continuously saturated, as well as areas where water is consistently present (Montgomery & Associates 2017). Elevations along this reach

of Devils Canyon range from approximately 2,400 ft at the confluence with Mineral Creek to approximately 4,000 ft at US 60.

The upland biotic communities of Devils Canyon include Interior Chaparral, Interior Riparian Deciduous Forest, and Arizona Upland Subdivision Sonoran Desertscrub (Turner and Brown 1994) (Figure 5). Riparian habitat in the upper reach is patchy with riparian trees such as Goodding’s willow, Fremont cottonwood, Arizona walnut, and Arizona sycamore occurring singly or in clusters. Steep sloping hillsides along the creek rise rapidly transitioning through more xeric riparian species such as mesquite to Arizona Upland Desertscrub or Interior Chaparral (WestLand Resources 2012). In the middle reach of Devils Canyon, there is a closed canopy forest of Arizona alder (*Alnus oblongifolia*) that is associated with an understory of button willow (*Cephalanthus occidentalis*), as well as scattered velvet ash, Arizona sycamore, and Bonpland willow (*Salix bonplandiana*). South of this reach the canyon is not easily accessible because of narrow canyon walls and considerable vertical drops associated with several very large plunge pools (known as Crater Tanks). In the lower reach of Devils Canyon, there are Goodding’s willow that occur singly or in small clusters, a few scattered Fremont cottonwoods, Arizona walnut, and Arizona sycamore; the latter being the most common species.

Table 5. Biotic Communities within the Downstream Areas

Area	Arizona Upland Subdivision of Sonoran Desertscrub	Interior Chaparral	Interior Riparian Deciduous Forest	Lower Colorado Subdivision of Sonoran Desertscrub	Madrean Evergreen Woodland	Disturbed Areas
Devils Canyon	X	X	X			
Queen Creek	X	X	X		X	

2.5. RESULTS OF SPECIAL STATUS SPECIES SCREENING ANALYSIS – GPO ACTIVITIES

Sixty-three Special Status Species were identified for analysis of their potential to occur within the GPO Footprint and Downstream Areas. A summary of the screening analysis identifying those Special Status Species that are either known to occur or have the potential to occur within the GPO Footprint and Downstream Areas is provided in Tables 6 and 7. A detailed table providing the results of the screening analysis is provided in Appendix A.

2.5.1. GPO Footprint

Within the GPO Footprint, 43 of the 63 Special Status Species analyzed were determined to have no potential to occur, 10 had some potential but were considered unlikely to occur, 3 were considered to

have the possibility for occurrence but there are no records available to confirm their presence, and 7 species were determined to have documented records for occurrence in the GPO Footprint (**Table 6**). There is no designated or proposed critical habitat for federally listed species within the GPO Footprint.

One endangered species, Arizona hedgehog cactus, is known to occur within the GPO Footprint (i.e., the EPS and mine subsidence areas). Three additional federally listed species have some limited potential to occur, Chiricahua leopard frog, yellow-billed cuckoo, and southwestern willow flycatcher. Chiricahua leopard frog and Yellow-billed cuckoo have limited potential to occur (determined unlikely) within the footprint of the Tailings Area, EPS, and mine subsidence area. Southwestern willow flycatcher has limited potential to occur (determined unlikely) within the footprint of the Tailings Area, and a single record of Southwestern willow flycatcher is known from Whitlow Ranch Dam area prior to the Comet Fire of 2012 (Mark Taylor USFS pers. comm). There are also records of willow flycatcher (subspecies not verified) from BTA. These records are all outside of the Southwestern willow flycatcher breeding season and thus could be any of the willow flycatcher group (eBird 2017; WestLand Resources 2017a).

For the remaining 46 Sensitive Species evaluated, 5 TNF sensitive species and 1 species protected by the Bald and Golden Eagle Act are known to occur within the GPO Footprint. Six species, lowland leopard frog, Bezy’s night lizard, Sonoran desert tortoise, American peregrine falcon, golden eagle, and western red bat, are known to occur within the GPO Footprint.

Table 6. GPO Footprint and Downstream Areas Screening Analysis Results Summary

Analysis Area	Potential to Occur	Federally Listed Species	Sensitive Species
GPO Footprint	None	13	30
	Unlikely	3	7
	Possible	0	3
	Present	1	6
Downstream Areas	None	11	32
	Unlikely	2	7
	Possible	0	3
	Present	3	5

2.5.2. Downstream Areas

Within the Downstream Areas, 32 of the 63 Special Status Species analyzed were determined to have no potential to occur, 7 had some potential but were considered unlikely to occur, 3 were considered to have the possibility for occurrence but there are no records available to confirm their presence, and 5 species

were determined to have documented records for occurrence in the Downstream Areas (**Table 6**). There is no designated or proposed critical habitat for federally listed species within the Downstream Areas.

Three federally listed species are known to occur within the Downstream Areas. Arizona hedgehog cactus and southwestern willow flycatcher have been detected in Queen Creek (**Table 6**). Southwestern willow flycatcher occurrence is extremely limited, however, as only a single record of southwestern willow flycatcher has been detected within Queen Creek. One willow flycatcher was observed along Queen Creek near Boyce Thompson Arboretum in 2017, but did not meet the criteria to indicate it was a resident southwestern willow flycatcher (WestLand Resources 2017a). Yellow-billed cuckoo has been detected in both Devils Canyon and along Queen Creek at [REDACTED], although these occurrences have been generally limited to incidental observations. Yellow-billed cuckoo was not detected during survey in 2017, and there are no records of established territories within the Downstream Areas (WestLand Resources 2017b).

For the 47 Special Status Species evaluated that were not listed as threatened or endangered under the ESA, 7 TNF sensitive species and one species protected by the Bald and Golden Eagle Act are known to occur within the Downstream Areas. Five of these occur in both the GPO Footprint and Downstream Areas: lowland leopard frog, American peregrine falcon, golden eagle, pale Townsend's big-eared bat, and western red bat are known to occur within the GPO Footprint. Two TNF sensitive species are known to occur only in the portions of the Downstream Areas. These are the: Aravaipa woodfern and Hohokam agave aka Murphey agave.

Table 7. Summary of Special Status Species with Potential to Occur within the GPO Footprint

Species	Status	GPO Footprint					Downstream Areas	
		East Plant	West Plant	Tailings Area	MARRCO Corridor		Devils Canyon	Queen Creek
					Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present								
PLANTS								
Aravaipa woodfern <i>(Thelypteris puberula</i> var. <i>sonorensis)</i>	TNF - S	○	○	○	○	○	●	◐
Arizona alum root <i>(Heuchera glomerulata)</i>	TNF - S	○	○	○	○	○	◐	◐
Arizona hedgehog cactus <i>(Echinocereus triglochidiatus</i> var. <i>arizonicus)</i>	Endangered; no designated critical habitat	●	◐	○	○	○	◐	●
Chihuahuan sedge <i>(Carex chihuahuensis)</i>	TNF - S	◐	○	○	○	○	◐	◐
Cochise sedge aka Giant Sedge <i>(Carex ultra</i> ; also <i>Carex spissa</i> var. <i>ultra)</i>	TNF - S	◐	○	◐	○	○	◐	◐
Fish Creek fleabane <i>(Erigeron piscaticus)</i>	TNF - S	○	○	○	○	○	◐	◐
Galiuro sage aka Aravaipa sage <i>(Salvia amissa)</i>	TNF - S	○	○	○	○	○	◐	◐
Hohokam agave aka. Murphey agave <i>(Agave murpheyi)</i>	TNF - S	○	○	◐	◐	◐	○	●
Mapleleaf false snapdragon <i>(Mabrya [Maurandya] acerifolia)</i>	TNF - S	◐	◐	◐	○	○	◐	◐
Mogollon fleabane <i>(Erigeron anchana)</i>	TNF - S	◐	○	○	○	○	◐	◐
Pima Indian mallow <i>(Abutilon parishii)</i>	TNF - S	◐	◐	●	◐	○	◐	◐
AMPHIBIANS								
Chiricahua leopard frog <i>(Lithobates [Rana] chiricahuensis)</i>	Threatened; designated critical habitat	◐	○	◐	○	○	◐	◐
Lowland leopard frog <i>(Lithobates [Rana] yavapaiensis)</i>	TNF - S	●	○	●	○	○	●	●
REPTILES								
Bezy's night lizard <i>(Xantusia bezyi)</i>	TNF - S	◐	◐	◐	◐	◐	◐	◐

Table 7. Summary of Special Status Species with Potential to Occur within the GPO Footprint

Species	Status	GPO Footprint					Downstream Areas	
		East Plant	West Plant	Tailings Area	MARRCO Corridor		Devils Canyon	Queen Creek
					Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present								
Sonoran desert tortoise <i>(Gopherus morafkai)</i>	TNF - S (Previously a USFWS Candidate species; Determined to be not warranted for listing on October 6, 2015)	◐	◑	●	◑	◐	◐	◑
BIRDS								
American peregrine falcon <i>(Falco peregrinus anatum)</i>	TNF - S	●	●	◑	◑	◑	●	◑
Bald Eagle <i>(Haliaeetus leucocephalus)</i>	Bald and Golden Eagle Protection Act	○	○	○	○	○	◑	◑
Golden eagle <i>(Aquila chrysaetos)</i>	Bald and Golden Eagle Protection Act	◑	◑	◑	◑	◑	●	●
Mexican spotted owl <i>(Strix occidentalis lucida)</i>	Threatened; designated critical habitat	○	○	○	○	○	◐	◐
Northern goshawk <i>(Accipiter gentilis atricapillus)</i>	TNF - S	◑	○	○	○	○	◑	◑
Southwestern willow flycatcher <i>(Empidonax traillii extimus)</i>	Endangered; designated critical habitat	◐	○	◐	○	○	◐	●
Sulphur-bellied flycatcher <i>(Myiodynastes luteiventris)</i>	TNF - S	◐	○	◐	○	○	◐	◐
Yellow-billed cuckoo <i>(Coccyzus americanus occidentalis)</i>	Threatened; proposed critical habitat	◐	○	◐	○	○	●	●
Yellow-eyed junco <i>(Junco phaeonotus)</i>	TNF - S	○	○	○	○	○	○	◐
MAMMALS								
Allen's big-eared bat aka. Allen's lappet-browed bat <i>(Idionycteris phyllotis)</i>	TNF - S	◐	◐	◐	○	○	◑	◑
Pale Townsend's big-eared bat <i>(Corynorhinus townsendii pallescens)</i>	TNF - S	●	◑	◑	◑	◑	●	●
Western Red Bat <i>(Lasiurus blossevillii)</i>	TNF - S	●	◐	○	○	○	●	●

TNF - S = Tonto National Forest - Sensitive

3. LEGISLATIVE LAND EXCHANGE

3.1. OVERVIEW OF THE LEGISLATIVE LAND EXCHANGE

Section 3003 of the NDAA for Fiscal Year 2015 authorizes and directs the exchange of the selected lands (the Oak Flat parcel) between the United States and Resolution for private lands owned by Resolution. Because of the land exchange, the Oak Flat parcel “shall be available for mining and related activities subject to and in accordance with applicable Federal, state, and local laws pertaining to mining and related activities on land in private ownership” (Section 3003, House of Representatives bill 3979). In exchange for the selected lands, Resolution would transfer to the United States eight parcels (the offered lands) located throughout Arizona totaling 5,344 acres (**Section 3.1.2**). As part of the legislative land exchange Resolution will release their mineral rights on 697 acres of unpatented mining claims on the Apache Leap and the USFS will then withdrawal that 697 acres from mineral entry. Collectively, the lands involved in the legislative land exchange authorized by Section 3003 of the NDAA are referred to as the Land Exchange Analysis Area. Locations of the lands involved in the land exchange are shown in **Figure 6**.

Table 8 describes the current and proposed surface management of the parcels to be exchanged as authorized in the legislative land exchange. **Figures 7 through 14** depict the current surface management of the lands involved in the land exchange.

The selected lands identified in **Table 8** include two parcels, the Oak Flat Withdrawal Area (760 acres) and 1,662 acres of Federal Land managed by the TNF surrounding the Oak Flat Withdrawal Area. These two parcels are collectively referred to as the Oak Flat. The selected lands are located within the following townships, ranges, and sections:

- Township 1 South, Range 13 East, in portions of Sections 28-29 and 31-33;
- Township 2 South, Range 12 East, in portions of Section 1; and
- Township 2 South, Range 13 East, in portions of Sections 6 and 7.

The eight parcels located on private land for which the ownership would be transferred to the United States (the offered lands) are located throughout Arizona. These lands, when transferred to the Federal government would be managed by the Coconino National Forest, the Tonto National Forest, the Coronado National Forest, or the BLM. The location of each offered land parcel is listed as follows, and their locations are depicted on **Figures 6, 7 through 14**.

The offered lands are located in non-contiguous areas within the following townships, ranges, and sections:

- **Appleton Ranch:** 640 acres in Township 21 South, Range 18 East, in portions of Sections 14-15 and 17; Township 21 South, Range 18 East, in portions of Section 28;

- **Apache Leap South End:** 110 acres in Township 2 South, Range 12 East, in portions of Sections 1-2 and 12;
- **Cave Creek:** 149 acres in Township 7 North, Range 4 East, in a portion of Section 21;
- **Dripping Springs:** 160 acres in Township 4 South, Range 15 East in portions of Sections 7 and 8;
- **East Clear Creek:** 640 acres in Township 14 North, Range 12 East, the entirety of Section 9;
- **Lower San Pedro River:** 3,050 acres in Township 8 South, Range 16 East, in a portion of Section 12; Township 8 South, Range 17 East, in portions of Sections 7, 17-21, 28-29, and 32-33; and Township 9 South, Range 17 East, in portions of Sections 3 and 4;
- **Tangle Creek:** 148 acres in Township 9.5 North, Range 5 East, in portions of Sections 34 and 35 and Township 9 North, Range 5 East, in a portion of Section 2; and
- **Turkey Creek:** 147 acres in Township 7 North, Range 12 East, in portions of Sections 3 and 4.

In addition to the offered lands, the NDAA also requires as part of the legislative land exchange that certain unpatented mining claims on Apache leap be withdrawn from mineral entry. Approximately 697 acres of unpatented mining claims currently held by Resolution near Apache Leap would be withdrawn from mineral entry by the USFS when Resolution surrenders all mining and extraction rights for those lands (**Figure 11**). The withdrawal lands are located in:

- Township 1 South, Range 12 East, in a portion of Section 36;
- Township 1 South, Range 13 East, in a portion of Section 31; and
- Township 2 South, Range 12 East, in portions of Sections 1-2 and 12.

Table 8. Surface Management, Size, and Location of Lands Involved in the Land Exchange

Parcel	County	CURRENT Surface Management	POST-EXCHANGE Surface Management	Acres
SELECTED LANDS (OAK FLAT PARCEL)				
Oak Flat (Federal Land)				
Oak Flat Withdrawal Area (including the 50-acre Oak Flat Campground)	Pinal	USFS (TNF)	Resolution Copper	760
Other Oak Flat Acreages	Pinal	USFS (TNF)	Resolution Copper	1662
TOTAL US Land to Resolution Copper				2,422
OFFERED LANDS (to be acquired by the USFS or BLM)				
Turkey Creek parcel (JX Ranch)	Gila	Resolution Copper	USFS (TNF)	147
Tangle Creek parcel (LX Bar Ranch)	Yavapai	Resolution Copper	USFS (TNF)	148
Cave Creek parcel (6L Ranch)	Maricopa	Resolution Copper	USFS (TNF)	149
East Clear Creek parcel	Coconino	Resolution Copper	USFS (CNF)	640
Apache Leap South End parcel	Pinal	Resolution Copper	USFS (TNF)	110
Subtotal Private Lands to US for administration by the USFS				1,194
Lower San Pedro River parcel (7B Ranch)	Pinal	Resolution Copper	BLM (Gila District)	3,050
Dripping Springs parcel	Gila, Pinal	Resolution Copper	BLM (Gila District)	160
Appleton Ranch parcel	Santa Cruz	Resolution Copper	BLM (Gila District)	940
Subtotal Private to US for administration by the BLM				4,150
TOTAL Private Lands to US for administration by BLM				5,344
APACHE LEAP WITHDRAWAL AREA¹				
Apache Leap Withdrawal Area ¹	Pinal	TNF	TNF all mining and other claims to be surrendered	697 ³
TOTAL Apache Leap Withdrawal Area				807

¹ This is the part of Apache Leap that is already federal, but within which Resolution Copper would surrender all mining claims and interests. This parcel plus the 110 acres of the Apache Leap South End parcels would make up the Apache Leap Special Management Area.

3.2. METHODS

In determining the scope of analysis for the evaluation of the legislative land exchange we relied upon the requirements of the legislation authorizing the exchange and USFS NEPA policy and guidelines. The NDAA requires the Secretary of Agriculture to prepare an EIS prior to conveying the offered lands and the specific decision space for the USFS Supervisor with respect to the land exchange is limited as outlined in the NOI prepared for the USFS EIS (CFR Vol. 81, No. 53 pages 14831 and 14832).

The geographic scope of the legislative land exchange includes the Offered Lands, the Selected Lands, and the Mineral Withdrawal parcel. As described in **Section 3.1**, there are eight Offered Land parcels located throughout Arizona. These parcels occur from East Clear Creek, on the Coconino National

Forest, south to the Appleton Ranch parcels adjoining the Appleton-Whittell Research Ranch managed by the Audubon Society, less than 18 miles from the US Border with Mexico. These parcels are located within a region that from north to south is approximately 200 miles in length and includes three national forests and two BLM districts. Elevation of the parcels included in the legislative exchange range from 2,400 to 6,800 ft amsl and habitats found on these parcels include Plains and Great Basin Grasslands, Mesquite Bosque, Petran Montane Conifer Forest, Great Basin Conifer Woodland, and Sonoran Desert Scrub. Because of the biogeographic diversity of the offered land parcels, the list of Special Status Species considered in this analysis was derived from the sensitive species lists for the Coconino National Forest, Tonto National Forest, the Coronado National Forests, the BLM Phoenix District, and BLM Gila District (**Appendix C**) and those species that have been designated as Endangered, Threatened, Proposed for listing or Candidate for listing by USFWS (collectively referred to as USFWS listed species), as determined by the IPaC resource lists for each county (Coconino, Gila, Maricopa, Pinal, Santa Cruz, and Yavapai) (**Appendix D**).

The procedures, principal resources and definitions for occurrence used to complete the screening analysis for the legislative land exchange Analysis Area are the same as described in **Section 2.2** for the GPO Footprint.

3.3. ENVIRONMENTAL SETTING OF LANDS INCLUDED IN THE LEGISLATIVE LAND EXCHANGE

3.3.1. Selected Lands

The selected lands are located two to three miles east of the town of Superior in a transitional zone on the northeastern edge of the Basin and Range physiographic province. Elevations range from 3,100 ft amsl near Queen Creek to 4,648 ft amsl at a high point on the Apache Leap escarpment that overlooks Superior. The western edge of this area is generally very steep, with the cliffs of the Apache Leap escarpment rising abruptly above Superior. East of Apache Leap, an area of parallel ridges and valleys trends to the northeast. The northeastern portion of the area is relatively flat, and most of the drainages flow toward Queen Creek; however, in the southern portion of the parcel, Rio Rancho Creek drains toward Devils Canyon to the east. The aquatic features (i.e., drainages, stock ponds) range from ephemeral to intermittent; no perennial water sources exist within Oak Flat. Surface water runoff in the vicinity is captured in man-made stock ponds and Civilian Conservation Corps check dams, some of which support riparian vegetation and could be considered intermittent. No natural ponds are present (WestLand Resources 2004a, 2004e, 2011).

The selected lands contain the Oak Flat Campground, a year-round, no-fee, campground with 16 developed campsites, two outhouses, tables, fire-pit grills, and recreational vehicle access. Portions of the selected lands have been used for mining exploration and contain numerous exploration drill sites and drill roads. Some drill sites are still active and may contain drilling rigs, support vehicles, above

ground storage tanks (ASTs) for fuel, ASTs for drilling mud, ASTs for water, generators, equipment/tool storage, and lubricants and oils for mechanical equipment.

Four upland biotic communities, Interior Chaparral, Madrean Evergreen Woodland, Arizona Upland Subdivision of Sonoran Desertscrub, and Interior Riparian Deciduous Forest, are found within the Selected Lands (Brown and Lowe 1994). (**Table 9; Figure 15**). Interior Chaparral covers most of the parcel and is represented by manzanita (*Arctostaphylos pungens*) and shrub live oak (*Quercus turbinella*). Madrean Evergreen Woodland represented by Emory oak (*Quercus emoryi*), pinyon pine (*Pinus edulis*), one seed juniper (*Juniperus monosperma*), and mountain mahogany (*Cercocarpus montanum*) occur as bands along the deeper alluvium and on the steeper north facing slopes above Queen Creek. Arizona Upland Subdivision of Sonoran Desertscrub, represented by saguaro (*Carnegiea gigantea*) and hedgehog cactus (*Echinocereus fasciculatum*) occurs on a south facing hillslope above Rancho Rio Creek in the southern portion of the parcel. Interior Riparian Deciduous Forest, represented by Fremont cottonwood (*Populus fremontii*) and Goodding's willow (*Salix gooddingii*) which occur in patches around stock ponds (WestLand Resources 2011).

3.3.2. Offered Lands

3.3.2.1. Turkey Creek

The Turkey Creek parcel is located within the streambed and adjacent upland areas along Turkey Creek and Rock Creek in the Sierra Ancha Mountains within the Central Highlands physiographic province, a transitional zone between the Basin and Range and the Colorado Plateau provinces. Elevations range from a high of approximately 5,580 ft amsl at the western boundary down to approximately 5,160 ft amsl along the northern boundary in the stream bed. WestLand observations suggest that the flow is intermittent (WestLand Resources 2004b).

The upland vegetation on the Turkey Creek parcel is mapped as one biotic community: Great Basin Conifer Woodland (Brown 1994b) (**Table 9; Figure 16**). However, during field reconnaissance, vegetation characteristic of four biotic communities: Petran Montane Conifer Forest, Madrean Evergreen Woodland, Interior Chaparral, and Great Basin Conifer Woodland were observed (WestLand Resources 2004c). The Petran Montane Conifer Forest, represented by ponderosa pine (*Pinus ponderosa*), occurs on north facing slopes, while the south facing slopes are a transition between Madrean Evergreen Woodland, represented by alligator juniper (*Juniperus deppeana*), and Interior Chaparral, represented by manzanita (*Arctostaphylos* sp.) with grasses also present. Riparian vegetation along Turkey Creek includes narrowleaf cottonwood (*Populus angustifolia*), New Mexican locust (*Robinia neomexicana*), Arizona sycamore (*Platanus wrightii*), and Gambel oak (*Quercus gambelii*).

Fires in the early 2000s burned approximately one third of the vegetation on the parcel (WestLand Resources 2004b). The south facing slopes experienced a greater loss of vegetative cover than the more

mesic north facing slopes and canyon bottoms. Some areas burned intensely, with the resulting loss of complete stands of one seed juniper, Ponderosa pine, and manzanita (WestLand Resources 2004b). Heavy undergrowth covers the parcel, which is now dominated by manzanita, as well as a number of dead Ponderosa pine snags and deadfalls (Charest and Huntington 2016). The south facing slopes experienced a greater loss of vegetative cover than the more mesic north facing slopes and canyon bottoms. Some areas burned intensely, with the resulting loss of complete stands of one seed juniper, ponderosa pine, and manzanita (WestLand Resources 2004b).

3.3.2.2. Tangle Creek

The Tangle Creek parcel is located within the Central Highlands physiographic province, a transition zone between the Basin and Range and the Colorado Plateau provinces. The parcel is located near the center of a broad valley with gently sloping to rolling hills known as Bloody Basin. Tangle Creek bisects the property from west-northwest to east-southeast. Streambeds within the broad portion of the valley slope gently to the east. Nearly flat floodplains adjacent to the stream beds are up to approximately 20 ft above the active channels. Upland areas display moderately sloping to rolling hills, with some steep to vertical sections where erosion has removed sedimentary (alluvial [stream bed] or lacustrine [lake bed]) deposits. Tangle Creek is ephemeral within the parcel, but is presumed to be intermittent to perennial (above/below) in other reaches because of its designated use for warm water aquatic and wildlife use.

The upland vegetation on the Tangle Creek parcel is mapped as one biotic community: Great Basin Conifer Woodland (Brown 1994b) (Table 9; Figure 17). However, during field reconnaissance, vegetation characteristic of four biotic communities: The Great Basin Conifer Woodland, the Arizona Upland Subdivision of the Sonoran Desertscrub, the Semi-desert Grassland, and Sonoran Deciduous Riparian Forest were observed (WestLand Resources, 2004a). Great Basin Conifer Woodland, represented by one seed juniper, and Semi-desert Grassland, represented by a number of grass species including the locally dominant side oats grama (*Bouteloua curtipendula*), occur throughout the property. The Arizona Upland Subdivision of Sonoran Desertscrub represented by saguaro occurs only on the cliffs of exposed lacustrine sediments in the northwestern portion of the property. Sonoran Deciduous Riparian Forest occurs in a defined corridor in and along the floodplains of Tangle Creek and is represented by individual sycamores, ash, and desert willow.

Historical use of the site as a residence and, more recent (1990s) transient worker housing, has resulted in a modest amount of land disturbance, including agricultural land clearing. In 2004, the property was vacant, disturbance had largely ceased, and natural vegetation was gradually returning (WestLand Resources 2004c).

3.3.2.3. Cave Creek

The Cave Creek parcel is located along the canyon floor and adjacent upland areas of Cave Creek, in the Central Highlands physiographic province, with elevations ranging from 2,560 to 2,800 ft amsl. The Cave Creek watershed is over 50 square miles in area with much of it bare bedrock or shallow soils, conditions favorable for frequent high-water flood events in the stream above the parcel (WestLand Resources 2004d). The Cave Creek riparian corridor runs through the center of the property. Flow in Cave Creek is intermittent with some perennial pools in the vicinity of the parcel. There are perennial reaches of Cave Creek up and downstream of the parcel.

The upland vegetation on the Cave Creek parcel is mapped as one biotic community: Arizona Upland Subdivision of Sonoran Desertscrub (Turner and Brown 1994) (**Figure 18**). However, during field reconnaissance, vegetation characteristic of three biotic communities, Interior Chaparral, Arizona Upland Subdivision of Sonoran Desertscrub, and Deciduous Riparian Forest were observed (**Table 9**) (WestLand Resources 2004d). Arizona Upland, represented by saguaro, foothill palo verde, and ironwood (*Olneya tesota*), occurs on both the slopes and terraces of the parcel, with elements of Interior Chaparral, represented by barberry (*Mahonia haematocarpa*) and buckbrush (*Ceanothus* sp.) present on the terraces. Riparian vegetation along Cave Creek is not well developed, but includes Arizona sycamore, velvet ash (*Fraxinus velutina*), and Goodding's willow.

3.3.2.4. East Clear Creek

The East Clear Creek parcel is located along the canyon floor and adjacent upland areas of East Clear Creek in the Colorado Plateau physiographic province, with elevations ranging from 6,200 to 6,820 ft amsl. East Clear Creek flows to the east northeast towards the Little Colorado River and the general gradient of the topography is sloping down towards the north. The section of East Clear Creek that crosses the parcel supported a perennial flow in 2005 (Golder Associates 2005).

The upland vegetation on the East Clear Creek parcel is mapped as one biotic community: Petran Montane Conifer Forest (**Figure 19**). However, during field reconnaissance, vegetation characteristic of Interior Riparian Deciduous Forest and Great Basin Conifer Woodland was also observed (**Table 8**) (WestLand Resources 2016a, 2016c). The upland vegetation is dominated by second growth ponderosa pine with Gambel oak and New Mexico locust on north facing slopes, while south facing slopes are generally scrub live oak woodland with juniper (*Juniperus* spp.) and pinyon pine (Golder Associates 2005). Along East Clear Creek patches of boxelder (*Acer negundo*), cottonwood, Arizona alder (*Alnus oblongifolia*), and Bonpland's willow (*Salix bonplandiana*) occur (WestLand Resources 2016c).

3.3.2.5. Apache Leap South End

The Apache Leap South End parcel is located in the mountains immediately east and south of the town of Superior in a transitional zone on the northeastern edge of the Basin and Range physiographic province. The Apache Leap escarpment above the town of Superior runs through portions of the parcel. Elevations range from 3,680 ft amsl to 4,720 ft amsl at a high point on the Apache Leap escarpment that overlooks Superior. The western edge of this area is generally very steep, with the cliffs of the Apache Leap escarpment rising abruptly above Superior. East of the Apache Leap escarpment, an area of parallel ridges and valleys trends to the northeast. There are no surface water features in the Apache Leap South End parcels, except for minor ephemeral headwater drainage features.

The upland vegetation on the Apache Leap South End parcels is mapped as one biotic community: Arizona Upland Subdivision of the Sonoran Desertscrub (Turner and Brown 1994) (**Figure 11**). However, field reconnaissance noted that the north facing slopes include plants that more closely resemble the Interior Chaparral biotic community (**Table 9**) (WestLand Resources 2017c). Common plants of the Arizona Upland biotic community on the parcel include saguaro, pencil cholla (*Cylindropuntia arbuscula*), jojoba (*Simmondsia chinensis*), prickly pear (*Opuntia engelmannii*), foothill palo verde, brittlebush (*Encelia farinosa*), globemallow (*Sphaeralcea* sp.), and false mesquite (*Calliandra eriophylla*). Common plants of the Interior Chaparral biotic community on the parcel include scrub live oak, sugar sumac (*Rhus ovata*), barberry, and desert spoon (*Dasyliirion wheeleri*) (WestLand Resources 2017c).

Also noted were several plant species frequently found on calcareous substrate including crucifixion thorn (*Canotia holacantha*), California rosewood (*Vauquelinia californica*), sandpaper bush (*Mortonia scabrella*), and mariola (*Parthenium incanum*) (WestLand Resources 2017c).

The xeric washes on the parcels support velvet mesquite and catclaw mimosa (*Mimosa aculeaticarpa*) of greater density than upland areas (WestLand Resources 2017c).

3.3.2.6. Lower San Pedro River

The Lower San Pedro River parcel is located within the Basin and Range physiographic province, with elevations ranging from 2,600 ft amsl atop a bluff at the southwestern most corner of the parcel sloping gradually towards 2,300 ft amsl at the northern boundary. The province is characterized by elongated mountain ranges trending northwest southeast, separated by broad alluvial valleys. The parcel is located within one of the broad alluvial valleys with the Galiuro Mountains to the east and the Santa Catalina Mountains to the south. The San Pedro River is ephemeral to intermittent along the approximately 53,800-ft reach passing through the parcel; perennial surface water is supported by an uncapped artesian well (Celeste Andresen, Land Manager with the Nature Conservancy, personal communication).

The vegetation on the Lower San Pedro River parcel is mapped as one biotic community: Arizona Upland Subdivision of Sonoran Desertscrub (Turner and Brown 1994) (**Figure 20**). However, during field reconnaissance, vegetation characteristic of Sonoran Riparian Deciduous Forest was also observed (**Table 8**). The Arizona Upland Subdivision of Sonoran Desertscrub occurs on *bajadas* above the San Pedro River floodplain and is represented by saguaro, velvet mesquite, creosote bush (*Larrea tridentata*), several species of cholla cacti (*Cylindropuntia* spp.), and foothill palo verde (WestLand Resources 2004d).

The Sonoran Riparian Deciduous Forest vegetation that lines the river corridor includes a mesquite bosque that stretches for approximately 3 miles on the east side of the San Pedro River in the center of the property. Other riparian species present include velvet mesquite, desert willow (*Chilopsis linearis*), Goodding's willow, graythorn (*Ziziphus obtusifolia*), Fremont cottonwood, and the non-native tamarisk (WestLand Resources 2004d).

3.3.2.7. Dripping Springs

The Dripping Springs parcel is located in the Dripping Spring Mountains northeast of Kearny, Arizona in the Basin, and Range physiographic province. Elevations range from 3,480 to 4,360 ft amsl within the parcel. It is located in a rugged upland area northeast of the Gila River, which is the main drainage feature for the area. Notable peaks in the vicinity of the parcel include Steamboat Mountain rising to 3,373 ft immediately west of the parcel and Tam O'Shanter Peak rising to 4,633 ft southeast of the parcel. No surface water features are present in the Dripping Springs parcel, with the exception of very minor ephemeral headwater drainage features that are tributary to the Gila River.

The vegetation of the Dripping Springs parcel is comprised of two biotic communities: Arizona Upland subdivision of the Sonoran Desertscrub and Semi-desert Grassland (Brown and Lowe 1994) (**Table 9; Figure 21**). The western portion of the parcel is an ecotone between the two biotic communities, while the eastern portion is Semi-desert Grassland. The Arizona Upland subdivision occurs on the south facing slopes of the western portion of the parcel and is represented by plant species including saguaro, palo verde, jojoba, velvet mesquite, desert hackberry (*Celtis pallida*) hopbush (*Dodonaea viscosa*), and brittle bush (*Encelia farinosa*). A variety of cholla (*Cylindropuntia* spp.) and prickly pear cacti (*Opuntia* spp.) contribute significantly to this biotic community. The Semi-desert Grassland occurs on the north facing slopes of the western portion of the parcel and on the whole of the eastern portion of the parcel. It is represented by plant species including desert spoon, Palmer's agave (*Agave palmeri*), catclaw acacia, scrub live oak, beargrass (*Nolina microcarpa*), one-seed juniper, threeawn grasses (*Aristida* spp.), sideoats grama grass (*Bouteloua curtipendula*), black grama grass (*B. eriopoda*), curly mesquite grass (*Hilaria belangeri*), bullgrass (*Muhlenbergia emersleyi*), and broom snakeweed (*Gutierrezia sarothroides*).

Also noted were groupings of limestone endemics including sandpaper bush (*Mortonia scabrella*), mariola (*Parthenium incanum*), crucifixion thorn, desert zinnia (*Zinnia acerosa*), and beebush (WestLand Resources 2016b). The xeric washes on the parcels support dense velvet mesquite and catclaw mimosa.

3.3.2.8. Appleton Ranch

The Appleton Ranch parcel is comprised of a set of three private parcels within the larger 8,000-acre Appleton-Whittell Research Ranch in the Basin and Range physiographic province. The parcels are located along the streambeds and adjacent upland areas of Post, Vaughn, and O'Donnell canyons (all of which flow north northeast toward the Babocomari River). The Babocomari River is an ephemeral to perennial tributary to the perennial San Pedro River, approximately 20 miles east of the parcels.

The upland areas drained by the three onsite streams are known as the Canelo Hills, a rolling terrain that in the immediate vicinity of the Appleton Ranch parcel ranges in elevation from 4,635 to 5,051 ft amsl. Bald Hill, centrally located on the Research Ranch (and near the midpoint of the three parcel groups), represents the high point of this elevational range. The Canelo Hills reach their peak elevation at Lookout Knob, 6,175 ft amsl, about 7 miles south southeast of the parcels.

The vegetation of the Appleton Ranch parcel is comprised of two biotic communities: Plains and Great Basin Grassland (the dominant biotic community) and Madrean Evergreen Oak Woodland (Brown and Lowe 1994) (**Table 9; Figure 22**). Grasslands are much more extensive than are the oak woodlands. The grassland varies markedly in species composition, density, and structure in the northern part of the Appleton Ranch parcel, with short-grass grasslands found on south-facing slopes, medium-sized grass stands in swales and north-facing ridges, and tall-grass stands of sacaton (*Sporobolus wrightii*) in the broader floodplains along several of the washes. Woody vegetation is present in some upland areas as juniper woodlands, and along watercourses as mesquite bosques with very limited stands of cottonwood and desert willow.

3.3.3. Apache Leap Withdrawal Area

The Apache Leap Withdrawal Area is located in the mountains immediately east and south of the town of Superior in a transitional zone on the northeastern edge of the Basin and Range physiographic province. There are two biotic communities found on the Apache Leap Withdrawal Area: Arizona Upland Subdivision of the Sonoran Desertscrub and Interior Chaparral (**Table 9; Figure 11**).

Table 9. Biotic Communities within the Land Exchange Analysis Area

Land Exchange Lands	Biotic Community									
	Arizona Upland Subdivision of Sonoran Desertscrub	Great Basin Conifer Woodland	Interior Chaparral	Interior Riparian Deciduous Forest	Madrean Evergreen Woodland	Montane Riparian Wetland	Petran Montane Conifer Forest	Plains and Great Basin Grasslands	Semi-desert Grassland	Sonoran Riparian Deciduous Forest
Selected Lands										
Oak Flat Parcel	X		X	X	X					
Offered Lands										
Turkey Creek Parcel		X	X		X		X			
Tangle Creek Parcel	X	X							X	X
Cave Creek Parcel	X		X	X						
East Clear Creek Parcel		X		X			X			
Apache Leap South End Parcel	X		X							
Lower San Pedro River Parcel	X									X
Dripping Springs Parcel	X								X	
Appleton Ranch Parcel					X				X	
Apache Leap Withdrawal Area										
Apache Leap Withdrawal Area	X		X							

3.4. RESULTS OF SPECIAL STATUS SPECIES SCREENING ANALYSIS -- LEGISLATIVE LAND EXCHANGE

Two-hundred and ninety-two Special Status Species were identified for analysis of their potential to occur within the Legislative Land Exchange Analysis Area. A summary of the screening analysis identifying those Special Status Species that are either known to occur or have the potential to occur within the Legislative Land Exchange Analysis Area (both Selected and Offered Lands) is provided in **Tables 10 and 11**. A detailed table providing the results of the screening analysis is provided in **Appendix B**.

Of the 292 Special Status Species analyzed, 130 were determined to have no potential to occur within the Legislative Land Exchange Analysis Area, 59 had some potential but were considered unlikely to occur, 63 were considered to have the possibility for occurrence but there are no records available to confirm their presence, and 40 species were determined to have documented records for occurrence in the Legislative Land Exchange Analysis Area (**Table 10**). Within the Selected Lands, 41 species were determined to have some potential to occur (unlikely, possible, or present). While on the Offered Lands 162 Special Status Species were determined to have some potential to occur (unlikely, possible, or present) (**Tables 10 and 11**).

Table 10. Legislative Land Exchange Analysis Area, Screening Analysis Results Summary for Selected and Offered Lands

Potential to Occur	Federally Listed Species		Sensitive Species	
	Selected Lands	Offered Lands	Selected Lands	Offered Lands
None	42	26	209	104
Unlikely	3	6	11	52
Possible	0	8	19	62
Present	1	6	7	28

Within the Selected Lands one federally listed species, Arizona Hedgehog Cactus, is known to occur. Surveys conducted by WestLand within this area have detected 27 individuals (WestLand Resources 2017d). Three additional federally listed species have some limited potential to occur on the selected lands (determined unlikely), Chiricahua leopard frog, yellow-billed cuckoo, and southwestern willow flycatcher. The selected lands are not part of any proposed or designated critical habitat.

Within the Offered Lands 14 federally listed species are known or have the potential (Possible) to occur and 6 federally listed species had potential but were considered unlikely to occur (**Tables 10 and 11**). The Offered land parcels are within critical habitat for four federally listed species and proposed critical habitat for two federally listed species:

- Jaguar (designated): Appleton Ranch
- Mexican spotted owl (final designated): East Clear Creek and Turkey
- Little Colorado spinedace (final designated) East Clear
- SWFL (final): Lower San Pedro
- Northern Mexican gartersnake (proposed): Appleton Ranch and Lower San Pedro
- YBC (proposed): Lower San Pedro

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal	
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch		Apache Leap Withdrawal Area
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
PLANTS												
Aravaipa sage <i>(Salvia amissa)</i>	BLM - S (Gila)	○	◑	○	○	○	○	○	◐	○	○	○
Aravaipa woodfern <i>(Thelypteris puberula</i> var. <i>sonorensis)</i>	TNF - S COR - S BLM - S (Gila and PHX)	○	◑	◑	◐	◐	○	◑	○	◑	○	○
Arid throne fleabane <i>(Erigeron arisolius)</i>	COR - S	◑	○	○	○	○	○	○	○	○	●	○
Arizona alum root <i>(Heuchera glomerulata)</i>	TNF - S COR - S	◑	○	○	○	○	○	○	○	○	○	○
Arizona bugbane <i>(Cimicifuga arizonica)</i>	TNF - S COC - S	○	◐	○	○	◐	○	○	○	○	○	○
Arizona coralroot <i>(Hexalectris arizonica)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	○
Arizona eryngo <i>(Eryngium sparganophyllum)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	◑	○	○	○
Arizona hedgehog cactus <i>(Echinocereus triglochidiatus</i> var. <i>arizonicus)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	●	○	○	○	○	○	◐	○	◑	○	◐
Arizona manihot <i>(Manihot davisiae)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Arizona passionflower <i>(Passiflora arizonica)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Arizona phlox <i>(Phlox amabilis)</i>	TNF - S COC - S	○	◑	◑	○	◐	○	○	○	○	◑	○
Arizona sneezeweed <i>(Helenium arizonicum)</i>	COC - S	○	○	○	○	○	◐	○	○	○	○	○
Arizona sunflower <i>(Helianthus arizonensis)</i>	COC - S	○	◐	◐	○	◐	○	○	○	○	○	○
Bartram Stonecrop <i>(Graptopetalum bartramii)</i>	COR - S BLM - S (Gila)	○	○	○	○	○	○	○	○	○	◑	○
Beardless chinchweed <i>(Pectis imberbis)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Bebb's willow <i>(Salix bebbiana)</i>	COC - S	○	○	○	○	○	◐	○	○	○	○	○
Blumer's dock <i>(Rumex orthoneurus)</i>	TNF - S COC - S COR - S	○	◐	○	○	◐	○	○	○	○	○	○
Bush violet <i>(Browallia eludens)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered									Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
California flannelbush <i>(Fremontodendron californica)</i>	BLM - S (PHX)	◑	◑	◑	◑	◑	◑	○	○	○	○	
Canelo Hills ladies'-tresses <i>(Spiranthes delitescens)</i>	Endangered; no designated critical habitat	○	○	○	○	○	○	○	○	◑	○	
Chihuahuan sedge <i>(Carex chihuahuensis)</i>	TNF - S COR - S	○	◑	◑	◑	◑	○	◑	○	○	○	
Chiricahua mountain brookweed <i>(Samolus vagans)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	
Cochise sedge aka Giant Sedge <i>(Carex ultra; also Carex spissa var. ultra)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	○	◑	◑	◑	◑	○	◑	○	○	○	
Coleman's crested coralroot <i>(Hexalectris colemanii)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	
Dalhouse spleenwort <i>(Asplenium dalhousiae)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	○	◑	○	
Eastwood alum root <i>(Heuchera eastwoodiae)</i>	TNF - S COC - S	○	◑	◑	○	◑	○	○	○	○	○	
Fish Creek rockdaisy <i>(Perityle saxicola)</i>	TNF - S	◑	○	○	○	○	◑	○	○	○	○	
Flagstaff beardtongue <i>(Penstemon nudiflorus)</i>	COC - S	○	◑	○	○	◑	○	○	○	○	○	
Flagstaff pennyroyal <i>(Hedeoma diffusum)</i>	COC - S	○	○	○	○	◑	○	○	○	○	○	
Galiuro sage aka Aravaipa sage <i>(Salvia amissa)</i>	TNF - S COR - S BLM - S (Gila)	○	◑	◑	◑	◑	○	◑	○	○	○	
Greene milkweed <i>(Asclepias uncialis ssp. unialis)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	
Hinckley's polemonium <i>(Polemonium pauciflorum ssp. hinckleyi)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	
Hohokam agave aka. Murphey agave <i>(Agave murpheyi)</i>	TNF - S BLM - S (PHX)	○	○	◑	◑	○	○	○	○	○	○	
Huachuca golden aster <i>(Heterotheca rutteri)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	○	◑	○	
Huachuca milkvetch <i>(Astragalus hypoxylus)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	○	◑	○	

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered									Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Huachuca water-umbel <i>(Lilaeopsis schaffneriana</i> <i>var. recurva)</i>	Endangered; designated critical habitat BLM - S (Gila)	○	○	○	○	○	○	○	◑	○	●	○
Lemmon's milkweed <i>(Asclepias lemmonii)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Lemmon's stevia <i>(Stevia lemmonii)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Lemon lily <i>(Lilium parryi)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Mapleleaf false snapdragon <i>(Mabrya [Maurandya]</i> <i>acerifolia)</i>	TNF - S	◑	○	○	○	○	○	◑	○	○	○	○
Metcalfe's tick-trefoil <i>(Desmodium metcalfei)</i>	COC - S COR - S	◑	◑	◑	◑	◑	○	◑	◑	◑	○	○
Mogollon fleabane <i>(Erigeron anchana)</i>	TNF - S	◑	◑	◑	◑	◑	◑	○	◑	○	○	◑
Mt. Dellenbaugh sandwort <i>(Arenaria aberrans)</i>	TNF - S COC - S	○	◑	○	○	◑	○	○	○	○	○	○
Nodding blue-eyed grass <i>(Sisynchrium cernuum)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Pima Indian mallow <i>(Abutilon parishii)</i>	TNF - S COR - S BLM - S (Gila) and PHX	◑	○	○	○	○	○	◑	◑	◑	◑	◑
Pinos altos flameflower <i>(Talinum humile)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Ripley wild buckwheat <i>(Eriogonum ripleyi)</i>	TNF - S COC - S	○	◑	○	◑	○	○	○	○	○	○	○
Rock fleabane <i>(Erigeron saxatilis)</i>	COC - S	○	○	○	○	◑	○	○	○	○	○	○
Rutter's false golden aster <i>Heterotheca rutteri</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Saiya <i>(Amoreuxia gonzalezii)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Santa Cruz starleaf <i>(Choisya mollis)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Shade violet <i>(Viola umbraticola)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Smooth baby bonnets <i>(Coursetia glabella)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Sonoran noseburn <i>(Tragia laciniata)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present											
Southwestern muhly <i>(Muhlenbergia palmeri</i> [= <i>M. dubioides</i>])	COR - S	○	○	○	○	○	○	○	○	○	○
Supine bean <i>(Macropitilium supinum)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Sycamore Canyon muhly <i>(Muhlenbergia elongata</i> [= <i>M. xerophila</i>])	COR - S	○	○	○	○	○	○	○	○	○	○
Tepic flameflower <i>(Talinum marginatum)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Texas purplespike <i>(Hexalectris warnockii)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Tonto Basin agave <i>(Agave delamateri)</i>	TNF - S COC - S	○	◐	○	○	○	○	○	○	○	○
Toumey groundsel <i>(Packera [Senecio]</i> <i>neomexicana</i> var. <i>toumeyi</i>)	COR - S TNF - S	◐	○	○	○	○	◐	○	○	◐	○
Trans-Pecos Indian paintbrush <i>(Castilleja nervata)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Verde breadroot <i>(Pediemelum verdiensis)</i>	COR - S	○	○	◐	○	○	○	○	○	○	○
Wiggin's milkweed vine <i>(Metastelma mexicanum</i> [= <i>Cynanchum wigginsii</i>])	COR - S	○	○	○	○	○	○	○	○	○	○
INVERTEBRATES											
A Caddisfly <i>(Lepidostoma knulli)</i>	COC - S	○	○	○	○	◐	○	○	○	○	○
California floater <i>(Anodonta californiensis)</i>	COC - S	○	◐	○	○	◐	○	○	○	○	○
Cestus Skipper <i>(Atrytonopsis cestus)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Huachuca springsnail <i>(Pyrgulopsis thompsoni)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Hydrobiid springsnail <i>(Pyrgulopsis spp.)</i>	BLM - S (Gila and PHX)	○	◐	○	◐	◐	○	◐	○	○	○
Monarch Butterfly <i>(Danaus plexippus</i> <i>plexippus)</i>	BLM - S (Gila and PHX)	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Net-winged Midge <i>(Agathon arizonicus)</i>	TNF - S	○	◐	○	○	○	○	○	○	○	○
Sabino Canyon damselfly <i>(Argia sabino)</i>	COR - S	○	○	○	○	○	○	○	○	○	○
Succineid snails <i>(Succineidae spp.)</i>	BLM - S (Gila and PHX)	◐	◐	○	◐	◐	○	◐	○	○	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal	
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch		Apache Leap Withdrawal Area
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Sunrise Skipper <i>(Adopaeoides prittwitzii)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
FISH												
Bluehead Sucker <i>(Catostomus discobolus)</i>	BLM - S (Gila)	○	○	○	○	◑	○	○	○	○	○	○
Desert sucker <i>(Catostomus clarki)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	○	●	◑	◑	◑	○	◑	○	○	○	○
Gila chub <i>(Gila intermedia)</i>	Endangered; designated critical habitat. BLM - S (Gila and PHX)	○	◑	○	○	○	○	○	◑	○	○	○
Gila longfin dace <i>(Agosia chrysogaster chrysogaster)</i>	BLM - S (Gila and PHX)	○	◑	◑	◑	○	○	◑	○	○	○	○
Gila topminnow <i>(Poeciliopsis occidentalis occidentalis)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	○	○	○	◑	○	○	○	◑	○	○	○
Headwater chub <i>(Gila nigra)</i>	Proposed Threatened	○	●	○	○	○	○	○	○	○	○	○
Little Colorado spinedace <i>(Lepidomeda vittata)</i>	Threatened; designated critical habitat BLM - S (Gila)	○	○	○	○	◑	○	○	○	○	○	○
Little Colorado sucker <i>(Catostomus sp.3)</i>	COC - S BLM - S (Gila)	○	○	○	○	◑	○	○	○	○	○	○
Loach minnow <i>(Tiaroga cobitis)</i>	Endangered; designated critical habitat BLM - S (Gila)	○	○	○	○	○	○	○	◑	○	○	○
Roundtail chub <i>(Gila robusta)</i>	Proposed Threatened: BLM - S (Gila)	○	○	○	○	◑	○	◑	○	○	○	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered									Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Sonora sucker (<i>Catostomus insignis</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHX)	○	◐	◑	◑	○	○	○	○	○	○	
Spikedace (<i>Meda fulgida</i>)	Endangered; designated critical habitat BLM - S (Gila and PHX)	○	○	○	○	○	○	◐	○	○	○	
Speckled dace (<i>Rhinichthys osculus</i>)	BLM - S (Gila and PHX)	○	●	◐	◐	◑	○	○	○	○	○	
AMPHIBIANS												
Arizona toad (<i>Anaxyrus microscaphus</i>)	BLM - S (Gila and PHX)	◐	◑	◑	◑	◑	◐	◐	○	○	○	
Arizona treefrog (<i>Hyla wrightorum</i>)	COR - S	○	◑	◐	○	◑	○	○	○	◐	○	
Chiricahua leopard frog (<i>Lithobates [Rana] chiricahuensis</i>)	Threatened; designated critical habitat BLM - S (Gila)	◐	◐	○	○	○	○	○	○	◑	○	
Great Plains narrow-mouthed toad (<i>Gastrophryne olivacea</i>)	BLM - S (Gila and PHX)	○	○	○	○	○	○	○	○	◐	○	
Lowland leopard frog (<i>Lithobates [Rana] yavapaiensis</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHX)	◑	◑	◐	◑	◐	○	●	○	◑	○	
Northern leopard frog (<i>Lithobates [Rana] pipiens</i>)	TNF - S COC - S BLM - S (Gila and PHX)	○	○	○	○	◐	○	○	○	○	○	
Sonora tiger salamander (<i>Ambystoma mavortium stebbinsi</i> ; previously known as <i>A. tigrinum stebbinsi</i>)	Endangered; no designated critical habitat	○	○	○	○	○	○	○	○	◐	○	
Western barking frog (<i>Craugastor augusti cactorum</i>)	COR - S TNF - S	○	○	○	○	○	○	○	○	◐	○	

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal	
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch		Apache Leap Withdrawal Area
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
REPTILES												
Arizona ridge-nosed rattlesnake <i>(Crotalus willardi willardi)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Bezy's night lizard <i>(Xantusia bezyi)</i>	COR - S TNF - S	◐	○	○	◐	○	◐	◐	◐	○	○	◐
Brown vinesnake <i>(Oxybelis aeneus)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Chihuahuan black-headed Snake <i>(Tantilla wilcoxi)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Desert box turtle <i>(Terrapene ornata luteola)</i>	BLM - S (Gila)	○	○	○	○	○	○	◐	◐	●	○	○
Desert massasauga <i>(Sistrurus catenatus edwardsii)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	○	○	◐	○
Giant spotted whiptail <i>(Aspidoscelis stictogrammus)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Green ratsnake <i>(Senticolis triaspis)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Mountain skink <i>(Plestiodon callicephalus)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Narrow-headed gartersnake <i>(Thamnophis rufipunctatus)</i>	Threatened; proposed critical habitat BLM - S (Gila)	○	◐	○	○	◐	○	○	○	○	○	○
Northern Mexican gartersnake <i>(Thamnophis eques megalops)</i>	Threatened; proposed critical habitat COC - R COR - S TNF - R BLM - S (Gila and PHX)	○	◐	○	○	○	○	○	◐	○	●	○
Slevin's bunchgrass lizard <i>(Sceloporus slevini)</i>	COR - S BLM - S (Gila)	○	○	○	○	○	○	○	○	○	●	○
Sonoran desert tortoise <i>(Gopherus morafkai)</i>	COR - S TNF - S BLM - S (Gila and PHX)	◐	○	◐	◐	○	◐	●	◐	◐	◐	◐
Sonora mud turtle <i>(Kinosternon sonoriense)</i>	BLM - S (Gila and PHX)	◐	◐	◐	◐	○	○	◐	○	◐	○	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered									Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Thornscrub hook-nosed snake <i>(Gyalopion quadrangulare)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Twin spotted rattlesnake <i>(Crotalus pricei)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
Yaqui black-headed snake <i>(Tantilla yaquia)</i>	COR - S	○	○	○	○	○	○	○	○	○	◑	○
BIRDS												
Abert's Towhee <i>(Melospiza aberti)</i>	COR - S	◑	◑	◑	◑	◑	◑	◑	○	○	●	◑
American peregrine falcon <i>(Falco peregrinus anatum)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	●	◑	◑	●	◑	◑	●	◑	●	●	●
Arizona Botteri's sparrow <i>(Peucaea botterii arizonae)</i>	BLM - S (Gila)	○	○	○	○	○	○	◑	○	●	○	
Arizona grasshopper sparrow <i>(Ammodramus savannarum ammodramus)</i>	COR - S BLM - S (Gila)	●	◑	◑	◑	◑	●	◑	◑	●	●	
Arizona woodpecker <i>(Picoides arizonae)</i>	COR - S	○	○	○	○	○	○	○	○	●	○	
Baird's sparrow <i>(Ammodramus bairdii)</i>	COR - S	○	○	○	○	○	○	○	○	●	○	
Bald eagle <i>(Haliaeetus leucocephalus)</i>	COC - S BLM - S (Gila and PHX) Bald and Golden Eagle Protection Act	○	◑	◑	◑	◑	○	○	○	○	●	○
Broad-billed hummingbird <i>(Cyananthus latirostris)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Buff-collared nightjar <i>(Empidonax fulvifrons)</i>	COR - S	◑	○	○	○	○	◑	◑	○	○	○	
Burrowing owl (Western) <i>(Athene cucularia hypugaea)</i>	COC - S BLM - S (Gila and PHX)	○	○	○	○	○	○	○	○	○	●	○
Cactus ferruginous pygmy-owl <i>(Glaucidium brasilianum cactorum)</i>	COR - S BLM - S (Gila and PHX)	○	○	○	○	○	○	○	○	○	○	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered									Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Desert purple martin <i>(Progne subis hesperia)</i>	BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	◑	◑	●	◑	●	◑
Eared Quetzal <i>(Euptilotis neoxenus)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Elegant trogon <i>(Trogon elegans)</i>	COR - S	○	○	○	○	○	○	○	○	○	◐	○
Ferruginous hawk <i>(Buteo regalis)</i>	BLM - S (Gila and PHX)	◐	◑	◑	◐	◐	◐◑	◐	◑	◑	○	○
Gilded flicker <i>(Colaptes chrysoides)</i>	BLM - S (Gila and PHX)	●	◐	◑	●	◐	●	●	●	◑	○	●
Golden eagle <i>(Aquila chrysaetos)</i>	BLM - S (Gila and PHX) Bald and Golden Eagle Protection Act	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Gould's Wild Turkey <i>(Meleagris gallopavo mexicana)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Gray Vireo <i>(Vireo vicinior)</i>	COR - S	●	◑	◑	◑	◑	●	◑	◑	●	●	●
Mexican spotted owl <i>(Strix occidentalis lucida)</i>	Threatened; designated critical habitat BLM - S (Gila and PHX)	○	◑	○	○	◑	○	○	○	○	○	○
Northern Beardless-Tyrannulet <i>(Camptostoma imberbe)</i>	COR - S	◑	◐	◐	◐	○	◐	◑	○	●	○	○
Northern goshawk <i>(Accipiter gentilis atricapillus)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	◑	●	○	●	○	◑
Pinyon jay <i>(Gymnorhinus cyanocephalus)</i>	BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	◑	○	○	◐	○	◑
Rose-throated becard <i>(Pachyramphus aglaiae)</i>	COR - S	○	○	○	○	○	○	◐	○	○	○	○

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal	
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch		Apache Leap Withdrawal Area
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present												
Southwestern willow flycatcher <i>(Empidonax traillii extimus)</i>	Endangered; designated critical habitat BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	◑	◑	●	○	◑	◑
Sprague's pipit <i>(Anthus spragueii)</i>	Candidate	○	○	○	○	○	○	○	○	○	●	○
Sulphur-bellied flycatcher <i>(Myiodynastes luteiventris)</i>	COR - S TNF - S	◑	◑	◑	◑	◑	○	◑	○	◑	○	○
Thick-billed kingbird <i>(Tyrannus crassirostris)</i>	COR - S	○	○	○	○	○	○	○	◑	○	○	○
Varied bunting <i>(Passerina versicolor)</i>	COR - S	◑	○	○	○	○	◑	◑	○	○	●	○
Violet-crowned hummingbird <i>(Amazilla violiceps)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○	○
Whiskered screech owl <i>(Megascops trichopsis)</i>	COR - S	○	○	○	○	○	○	○	○	○	●	○
Yellow-billed cuckoo <i>(Coccyzus americanus occidentalis)</i>	Threatened; proposed critical habitat COC - S COR - S TON - S BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	○	●	○	○	●	○
Yellow-eyed junco <i>(Junco phaeonotus)</i>	TNF - S COR - S	○	○	○	○	○	○	○	○	○	●	○
MAMMALS												
Allen's big-eared bat aka. Allen's lappet-browed bat <i>(Idionycteris phyllotis)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	○	◑	○	○	○	○
Arizona myotis <i>(Myotis occultus)</i>	BLM - S (Gila and PHX)	◑	◑	○	○	◑	○	○	○	○	○	○
Banner-tailed kangaroo rat <i>(Dipodomys spectabilis)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	◑	◑	○	○
Black-tailed prairie dog <i>(Cynomys ludovicianus)</i>	BLM - S (Gila)	○	○	○	○	○	○	○	○	◑	○	○
California leaf-nosed bat <i>(Macrotus californicus)</i>	BLM - S (Gila and PHX)	●	○	◑	◑	○	◑	◑	◑	◑	◑	◑

Table II. Summary of Special Status Species with Potential to Occur within the Lands Involved in the Land Exchange

Species	Status	Selected	Offered								Mineral Withdrawal
		Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	
Potential to Occur = ○ None; ◐ Unlikely; ◑ Possible; ● Present											
Cave myotis <i>(Myotis velifer)</i>	BLM - S (Gila and PHX)	●	○	◑	◑	○	◑	◑	◑	◑	◑
Greater western mastiff bat <i>(Eumops perotis californicus)</i>	BLM - S (Gila and PHX)	◑	◐	◐	◑	◐	◑	◑	◑	○	◑
Hooded skunk <i>(Mephitis macroura milleri)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○
Jaguar <i>(Panthera onca)</i>	Endangered; designated critical habitat BLM - S (Gila)	○	○	○	○	○	○	○	○	◑	○
Lesser long-nosed bat <i>(Leptonycteris curasoae yerbabuena)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	○	○	○	○	○	○	○	○	◑	○
Mexican long-tongued bat <i>(Choeronycteris mexicana)</i>	COR - S BLM - S (Gila)	○	○	○	○	○	○	○	◐	◑	○
Navajo Mogollon vole <i>(Microtus mogollonensis navajo)</i> [synonyms include <i>M. mexicanus navajo</i> and <i>M. mexicanus mogollonensis</i>]	COC - S	○	○	○	○	◐	○	○	○	○	○
Northern pygmy mouse <i>(Baiomys taylori ater)</i>	COR - S	○	○	○	○	○	○	○	○	◑	○
Pale Townsend's big-eared bat <i>(Corynorhinus townsendii pallescens)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Western red bat <i>(Lasiurus blossevillii)</i>	TNF - S COC - S COR - S	●	◑	◑	◑	◑	○	◐	○	◐	○
Western yellow bat <i>(Lasiurus xanthinus)</i>	COR - S	◐	○	◐	◐	○	◐	◑	◐	◐	○

TNF – S = Tonto National Forest – Sensitive
 COC – S = Coconino National Forest – Sensitive
 COR – S = Coronado National Forest – Sensitive
 BLM – S (Gila) = Bureau of Land Management, Gila District – Sensitive
 BLM – S (PHX) = Bureau of Land Management, Phoenix District – Sensitive

4. REFERENCES

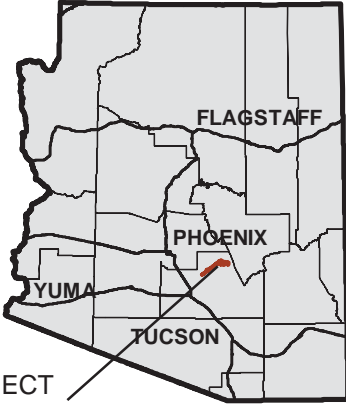
- Brown, D. E., ed. 1994a. *Biotic Communities Southwestern United States and Northwestern Mexico*. 2nded. Salt Lake City, Utah: University of Utah Press.
- _____. 1994b. "Great Basin Conifer Woodland." In *Biotic Communities: Southwestern United States and Northwestern Mexico*, edited by D. E. Brown, 52–57. Salt Lake City, Utah: University of Utah Press.
- Brown, D. E., and C. Lowe. 1980. "Biotic Communities of the Southwest [Map]." *General Technical Report RM-78*. Fort Collins, Colorado: Reprinted (and revised) 1994 by University of Utah Press, Salt Lake City.
- Brown, D.E., and C. Lowe. 1994. *Biotic Communities – Southwestern United States and Northwestern Mexico. General Technical Report RM-78, Rocky Mountain Forest and Range Experiment Station, U.S. Forest Service*. Salt Lake City, Utah: University of Utah Press.
- Charest, Jeffrey, and Fred Huntington. 2016. "A Cultural Resources Inventory of the 146.78-Acre Turkey Creek Parcel, Gila County, Arizona." Tucson, AZ: WestLand Resources, Inc.
- Chronic, H. 1983. *Roadside Geology of Arizona*. Mountain Press Publishing Company.
- eBird. 2017. *eBird: An Online Database of Bird Distribution and Abundance [Web Application]*. eBird. Ithaca, New York: Cornell Lab of Ornithology. www.ebird.org.
- Golder Associates. 2005. "Phase I Environmental Site Assessment Forested Land T14, R12E, Section 9 Coconino County, Arizona." *Prepared for The Trust for Public Land*. Tucson, Arizona: Golder.
- _____. 2006. "Resolution Copper Company, Surface Water Baseline Report, October 2002 through February 2006: Volume I of II – Text, Tables, Figures."
- Montgomery & Associates. 2013. "Technical Memorandum, Phase I Hydrogeologic Field Investigations, Near West Tailings Site, Pinal County, Arizona."
- _____. 2017. "Surface Water Baseline Addendum: Upper Queen Creek, Devils Canyon, and Mineral Creek Watersheds."
- Resolution Copper Mining. 2016. "General Plan of Operations." *Initial Submittal November 15, 2013; Revised May 9, 2016*. Resolution Copper Mining. <http://www.resolutionmineeis.us>.
- Tucson Audubon Society. 2011. "About the Arizona IBA Program." *Arizona Important Bird Areas Program*.
- Turner, R. M., and D. E. Brown. 1982. "Sonoran Desertscrub." In *Biotic Communities of the American Southwest – United States and Mexico*, edited by D. E. Brown, 4:181–221. Boyce Thompson Southwestern Arboretum.

- _____. 1994. "Sonoran Desertscrub (Arizona Upland Subdivision)." In *Biotic Communities: Southwestern United States and Northwestern Mexico*, edited by D. E. Brown, 200–203. Salt Lake City, Utah: University of Utah Press.
- WestLand Resources. 2004a. "Baseline Biology and Land Use Report." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004b. "Ecological Overview: JX Ranch Parcel, Gila County, Arizona." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004c. "Ecological Overview LX Bar Ranch Parcel Yavapai County, Arizona." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources Inc.
- _____. 2004d. "Ecological Overview Summary: Federal Parcel and Offered Lands Parcels." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004e. "2004 Reptile and Amphibian Survey Federal Parcel, Pinal County, Arizona." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2011. "Jurisdictional Waters Determination for the Resolution West Plant and East Plant Analysis Areas, Pinal County, Arizona." *Prepared for U.S. Army Corps of Engineers on Behalf of Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012. "Wetland Plant Survey of Springs in the Resolution Project Area." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2014a. "Biological Evaluation of the Near West Analysis Area." *Prepared for Resolution Copper Mining*. Tucson: WestLand Resources, Inc.
- _____. 2014b. "Jurisdictional Waters Determination for the Near West Project Area, Pinal County, Arizona." *Prepared for: US Army Corps of Engineers and Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015a. "Sonoran Desert Tortoise Habitat Reconnaissance Survey for the Magma Arizona Railroad Company Corridor, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015b. "Tucson Shovel-Nosed Snake Survey MARRCO Corridor and the Proposed Filter Plant and Loadout Facility." Tucson: WestLand Resources, Inc.
- _____. 2016a. "2016 Yellow-Billed Cuckoo Survey Baseline Activities Area, Pinal County, Arizona." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2016b. "Ecological Overview Dripping Springs Parcel Gila and Pinal Counties, Arizona." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2016c. "Ecological Overview East Clear Creek Parcel Coconino County, Arizona." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.

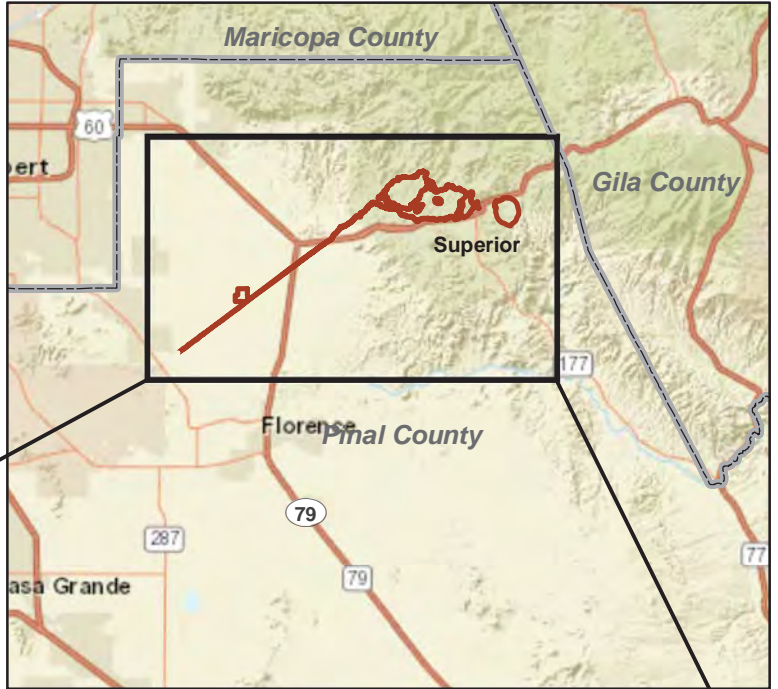
- _____. 2017a. “2017 Southwestern Willow Flycatcher Survey for the Resolution Copper Project.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017b. “2017 Yellow-Billed Cuckoo Survey for the Resolution Copper Project.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017c. “Ecological Overview Apache Leap South End Parcels Pinal County, Arizona.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017d. “2017 Arizona Hedgehog Cactus Survey Report East Plant Site.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.

FIGURES

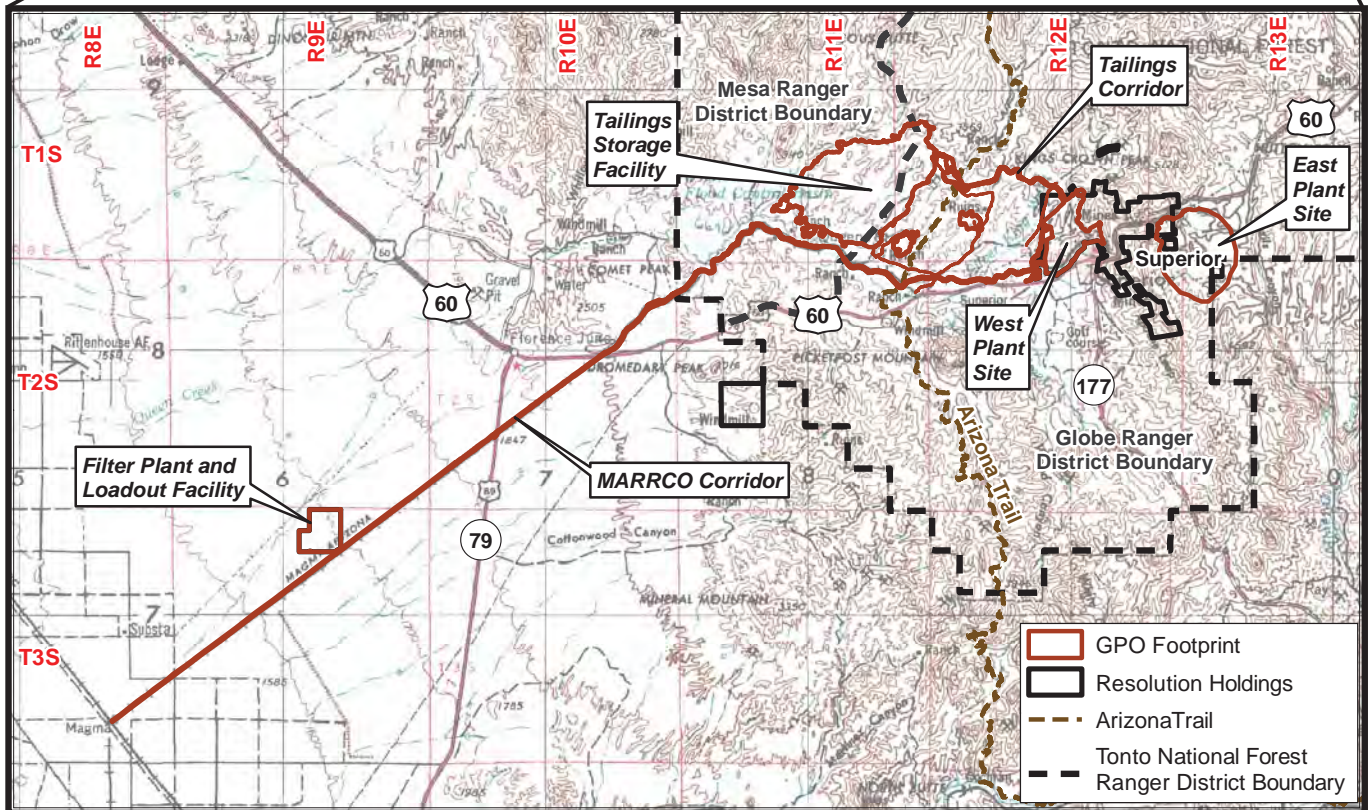
ARIZONA



PROJECT LOCATION



Approximate Scale 1 Inch = 15 Miles



Portion of Pinal County, Arizona
Image Source: Mesa 1:250,000 USGS Quadrangle



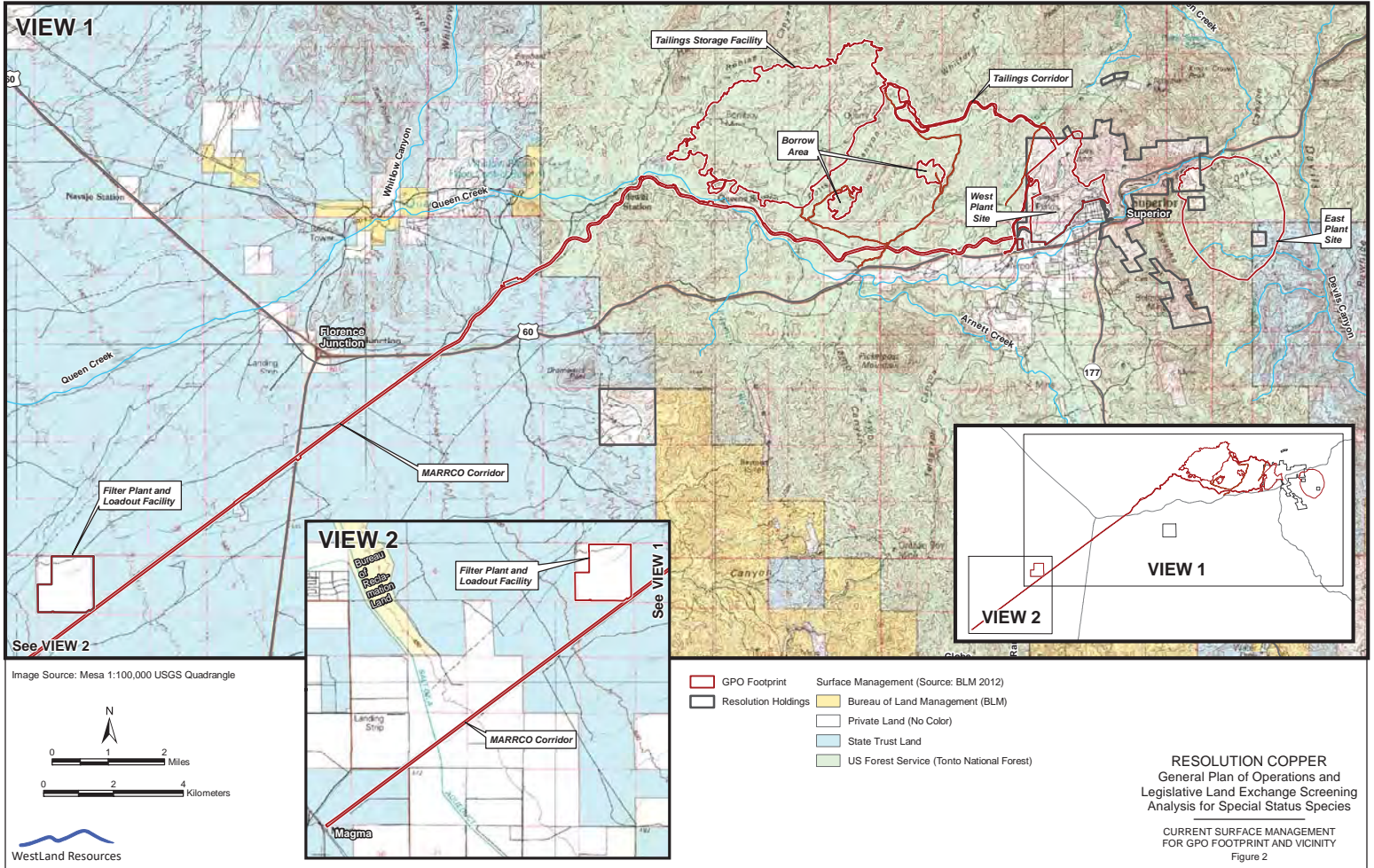
0 2.5 5 Miles

0 4 8 Kilometers

RESOLUTION COPPER General Plan of Operations and Legislative Land Exchange Screening Analysis for Special Status Species

GPO FOOTPRINT AND VICINITY MAP

Figure 1



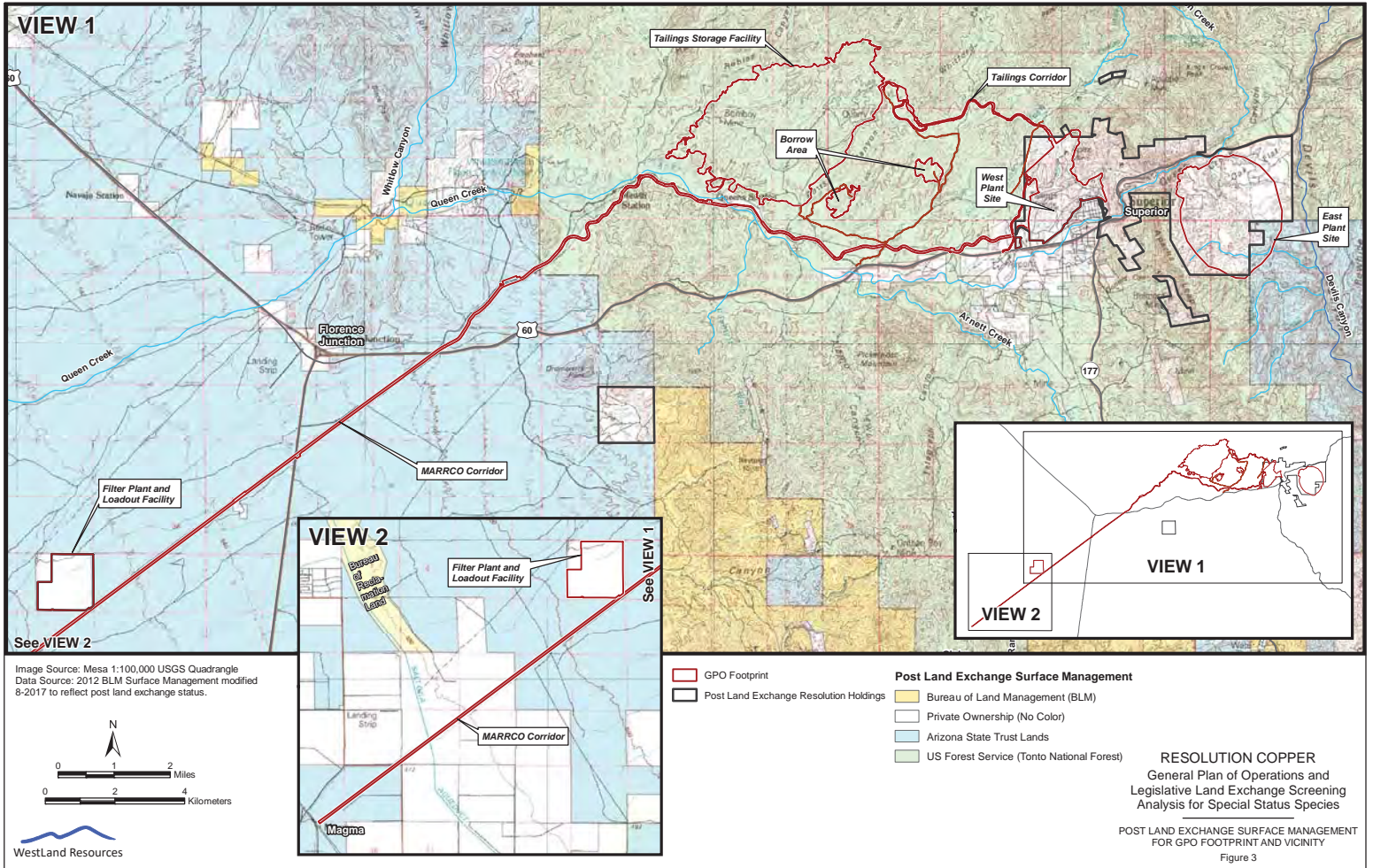
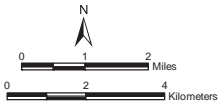


Image Source: Mesa 1:100,000 USGS Quadrangle
 Data Source: 2012 BLM Surface Management modified
 8-2017 to reflect post land exchange status.



WestLand Resources

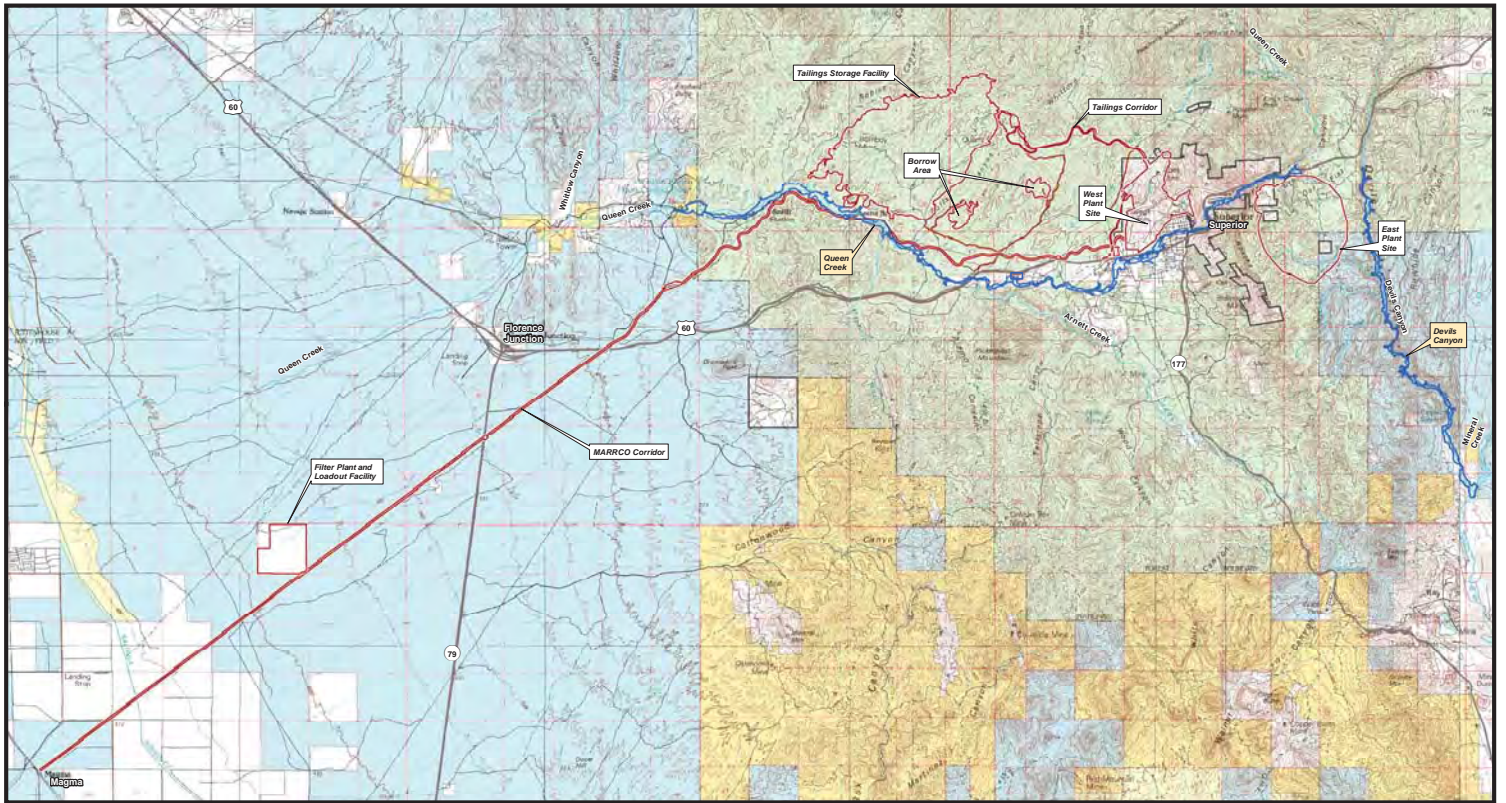
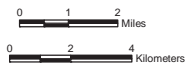
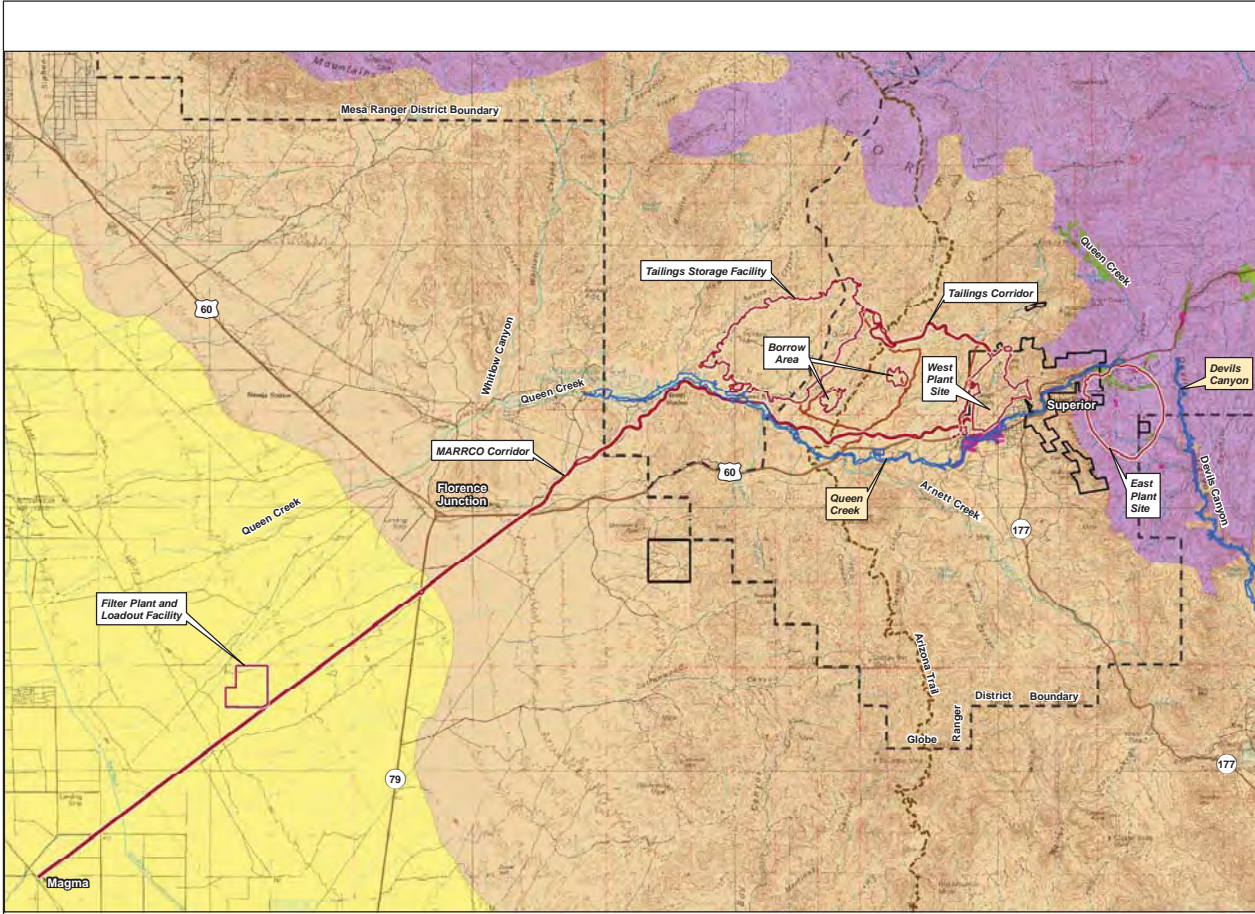


Image Source: Mesa 1:100,000 USGS Quadrangle



- | | |
|--|--|
| Downstream Areas | Surface Management (Source: BLM 2012) |
| GPO Footprint | Bureau of Land Management (BLM) |
| Resolution Holdings | Bureau of Reclamation |
| | Private Land (No Color) |
| | State Trust Land |
| | US Forest Service (Tonto National Forest) |

RESOLUTION COPPER
 General Plan of Operations and
 Legislative Plan Exchange Screening
 Analysis for Special Status Species
 GPO FOOTPRINT AND DOWNSTREAM AREAS
 Figure 4



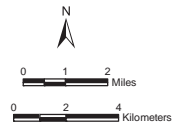
Legend

- GPO Footprint
- Resolution Holdings
- Downstream Areas
- Arizona Trail
- Tonto National Forest Ranger District Boundary

Biotic Communities

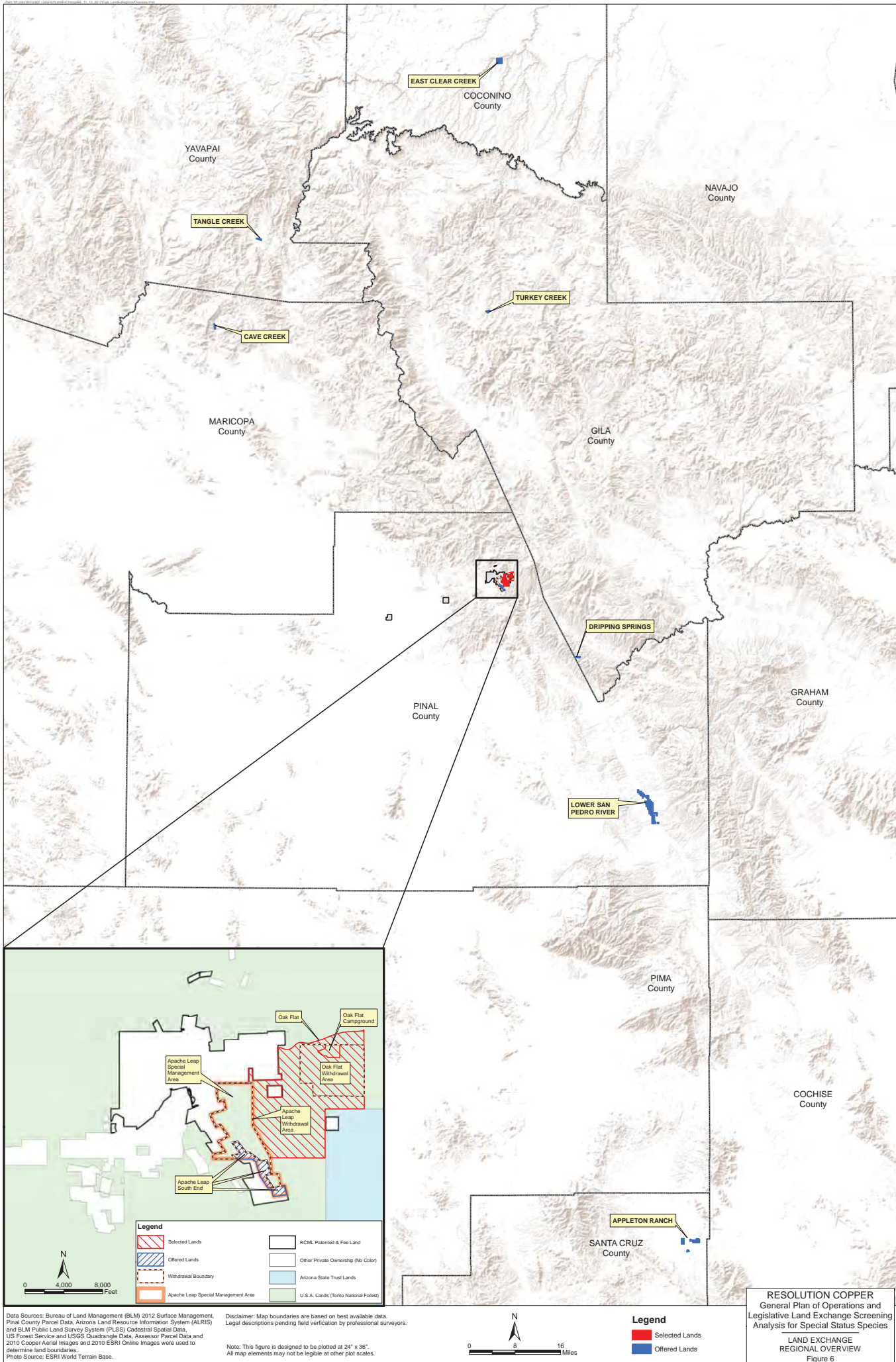
- Lower Colorado River Subdivision - Sonoran Desertscrub
- Interior Riparian Deciduous Forest
- Arizona Upland Subdivision - Sonoran Desertscrub
- Interior Chaparral
- Madrean Evergreen Woodland

Data Source: Vegetation Communities: Based on Biotic Communities of the Southwest, Brown & Lowe Classifications, August 1980, with modifications by WestLand Resources mapping efforts.
 Image Source: Mesa 1:100,000 USGS Quadrangle



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

BIOTIC COMMUNITIES
 GPO FOOTPRINT
 AND DOWNSTREAM AREAS
 Figure 5

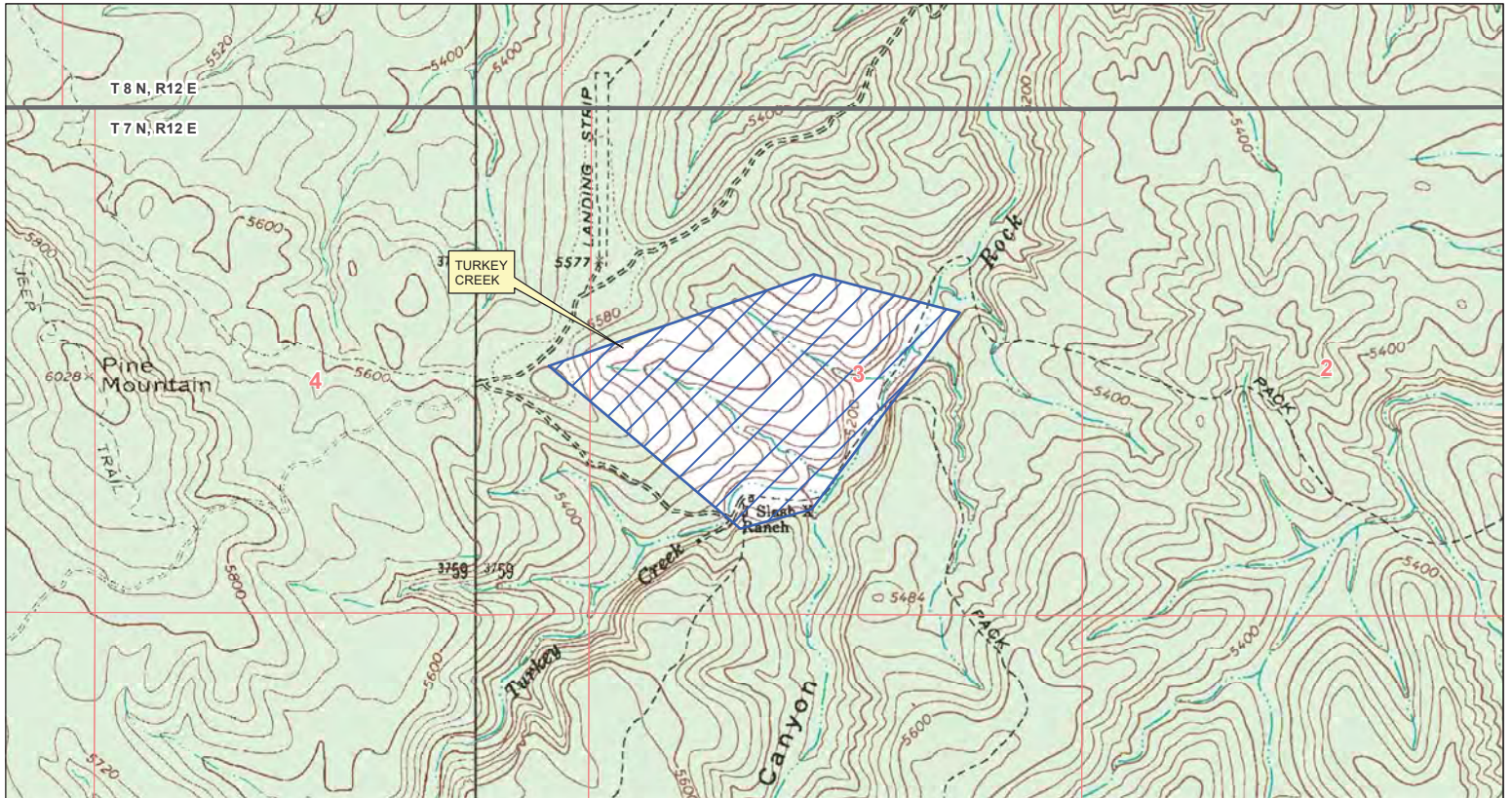


Data Sources: Bureau of Land Management (BLM) 2012 Surface Management, Pinal County Parcel Data, Arizona Land Resource Information System (ALRIS) and BLM Public Land Survey System (PLSS) Cadastral Spatial Data, US Forest Service and USGS Quadrangle Data, Assessor Parcel Data and 2010 Copper Aerial Images and 2010 ESRI Online Images were used to determine land boundaries.
 Photo Source: ESRI World Terrain Base.

Disclaimer: Map boundaries are based on best available data. Legal descriptions pending field verification by professional surveyors.
 Note: This figure is designed to be plotted at 24" x 36". All map elements may not be legible at other plot scales.

Legend
 Selected Lands
 Offered Lands
 Withdrawal Boundary
 Apache Leap Special Management Area
 RCM, Patented & Fee Land
 Other Private Ownership (No Color)
 Arizona State Trust Lands
 U.S.A. Lands (Forto National Forest)

RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 LAND EXCHANGE
 REGIONAL OVERVIEW
 Figure 6

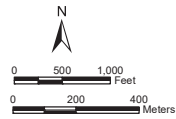


Turkey Creek:
 T7N, R12E, Portion of Sections 3 & 4,
 Gila County, Arizona.
 Image Source: Copper Mountain 7.5 Minute USGS Quadrangle
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.



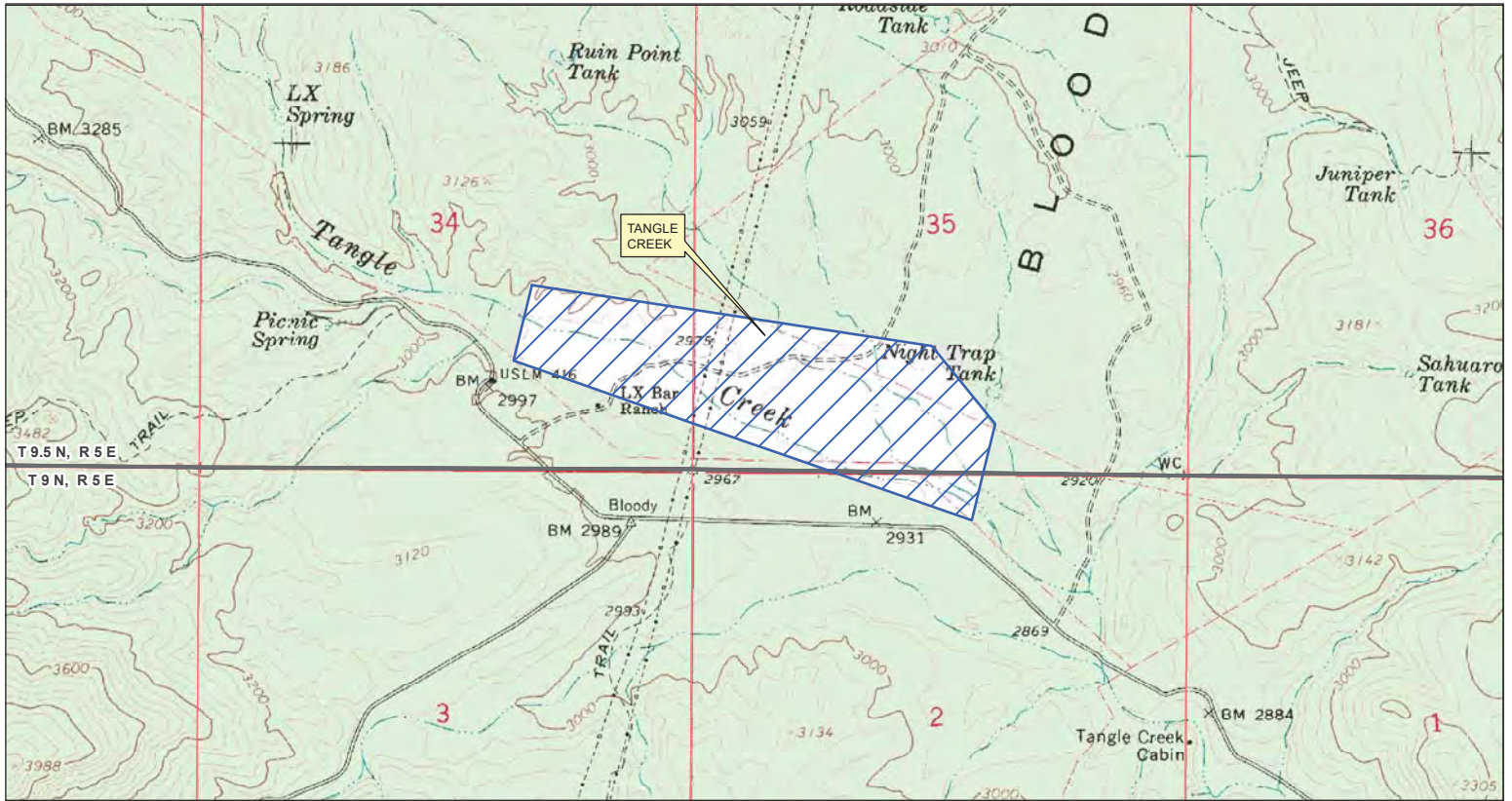
Legend

- Offered Lands
- US Forest Service (Tonto National Forest)



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

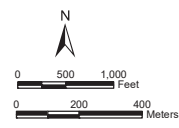
TURKEY CREEK PARCEL
 SURFACE MANAGEMENT
 Figure 7



Tangle Creek:
 T9.5N, R5E, Portion of Sections 34 and 35.
 T9N, R5E, Portion of Section 2,
 Yavapai County, Arizona.
 Image Source: Bloody Basin 7.5 Minute USGS Quadrangle
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

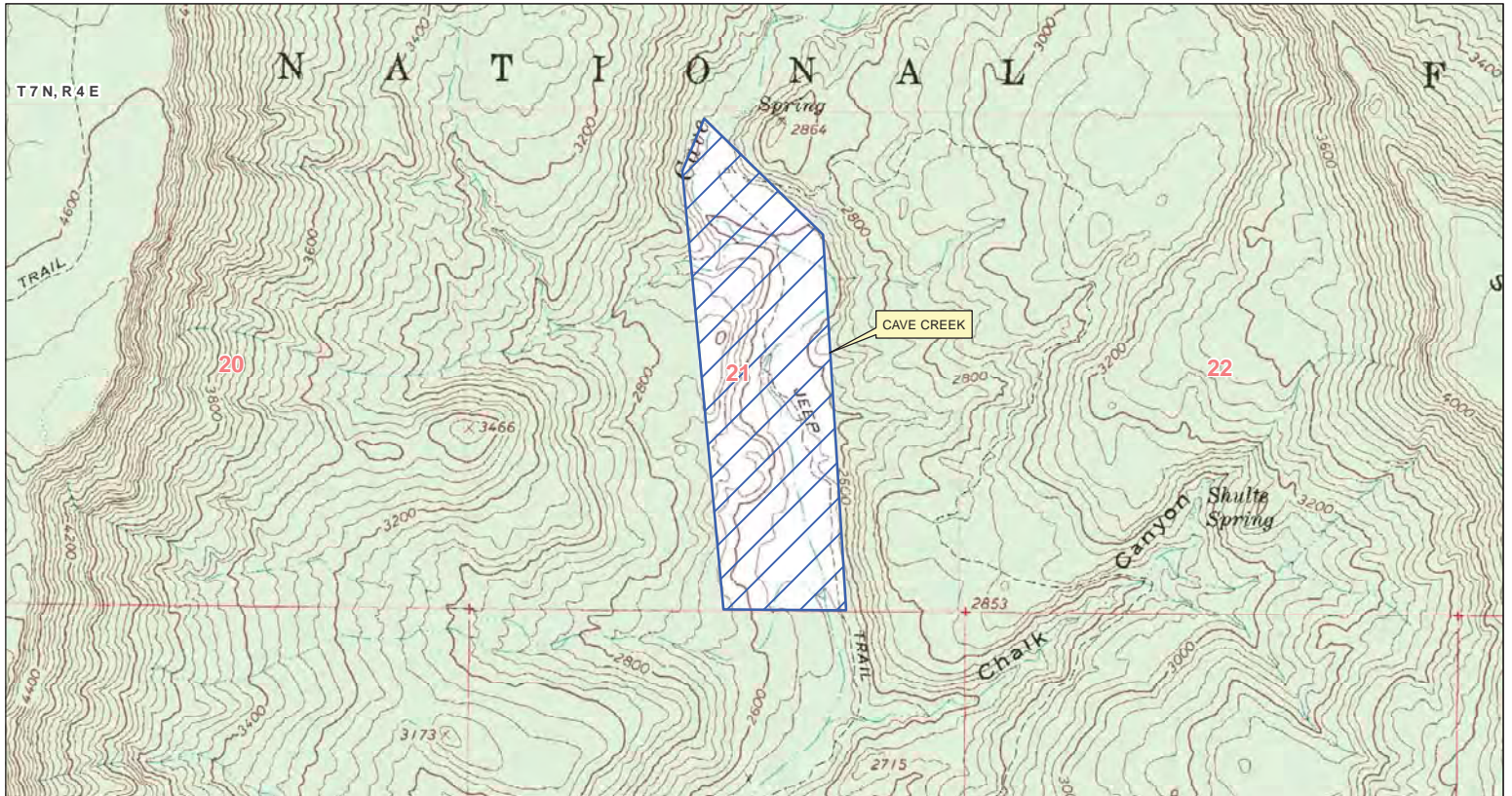
WestLand Resources

Legend
 Offered Lands  US Forest Service (Tonto National Forest)



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

TANGLE CREEK PARCEL
 SURFACE MANAGEMENT
 Figure 8

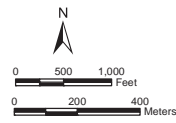


Cave Creek:
 T7N, R4E, Portion of Section 21,
 Maricopa County, Arizona.
 Image Source: New River Mesa 7.5 Minute USGS Quadrangle.
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.



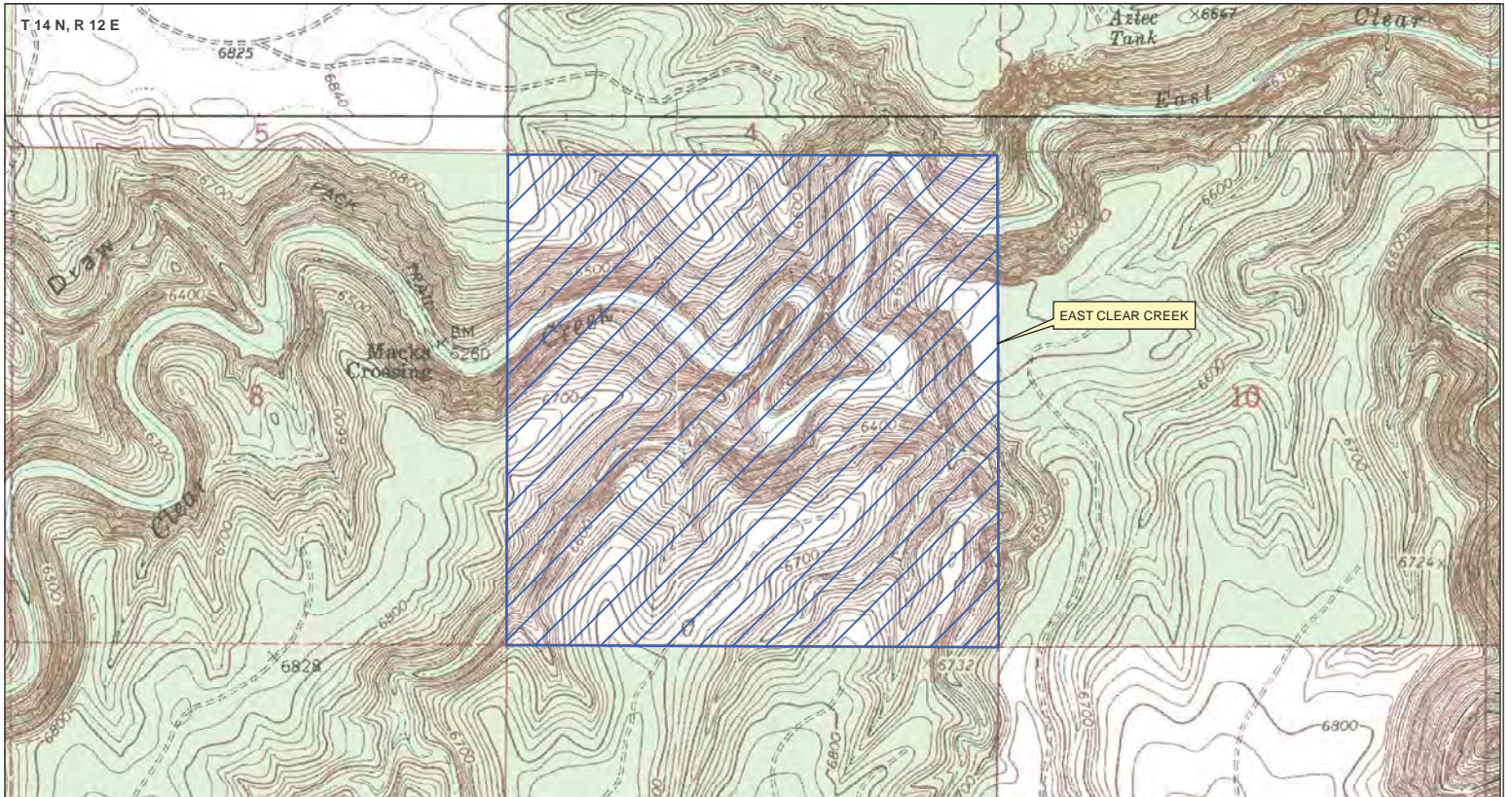
Legend

- Offered Lands
- US Forest Service (Tonto National Forest)



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species




CAVE CREEK PARCEL
 SURFACE MANAGEMENT
 Figure 9

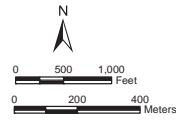


East Clear Creek:
 T14N, R12E, Section 9,
 Coconino County, Arizona.
 Image Source: Leonard Canyon 7.5 Minute USGS Quadrangle
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

WestLand Resources

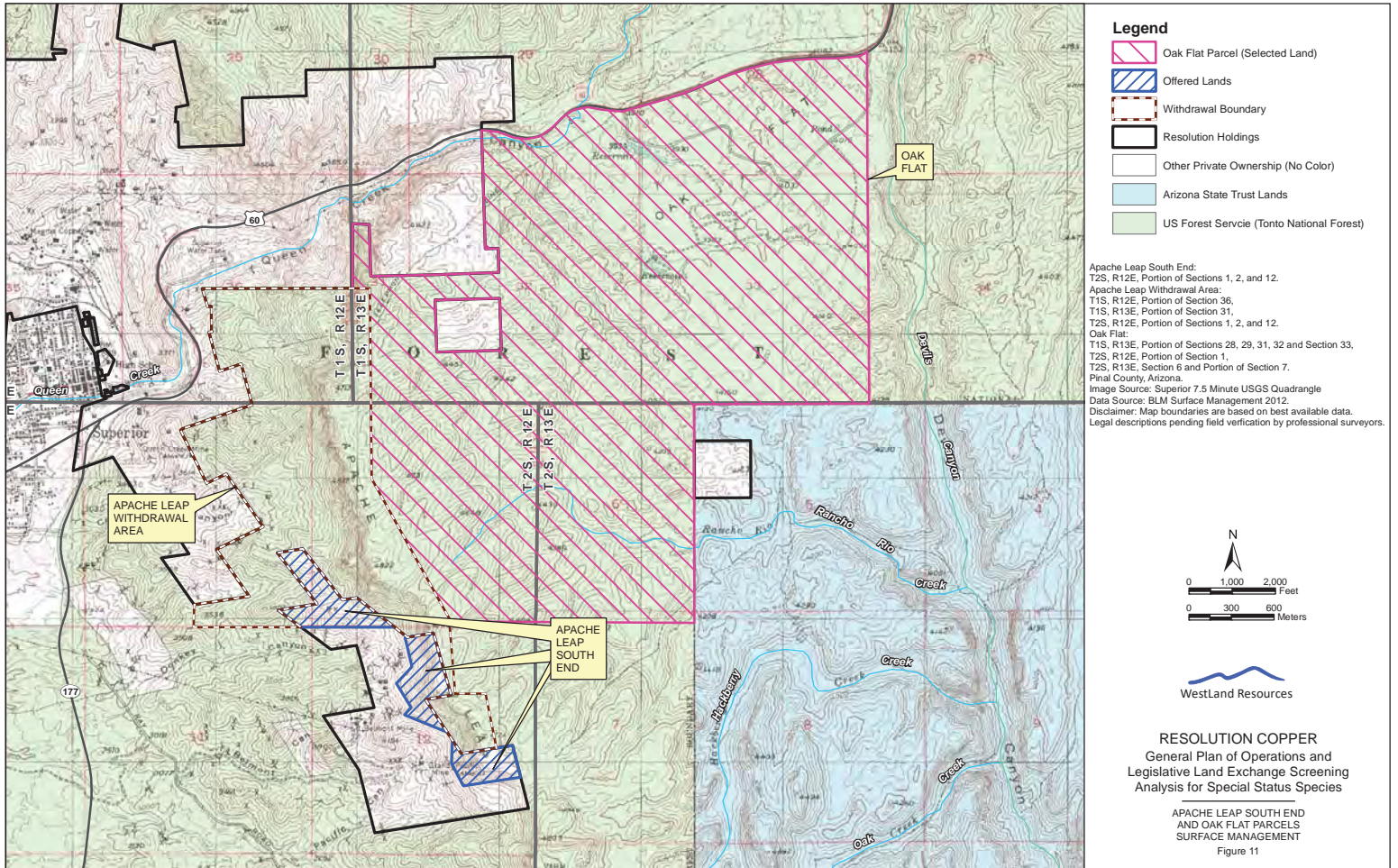
Legend

-  Offered Lands
-  Other Private Ownership (No Color)
-  US Forest Service (Coconino National Forest)



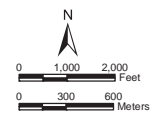
RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

EAST CLEAR CREEK PARCEL
 SURFACE MANAGEMENT
 Figure 10



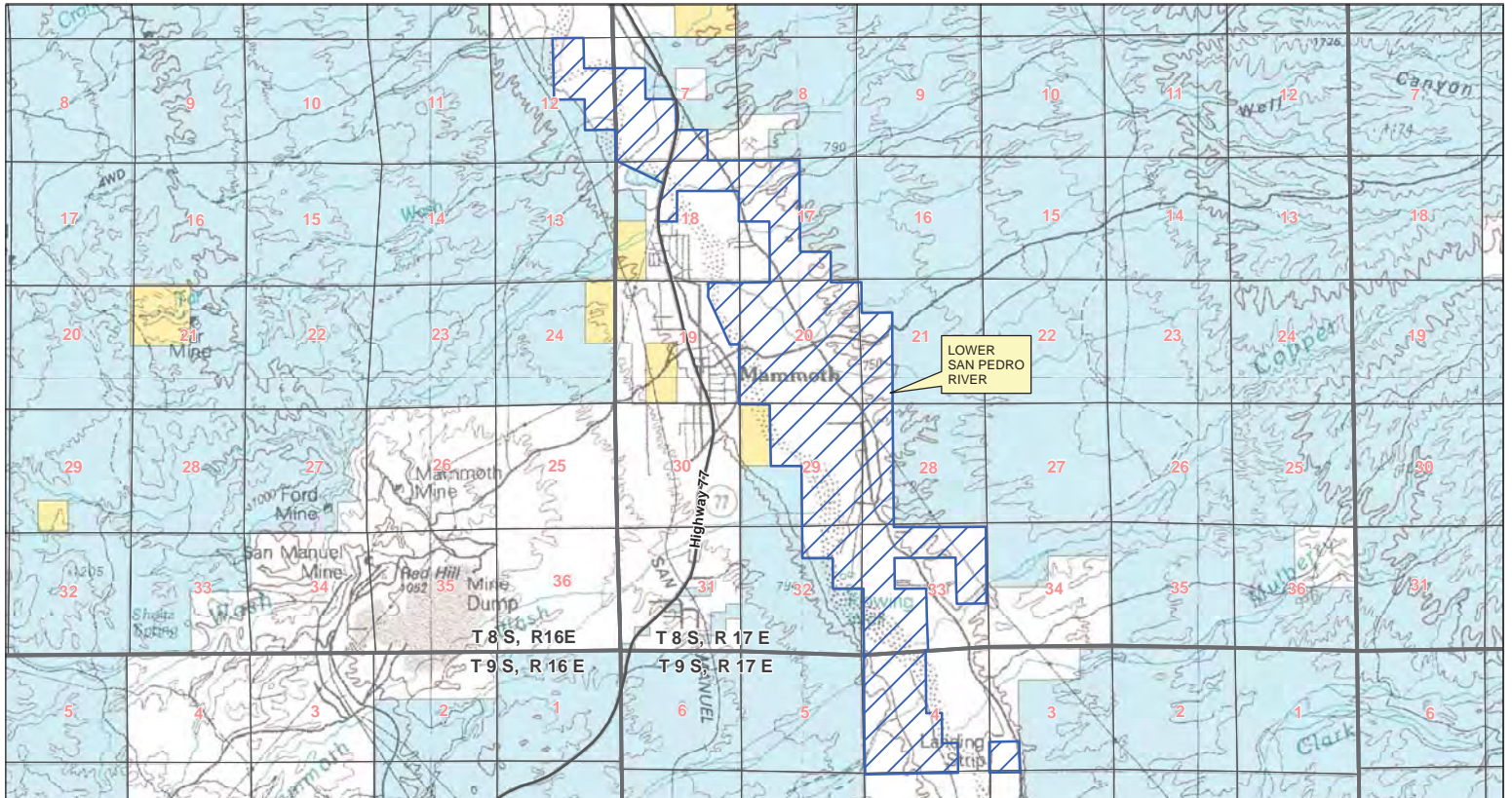
- Legend**
- Oak Flat Parcel (Selected Land)
 - Offered Lands
 - Withdrawal Boundary
 - Resolution Holdings
 - Other Private Ownership (No Color)
 - Arizona State Trust Lands
 - US Forest Service (Tonto National Forest)

Apache Leap South End:
T2S, R12E, Portion of Sections 1, 2, and 12.
Apache Leap Withdrawal Area:
T1S, R12E, Portion of Section 36,
T1S, R13E, Portion of Section 31,
T2S, R12E, Portion of Sections 1, 2, and 12.
Oak Flat:
T1S, R13E, Portion of Sections 28, 29, 31, 32 and Section 33,
T2S, R12E, Portion of Section 1,
T2S, R13E, Section 6 and Portion of Section 7.
Pinal County, Arizona.
Image Source: Superior 7.5 Minute USGS Quadrangle
Data Source: BLM Surface Management 2012.
Disclaimer: Map boundaries are based on best available data.
Legal descriptions pending field verification by professional surveyors.







RESOLUTION COPPER
General Plan of Operations and
Legislative Land Exchange Screening
Analysis for Special Status Species


APACHE LEAP SOUTH END
AND OAK FLAT PARCELS
SURFACE MANAGEMENT
Figure 11

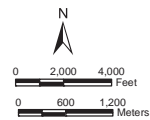


Lower San Pedro River:
 T8S, R16E, Portion of Section 12,
 T8S, R17E, Portion of Sections 7, 17-21, 28, 29, 32 & 33,
 T9S, R17E, Portion of Sections 3 & 4,
 Pinal County, Arizona.
 Image Source: Mammoth 1:100,000 USGS Quadrangle.
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

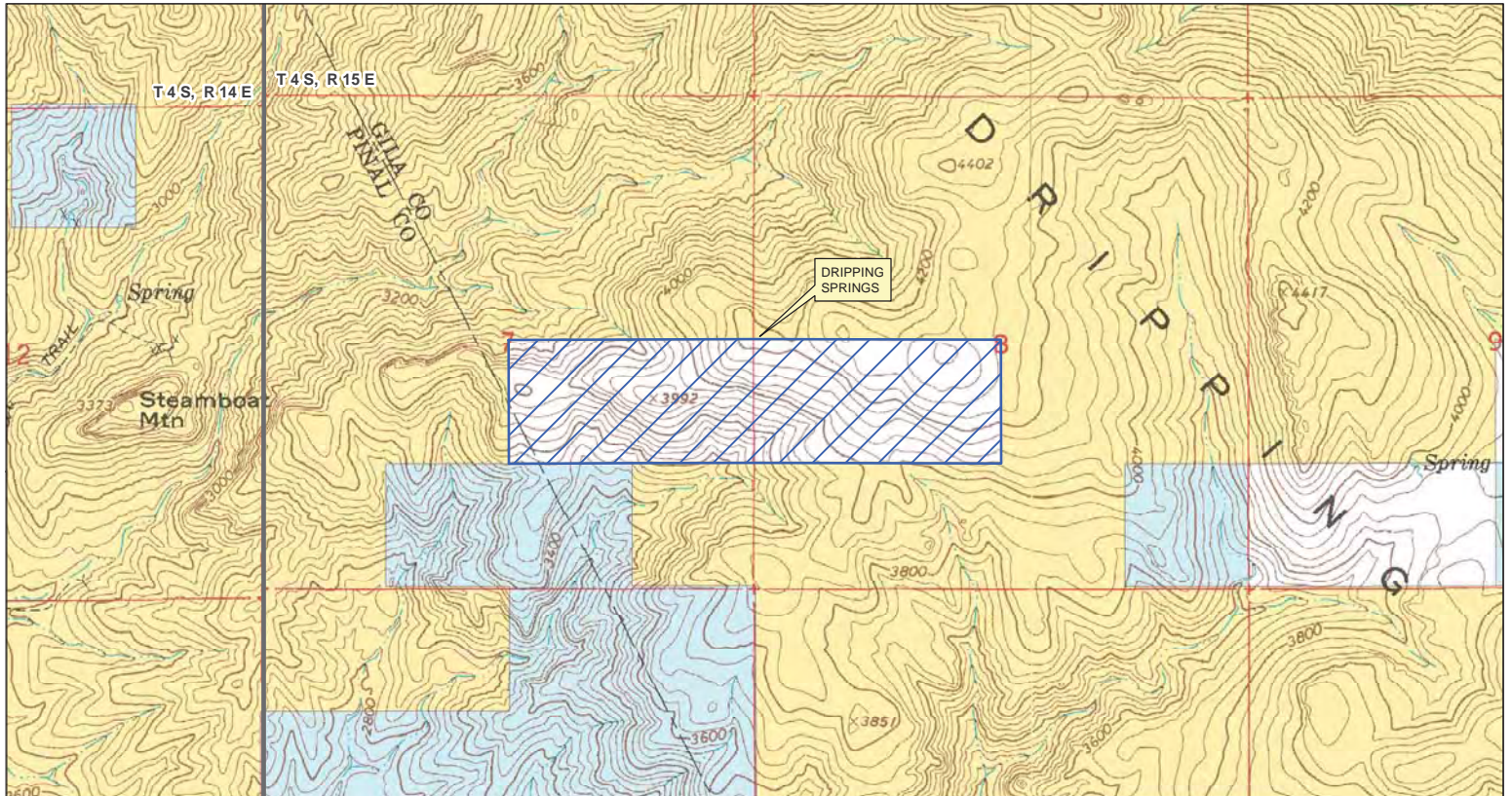
Legend

 Offered Lands	 Bureau of Land Management (BLM)
 Other Private Ownership (No Color)	 Arizona State Trust Lands

 WestLand Resources



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 LOWER SAN PEDRO RIVER PARCEL
 SURFACE MANAGEMENT
 Figure 12

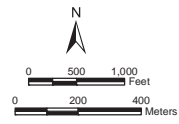


Dripping Springs:
 T4S, R15E, Portion of Sections 7 & 8,
 Pinal and Gila Counties, Arizona.
 Image Source: Hayden 7.5 Minute USGS Quadrangle.
 Data Source: BLM Surface Management 2012.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.



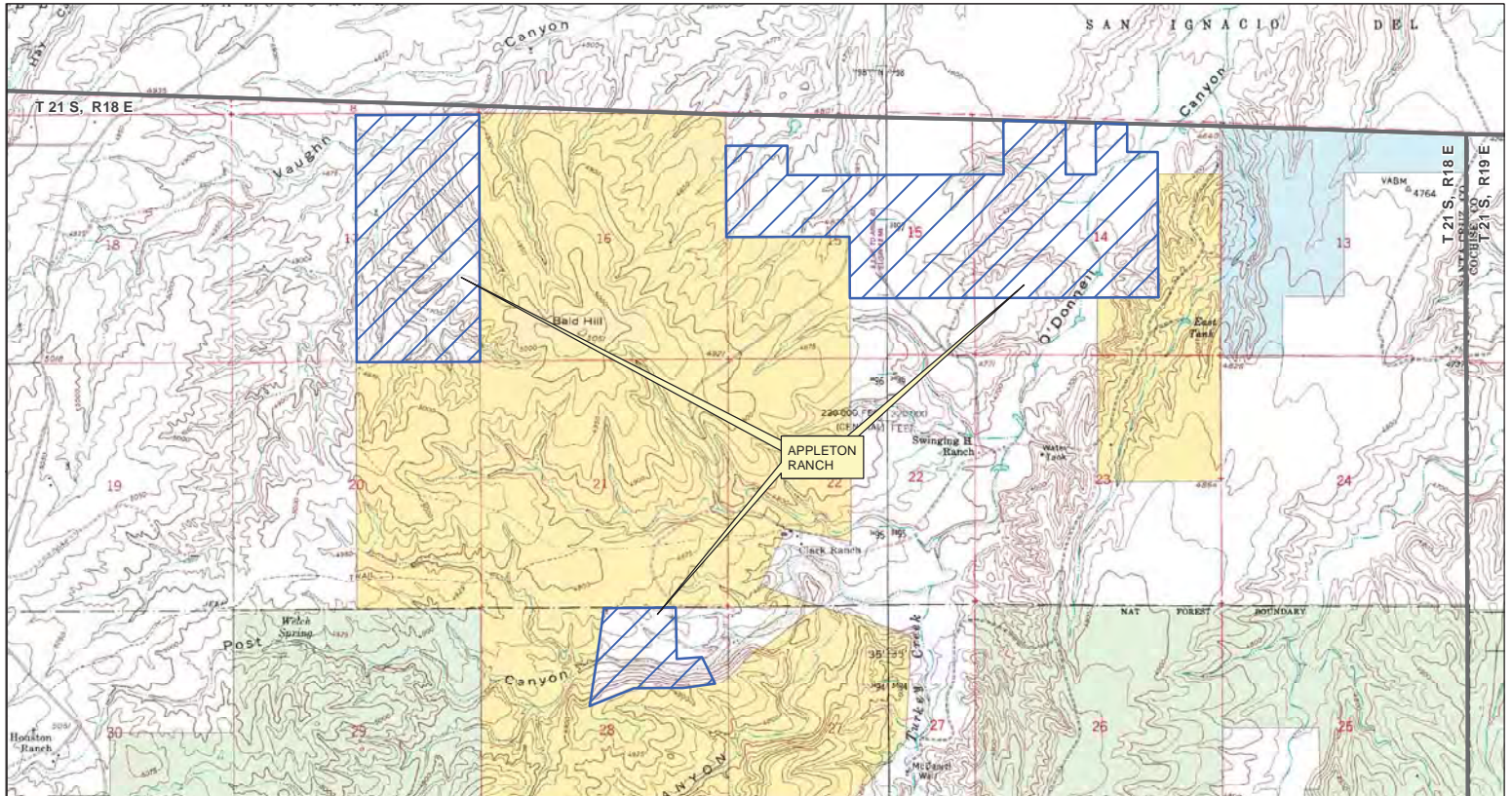
Legend

- Offered Lands
- Bureau of Land Management (BLM)
- Other Private Ownership (No Color)
- Arizona State Trust Lands



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

DRIPPING SPRINGS PARCEL
 SURFACE MANAGEMENT
 Figure 13

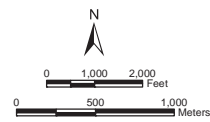


Appleton Ranch:
 T21S, R18E, Portion of Sections 14, 15, 17 & 28,
 Santa Cruz County, Arizona.
 Image Sources: O'Donnell Canyon and Pyeatt Ranch
 7.5 Minute USGS Quadrangles.
 Data Source: BLM Surface Management 2012
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

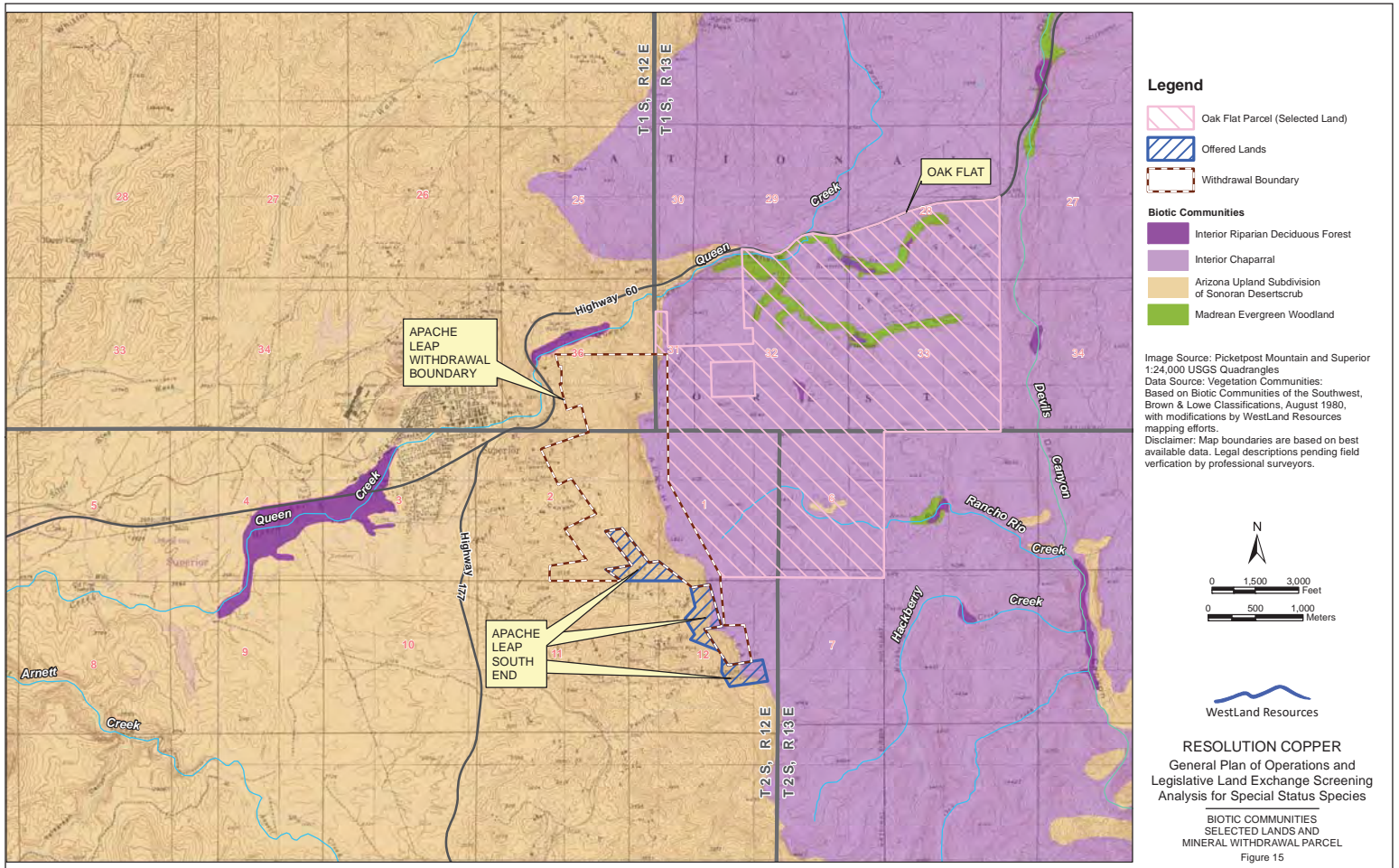
WestLand Resources

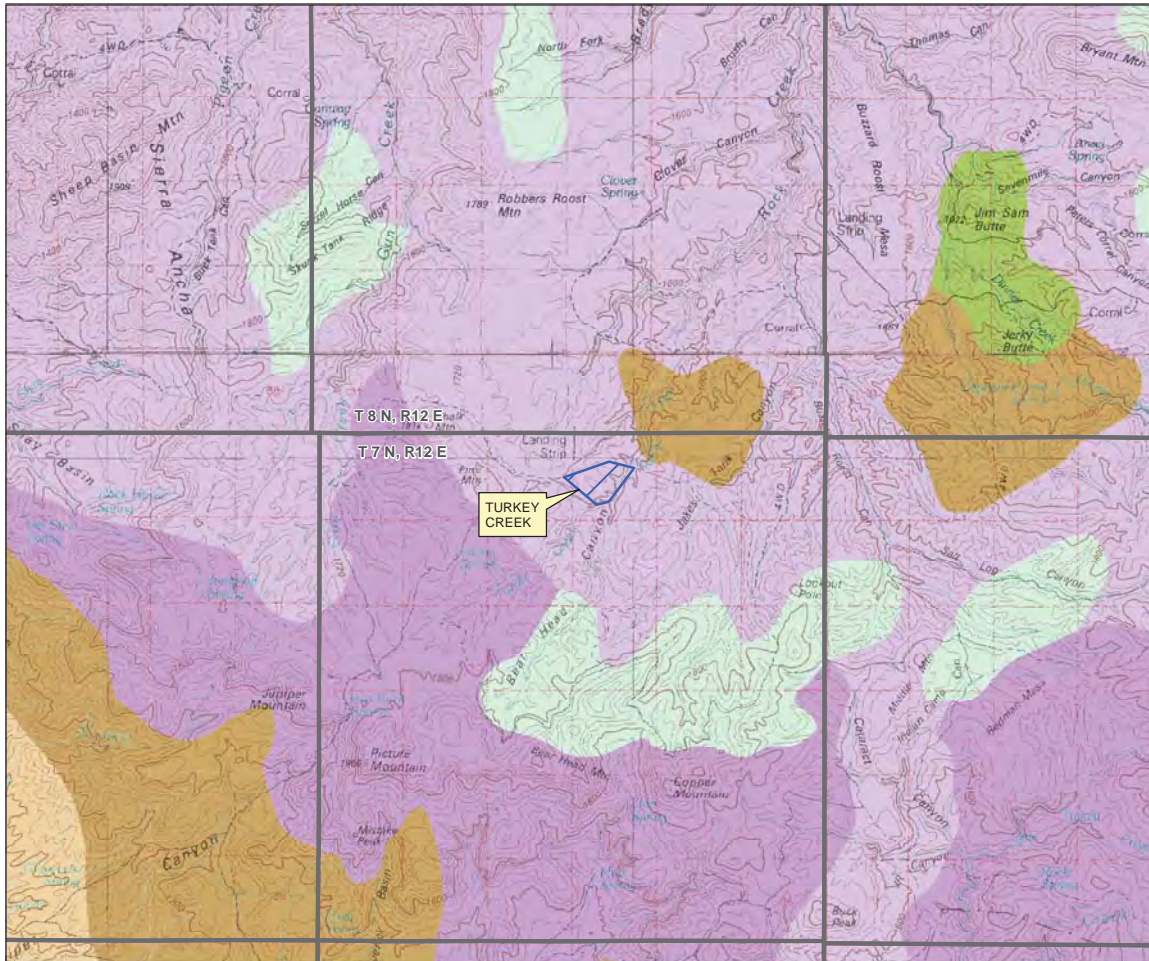
Legend

-  Offered Lands
-  Bureau of Land Management (BLM)
-  Other Private Ownership (No Color)
-  Arizona State Trust Lands
-  US Forest Service (Coronado National Forest)



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 APPLETON RANCH PARCEL
 SURFACE MANAGEMENT
 Figure 14





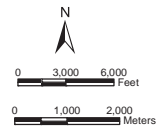
Turkey Creek:
 T7N, R12E, Portion of Sections 3 & 4,
 Gila County, Arizona.
 Image Source: Payson & Theodore Roosevelt Lake
 1:100,000 USGS Quadrangles
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

Legend

Offered Lands

BIOTIC COMMUNITIES

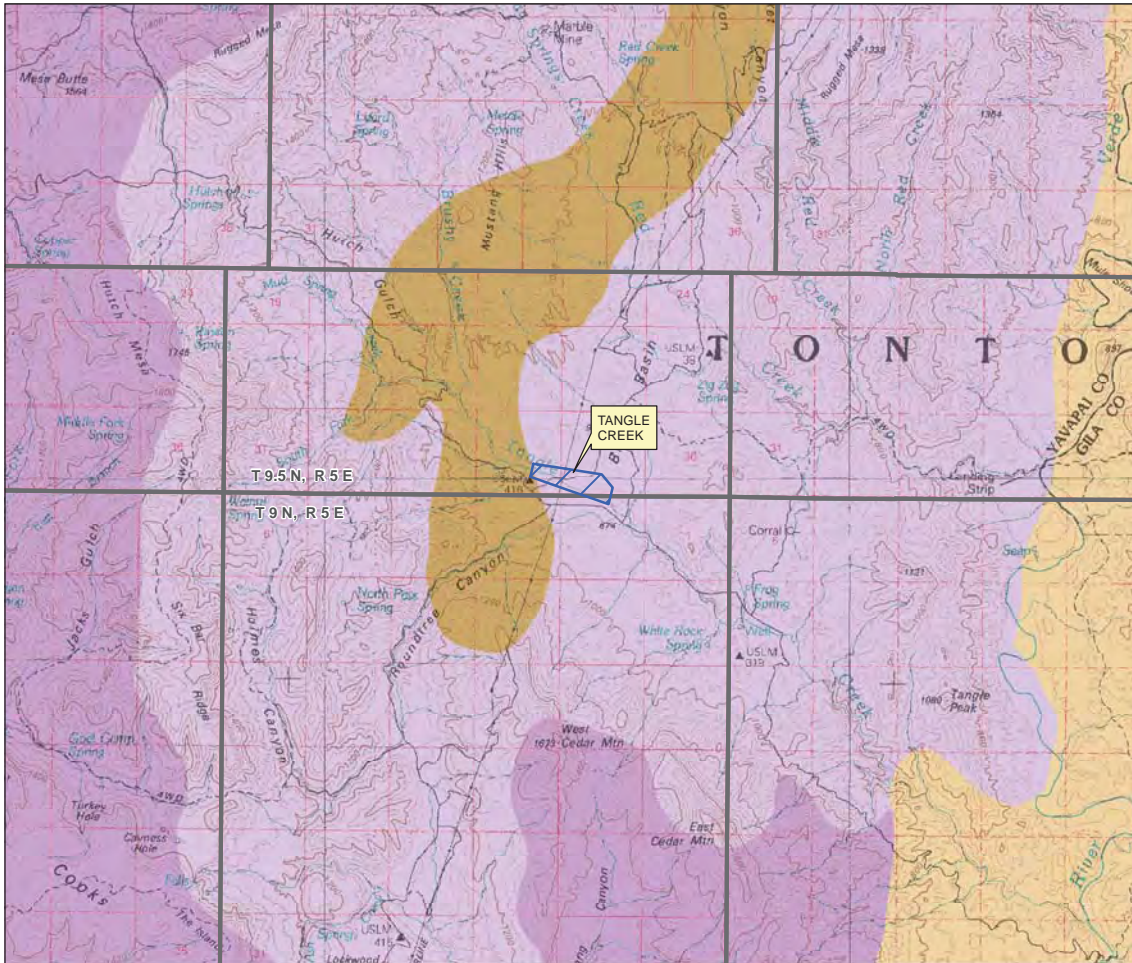
- AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB
- GREAT BASIN CONIFER WOODLAND
- INTERIOR CHAPARRAL
- MADREAN EVERGREEN WOODLAND
- PETRAN MONTANE CONIFER FOREST
- SEMIDESERT GRASSLAND



WestLand Resources

RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

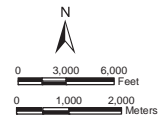
BIOTIC COMMUNITIES
 TURKEY CREEK PARCEL
 Figure 16



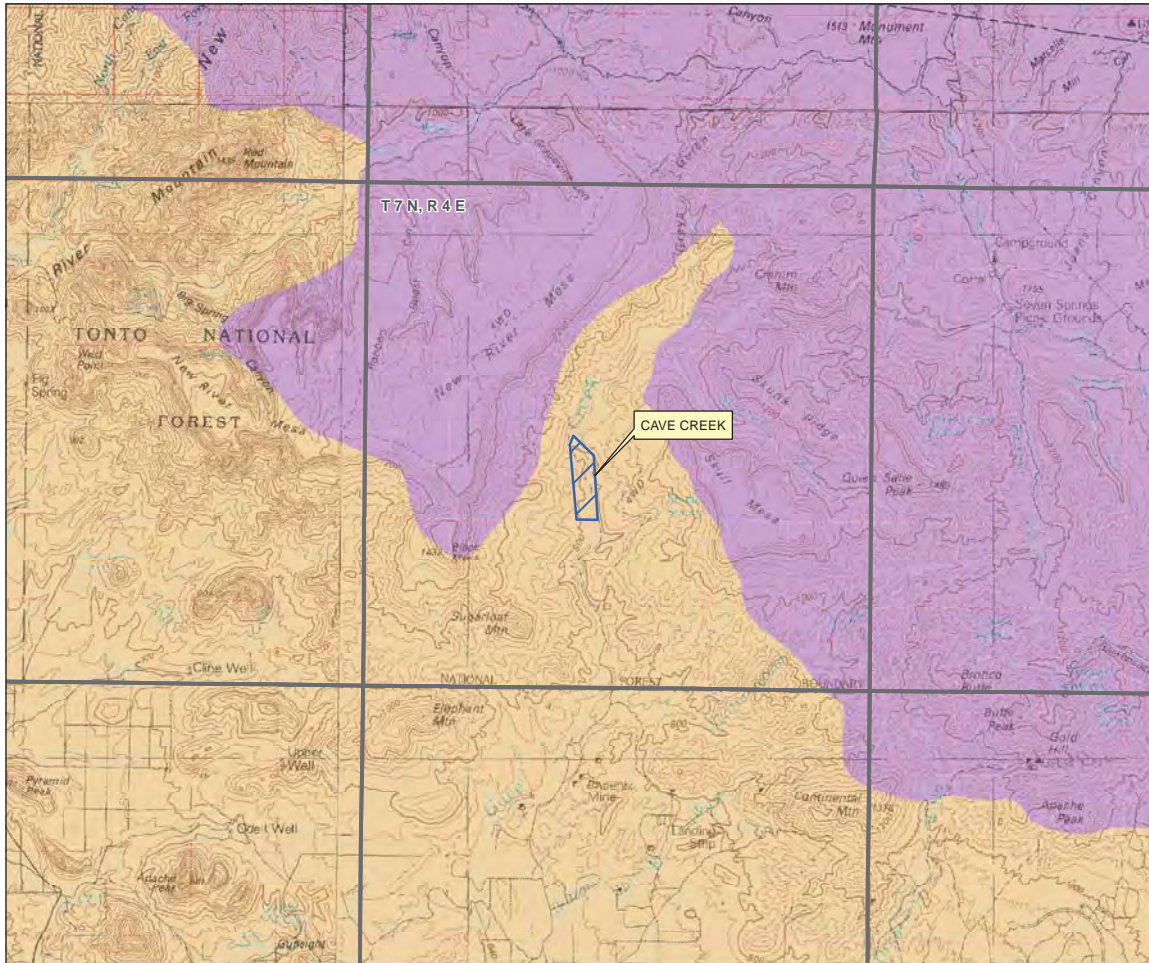
Tangle Creek:
 T9.5N, R5E, Portion of Sections 34 and 35,
 T9N, R5E, Portion of Section 2,
 Yavapai County, Arizona.
 Image Source: Payson 1:100,000 USGS Quadrangle
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

Legend

-  Offered Lands
- BIOTIC COMMUNITIES**
-  AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB
-  GREAT BASIN CONIFER WOODLAND
-  INTERIOR CHAPPARAL
-  SEMIDESERT GRASSLAND



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 BIOTIC COMMUNITIES
 TANGLE CREEK PARCEL
 Figure 17



Cave Creek:
 T7N, R4E, Portion of Section 21,
 Maricopa County, Arizona.
 Image Source: Bradshaw Mtns, Payson, Phoenix North &
 Theodore Roosevelt Lake 1:100,000 USGS Quadrangles
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

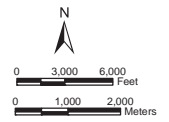
Legend

 Offered Lands

BIOTIC COMMUNITIES

 AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB

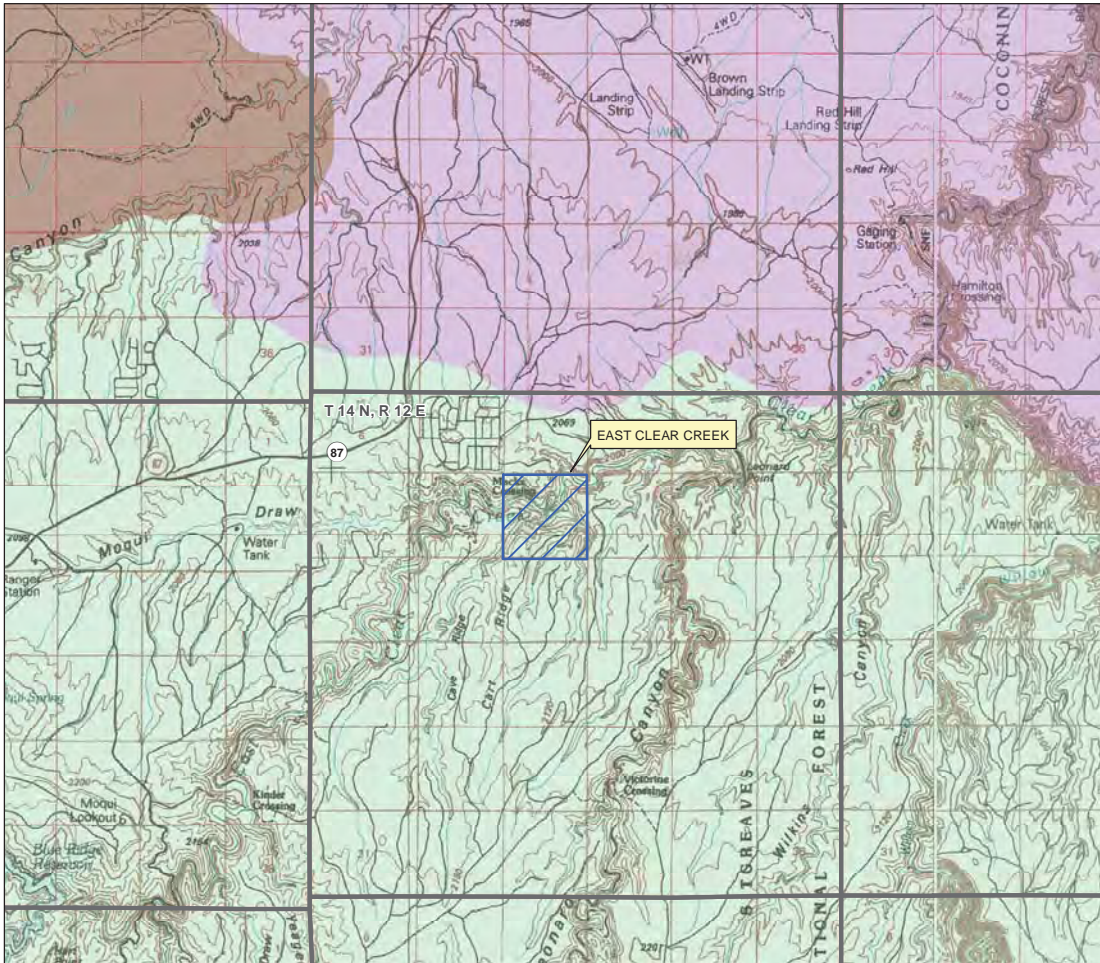
 INTERIOR CHAPPARAL




 WestLand Resources

RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

BIOTIC COMMUNITIES
 CAVE CREEK PARCEL
 Figure 18



East Clear Creek:
 T14N, R12E, Section 9,
 Coconino County, Arizona.
 Image Source: Sedona & Holbrook 1:100,000 USGS Quadrangles
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.


Legend

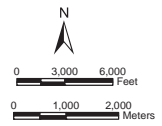
 Offered Lands

BIOTIC COMMUNITIES

 GREAT BASIN CONIFER WOODLAND

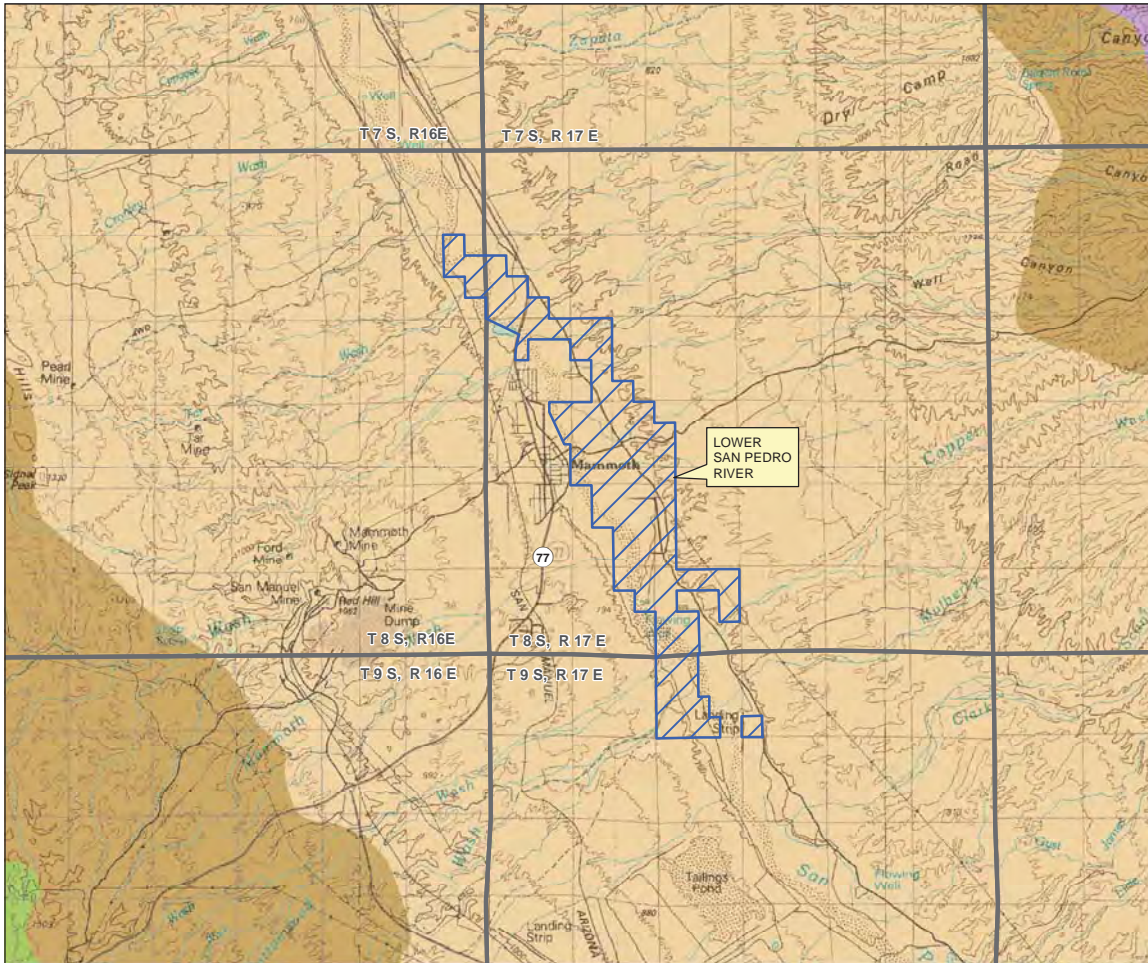
 PETRAN MONTANE CONIFER FOREST

 PLAINS AND GREAT BASIN GRASSLAND



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

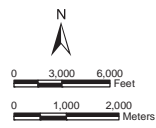
BIOTIC COMMUNITIES
 EAST CLEAR CREEK PARCEL
 Figure 19



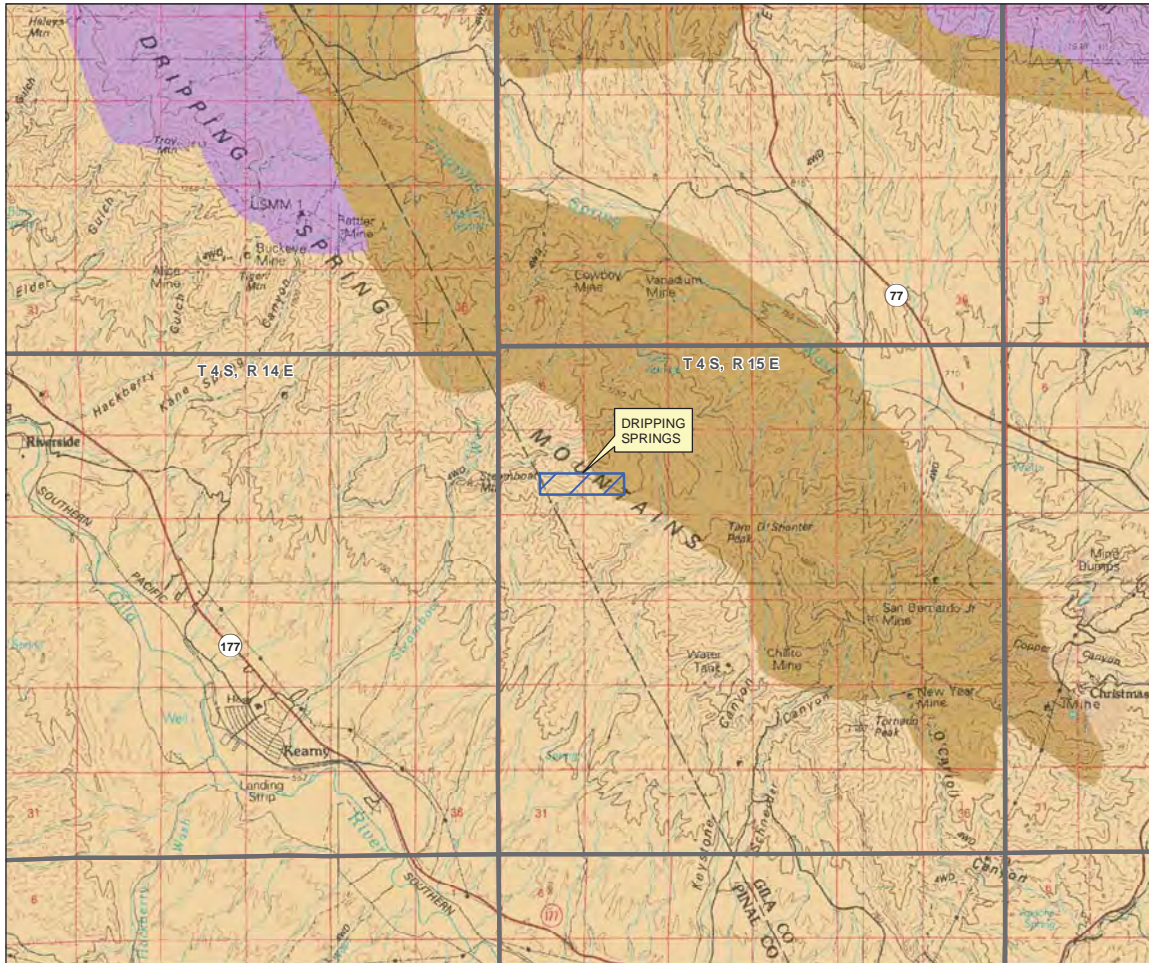
Lower San Pedro River:
 T8S, R16E, Portion of Section 12,
 T8S, R17E, Portion of Sections 7, 17-21, 28, 29, 32 & 33,
 T9S, R17E, Portion of Sections 3 & 4,
 Pinal County, Arizona.
 Image Source: Mammoth 1:100,000 USGS Quadrangle.
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

Legend

-  Offered Lands
- BIOTIC COMMUNITIES**
-  AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB
-  INTERIOR CHAPPARAL
-  MADREAN EVERGREEN WOODLAND
-  SEMIDESERT GRASSLAND






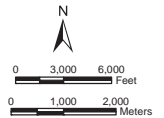
RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 Biotic Communities
 LOWER SAN PEDRO RIVER PARCEL
 Figure 20



Dripping Springs:
 T4S, R15E, Portion of Sections 7 & 8,
 Pinal and Gila Counties, Arizona.
 Image Source: Globe 1:100,000 USGS Quadrangle.
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

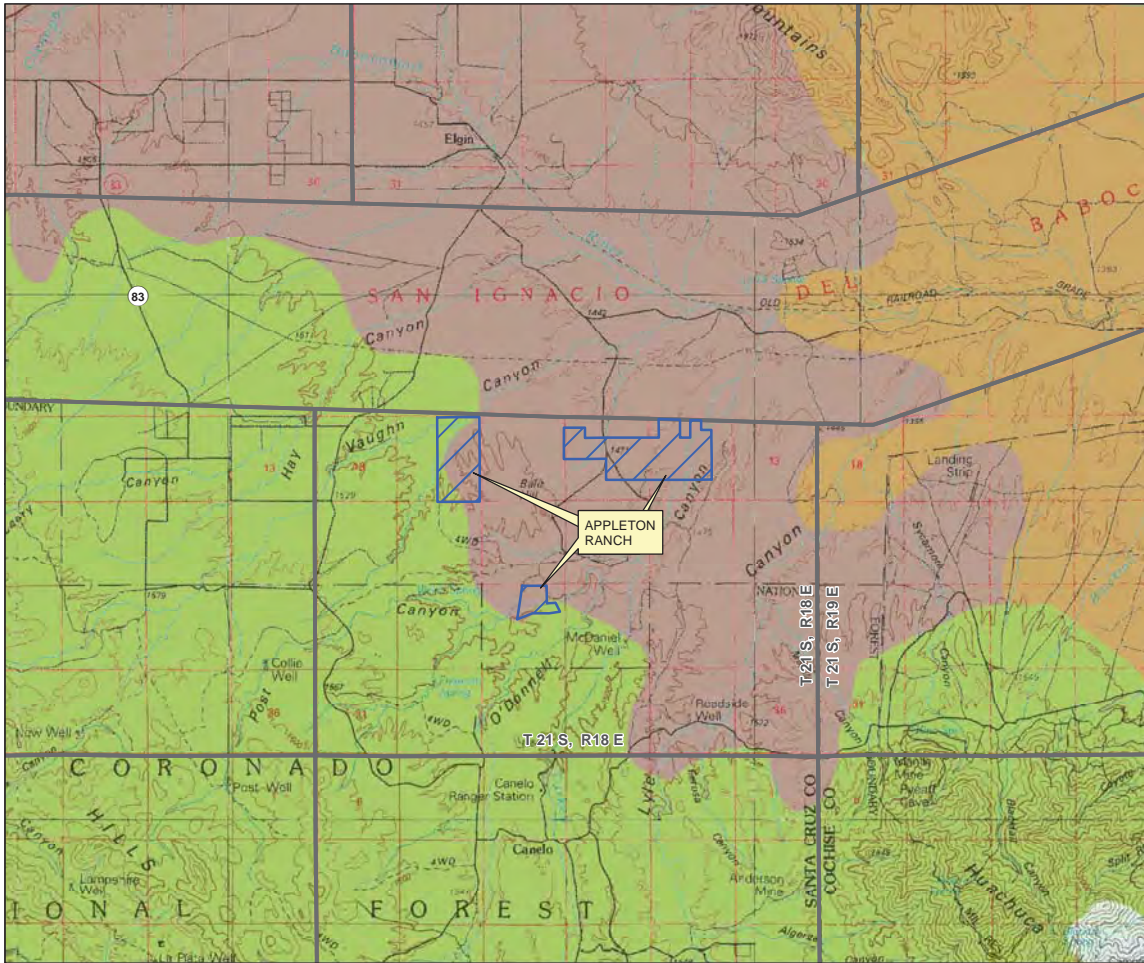
Legend

-  Offered Lands
- BIOTIC COMMUNITIES**
-  AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB
-  INTERIOR CHAPPARAL
-  SEMIDESERT GRASSLAND








RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species

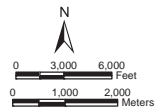
BIOTIC COMMUNITIES
 DRIPPING SPRINGS PARCEL
 Figure 21



Appleton Ranch:
 T21S, R18E, Portion of Sections 14, 15, 17 & 28,
 Santa Cruz County, Arizona.
 Image Sources: Ft. Huachuca 1:100,000 USGS Quadrangle
 Data Sources: Biotic Communities of the Southwest,
 Brown & Lowe, August 1980.
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

Legend

-  Offered Lands
- BIOTIC COMMUNITIES**
-  MADREAN EVERGREEN WOODLAND
-  PETRAN MONTANE CONIFER FOREST
-  PLAINS AND GREAT BASIN GRASSLAND
-  SEMIDESERT GRASSLAND



RESOLUTION COPPER
 General Plan of Operations and
 Legislative Land Exchange Screening
 Analysis for Special Status Species
 BIOTIC COMMUNITIES
 APPLETON RANCH PARCEL
 Figure 22

APPENDIX A

**Potential for
Occurrence Table
of Special-Status
Species within
the GPO Footprint
and Downstream
Areas**

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
PLANTS										
<i>Acuña cactus</i> (<i>Echinomastus erectocentrus</i> var. <i>acuhensis</i>)	Endangered; proposed critical habitat	Occurs on small knolls and ridges, terraces, flats, and slopes of broad dissected hills with fine to coarse grained granite or andesite gravels in Arizona Upland Sonoran desertscrub (AGFD 2013a; ARPC 2001).	Occurs as small disjunct populations from northeastern Pinal to southeastern Maricopa and western Pima counties in Arizona; also known from Sonora, Mexico. Occurs from 1,198 to 3,773 ft in elevation (AGFD 2013a).	None	None	None	None	None	None	None
<i>Aravaipa woodfern</i> (<i>Thelypteris puberula</i> var. <i>sonorensis</i>)	TNF - S	Occurs in moist soils in mesic canyons, along riverbanks, and meadow habitats in shade and often associated with boulders. Elevation ranges from 2,220 to 4,500 ft (SEINet 2017; AGFD 2004a).	Disjunct populations are found in Coconino, Gila, Maricopa, Pima, Pinal and Yavapai counties including a locality near Superior (AGFD 2004d; SEINet 2017).	None	None	None	None	None	Present	Unlikely
<i>Arizona alum root</i> (<i>Heuchera glomerulata</i>)	TNF - S	Associated with north-facing shaded rocky slopes near seeps, springs, and riparian areas. Occurs at elevations ranging from 4,000 to 9,000 ft (AGFD 2004b).	Known from small, isolated populations in several mountain ranges in southeastern Arizona including the Pinal Mountains in Gila County (AGFD 2004b).	None	None	None	None	None	Unlikely	Unlikely

¹ Tailings Storage Facility, Tailings Corridor, and Borrow Areas

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
<i>Arizona bighane</i> (<i>Acacia arizonica</i>)	TNF - S	Moist, shady areas in deep narrow ravines; associated with riparian, conifer and deciduous trees forming dense canopies at elevations of 4,800 to 6,900 ft (ARPC 2001).	Species is known from isolated locations in central Arizona: Bill Williams Mountain (Kaibab National Forest), tributaries to Oak Creek, and West Clear Creek (Coconino National Forest), Coconino County; Workman Creek and Cold Springs Canyon in the Sierra Ancha Mountains (Tonto National Forest), Gila County (Arizona Game and Fish Department 2012a).	None Area is outside known geographic range and lacks appropriate habitat.	None Area is below known elevational range and lacks appropriate habitat.	None Area is below known elevational range and lacks appropriate habitat.	None Area is below known elevational range and lacks appropriate habitat.	None Area is below known elevational range and lacks appropriate habitat.	None Although the area may contain appropriate habitat it is below known elevational range and outside of known geographic range. Moreover, species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).	None Although the area may contain appropriate habitat it is below known elevational range and outside of known geographic range. Moreover, species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).
<i>Arizona hedgehog cactus</i> (<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>)	Endangered; no designated critical habitat	Found in ecotone of Interior Chaparral and Madrean Evergreen Woodland from 3,300 to 5,700 ft. Associated with four major rock types: Tertiary Apache Leap Tuff (dacite), Cretaceous or Tertiary Schultze Granite, Precambrian Apache Group Pioneer Quartzite, and Precambrian Pinal Schist (WestLand Resources 2013a).	Occurs in northeastern Pinal and southwestern Gila counties in the Pinal, Dripping Springs, Superstition, Mescal mountains, and the higher elevation areas between Globe and Superior (AGFD 2003a). The currently identified number of individual Arizona hedgehog cactus's is over 6,000 individuals with an estimated population size of approximately 10,000 to 250,000 individuals. Predicted habitat is an estimated 44 square miles.	Present Known to occur at this site (WestLand Resources 2004a, 2014a, 2015c). HDMS records within 5 miles.	Unlikely Suitable geologic substrate occurs in a limited area. Majority of site occurs below 3,300 ft elevation, and has previous ground disturbance. Although there are HDMS records within 5 miles, no individuals were detected during 2015 surveys of a limited area of WP that was considered to contain potential habitat (WestLand Resources 2015c)	None Suitable geologic substrate occurs in a limited area, but area is below known elevational range of species. Additionally, targeted surveys did not detect this species (WestLand Resources 2013d) at Tailings Area. The nearest known populations of AHC are 2.5 miles to the east at East Plant, 3.5 miles to the north at vicinity Haunted Canyon, and 4.25 miles to the east at Silver King substation (WestLand Resources 2013d). HDMS records within 5 miles are likely those described herein.	None Area is outside of known geographic range, below known elevational range, and lacks appropriate geologic substrate and habitat. HDMS are likely those at East Plant Site, Haunted Canyon, or Silver King substation.	None Area is outside known geographic range, below known elevational range, and lacks appropriate geologic substrate habitat.	Possible Species could occur in areas within the appropriate elevational range and where appropriate geologic substrate exists. HDMS records within 5 miles.	Present AHC were observed during survey (WestLand Resources 2015c). Potentially appropriate habitat exists in other areas of this site that fall within the known elevational range and where appropriate geologic substrate exists. HDMS records within 5 miles.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Arizona phlox (<i>Phlox amabilis</i>)	TNF - S	Occurs in exposed limestone and rocky slopes in open areas associated with piñon-juniper communities, pine-oak communities, coniferous forests and shrublands, and open grassland-juniper woodlands at elevations between 3,500 and 7,800 ft (Arizona Game and Fish Department 2005a; Wilken and Porter 2005; Southwest Environmental Information Network 2017).	Species primarily occurs in central to northwestern Arizona at or above the Mogollon Rim (SEINet 2017).	None Area is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.	None Area does not contain suitable habitat and is outside known geographic range.
Blumer's dock (<i>Rumex orthoneurus</i>)	TNF - S	Restricted to high-elevation riparian and cienega habitats in moist soils (ARPC 2001). Elevations range from 4,480 to 9,660 ft (AGFD 2002c).	Occurs in central and east-central Arizona and at isolated localities in southeastern Arizona including the Sierra Ancha, White, Pinaleño, Chiricahua, and Huachuca mountains, as well as a record near East Clear Creek (ARPC 2001).	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.	None Area is within the general geographic range, but is below known elevational range and lacks appropriate habitat.
Chihuahuan sedge (<i>Carex chihuahuensis</i>)	TNF - S	Typically occurs in north- and northwest-facing slopes in wet soils in streambeds, wet meadows, and cienegas, at elevations of 3,600 and 7,200 ft (AGFD 2004c).	Species is known from localities from central to southeastern Arizona from the Sky Islands to the Sierra Ancha and White Mountains (SEINet 2017).	Unlikely Area is within known geographic range, but suitable habitat only occurs in limited, scattered patches. Surveys of spring-associated plant species have not detected the species (WestLand Resources 2013b; Montgomery & Associates and WestLand Resources 2017; WestLand Resources 2017f).	None Area is within known geographic range but below known elevational range and does contain appropriate habitat.	None Area is within known geographic range but contains only scattered patches of riparian vegetation and a few small seeps and springs that may contain saturated soils. Moreover, area is below known elevational range of the species.	None Area is within known geographic range but lacks appropriate habitat and is below known elevational range.	None Area is within known geographic range but lacks appropriate habitat and is below known elevational range.	Unlikely Area is within known elevational range and geographic range and contains appropriate habitat. However, species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).	Unlikely Area is within known elevational range and geographic range and contains appropriate habitat. However, species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Cochise sedge aka Giant Sedge (<i>Carex ultra</i> , also <i>Carex spissa</i> var. <i>ultra</i>)	TNF - S	Associated with saturated soils near or in perennial seeps, streams, and springs from elevations of 2,000 to 6,000 ft (Arizona Game and Fish Department 2000a; Southwest Environmental Information Network 2017).	Cochise County: Huachuca, Chiricahua, Dragoon and Galiuro Mountains; Graham County: Galiuro Mountains; Pinal County: Aravaipa Canyon; Pima County: Santa Rita Mountains, Rincon Valley; Santa Cruz County: Santa Rita and Atascosa Mountains; Yavapai County: Hieroglyphic and Mazatzal Mountains (AGFD 2000a).	Unlikely Area is within known geographic range, but suitable habitat only occurs in limited, scattered patches. Surveys of spring-associated plant species have not detected the species (WestLand Resources 2013b; Montgomery & Associates and WestLand Resources 2017; WestLand Resources 2017).	None Area is within known geographic range but does not contain habitat.	Unlikely Area contains only scattered patches of riparian vegetation and a few small seeps and springs that may contain saturated soils. Given the paucity of nearby records and potential seep and spring habitats, we consider the possibility for occurrence to be very low.	None Area is within known geographic range but does not contain habitat.	None Area is within known geographic range but does not contain habitat.	Unlikely Area is within broader geographic range but there are no records in the nearby vicinity; area does contain potential habitat. Species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).	Unlikely Area is within broader geographic range of the species and may contain limited areas of suitable habitat. However, species was not detected during spring-associated plant species (WestLand Resources 2012d).
Eastwood alum root (<i>Heuchera eastwoodiae</i>)	TNF - S	Occurs along moist slopes in ponderosa pine forests and canyons at elevations between 3,500 and 8,000 ft (Tonto National Forest 2000).	Occurs in central Arizona from the Tonto Basin northwest to the Bradshaw Mountains.	None Area is outside known geographic range and lacks appropriate habitat.	None Area is outside known geographic range and lacks appropriate habitat.	None Area is outside known geographic range, below known elevational range, and lacks appropriate habitat.	None Area is outside known geographic range, below known elevational range, and lacks appropriate habitat.	None Area is outside known geographic range, below known elevational range, and lacks appropriate habitat.	None Area is outside known geographic range and lacks appropriate habitat.	None Area is outside known geographic range and lacks appropriate habitat.
Fish Creek fleabane (<i>Erigeron piscaticus</i>)	TNF - S	Associated with perennial streams and is found on upper floodplain terraces in moist, shady canyon bottoms in sand and silt alluvium between elevations of 2,250 and 3,500 ft (Tonto National Forest 2000; Arizona Rare Plant Committee 2001).	Known from very few records across its range in Arizona (4 records in SEINet 2017). Known from tributaries to Aravaipa Creek in Galiuro Mountains, Box Canyon in Santa Catalina Mountains, and historically (1931) from Fish Creek in Superstition Mountains. (Arizona Game and Fish Department 2001b; Southwest Environmental Information Network 2017).	None Species not known from the Area, the Area is above the known elevational range and does not contain appropriate habitat.	None Species not known from the Area, and does not contain appropriate habitat.	None Species not known from the Area, and does not contain appropriate habitat.	None Species not known from the Area, and does not contain appropriate habitat.	None Species not known from the Area, and does not contain appropriate habitat.	Unlikely There are no known records in the vicinity of the area, but appropriate habitat is present. Species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).	Unlikely There are no known records in the vicinity of the area, but appropriate habitat is present. Species was not detected during surveys targeting spring-associated plant species (WestLand Resources 2012d).
Fish Creek rockdaisy (<i>Perityle saxicola</i>)	TNF - S	Occur in cracks and crevices on cliff faces, large boulders, and rocky outcrops in canyons and on buttes in xeric east and northeast facing exposures in Sonoran desertscrub at elevations between 2,000 and 3,500 ft (Tonto National Forest 2000).	Species occurs in the area of Tonto National Monument and Roosevelt Dam in central Arizona in drainages associated with the Salt River Canyon (SEINet 2017).	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.	None Area is outside of species limited geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Galileo² aka Aravaipa sage (<i>Salvia amissa</i>)	TNF - S	Occurs in shady canyon bottoms, near streams within oak woodlands or deciduous riparian woodlands near permanent water. Substrates include alluvium comprised of gravel, sand and silt at elevations between 1,500 and 5,000 ft (Arizona Game and Fish Department 2002b; Arizona Rare Plant Committee 2001; Southwest Environmental Information Network 2017).	Galileo, Sierra Ancha, and Superstition mountains, and in Eagle Creek near Morenci (Arizona Game and Fish Department 2002b; Southwest Environmental Information Network 2017).	None Area is within geographic range but lacks appropriate habitat.	None Area is within geographic range but lacks appropriate habitat.	None Area is within geographic range but lacks appropriate habitat.	None Area is within geographic range but lacks appropriate habitat.	None Area is within geographic range but lacks appropriate habitat.	Unlikely There are no known records in vicinity of the area, but appropriate habitat is present. Species has not been observed during surveys of aquatic habitat (WestLand Resources 2012d).	Unlikely There are no known records in vicinity of the area, but appropriate habitat is present along a portion of Queen Creek. However, species has not been observed during surveys of the area (WestLand Resources 2012d).
Hohokam agave aka. Murphey agave (<i>Agave murpheyi</i>)	TNF - S	Occurs on alluvial terraces or hilly slopes above major drainages in desertscrub habitat. Associated with pre-Columbian agricultural and settlement features at elevations between 1,300 to 2,400 ft (AGFD 2003c).	Found in Verde River Drainage, and Bradshaw, Paradise Valley (Phoenix Basin), McDowell, New River, and Wickenburg mountains, Maricopa County; South Bradshaw and Hieroglyphic mountains, Castle Creek and Agua Fria rivers, Yavapai County; Roosevelt Lake, Mazatzal and Sierra Ancha mountains, and Tonto Basin, Gila County; Queen Creek near Superior, Pinal County (Arizona Game and Fish Department 2003c; Arizona Rare Plant Committee 2001; Southwest Environmental Information Network 2017).	None Area is within the geographic range but is outside of the elevational range of the species and lacks appropriate habitat.	None Area is within the geographic range but is outside of the elevational range of the species.	Unlikely Area is relatively close to known localities and contains appropriate habitat but species has not been observed by USFS staff biologists in the area (Mark Taylor, USFS pers. comm.) or by surveys conducted by WestLand (WestLand Resources 2017b).	Unlikely Area is relatively close to known localities and contains appropriate habitat, but species has not been observed by USFS staff biologists in the area (Mark Taylor, USFS pers. comm.).	Unlikely Area is within the geographic range. However, despite known pre-Columbian settlement features located in the vicinity, no records of this species occur within the area.	None Area is within the geographic range but above the elevational range of the species and lacks appropriate habitat.	Present Area is within the geographic range and contains appropriate habitat. The species is also included in [REDACTED]
Horseshoe deer vetch (<i>Lotus mearnsii</i> var. <i>equisetensis</i>)	TNF - S	Occurs in powdery, gypsaceous limestone soils formed from Tertiary lakebed deposits at 2,100 ft elevation (ARPC 2001).	Only one population known from Horseshoe Reservoir along the lower Verde River (Arizona Rare Plant Committee 2001; Southwest Environmental Information Network 2017).	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.	None Area is outside of the highly restricted geographic range of this species.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Hualapai milkwort <i>(Polygala rusty)</i>	TNF - S	Strongly associated with ancient lacustrine, limestone-derived, soils in open deserts/scrub, desert grassland and juniper woodlands at elevations between 3,000 and 5,000 ft (Arizona Game and Fish Department 2003d; Southwest Environmental Information Network 2017).	Species is known from central to northwestern Arizona: northeast of Phoenix at Horseshoe Dam northwest to Peach Springs (SEINet 2017).	None Area is outside of known geographic range.	None Area is outside of known geographic range.	None Area is outside of known geographic range.	None Area is outside of known geographic range.	None Area is outside of known geographic range.	None Area is outside of known geographic range.	None Area is outside of known geographic range.
Mapleleaf false snapdragon <i>(Mahrya [Maurandya] acerifolia)</i>	TNF - S	Occurs in rhyolite rock crevices and overhangs on shaded cliffs and rock ledges, generally with north- to east-facing walls at an elevation of 1,800 to 3,350 ft (AGFD 2005b).	Known only from Superstition Mountains and nearby vicinity; known from Hewitt Wash (SEINet 2017).	Unlikely Area is not within, but near known range and slightly above the known elevational range of the species and cliff habitat is present.	Unlikely Area is not within, but near known range of the species and cliff habitat is present.	Unlikely Area is near known locality and is within the elevational range for this species but species has not been observed by USFS staff biologists in the area (Mark Taylor, USFS pers. comm.) or by surveys conducted by WestLand (WestLand Resources 2017b).	None Area is not within, but near known range of the species, is within the elevational range for this species, and there are HDMS records within 5 miles; however, cliff habitat is absent from this area.	None Area is not within, but near known range of the species, is within the elevational range for this species, but cliff habitat is absent from this area.	Unlikely Area is not within, but near known range of the species and cliff habitat is present.	Unlikely Area is not within, but near known range of the species and cliff habitat is present.
Mogollon fleabane <i>(Erigeron anchana)</i>	TNF - S	Occurs in granitic rock crevices or ledges on boulders and vertical rock faces, usually in canyons in association with chaparral up to pine forests. Elevation ranges from 3,500 to 7,000 ft (ARPC 2001).	Endemic to central Arizona occurring from the vicinity of Prescott to the Superstition Mountains (Pinal County) (SEINet 2017).	Unlikely Area is not within, but near known range of the species and appropriate habitat is present.	None Area is not within, but near known range of the species, is below the known elevational range, and does not contain chaparral or pine forests.	None Area is not within, but near known range of the species, is below the known elevational range, and does not contain chaparral or pine forests.	None Area is not within, but near known range of the species, is below the known elevational range, and does not contain chaparral or pine forests.	None Area is not within, but near known range of the species, is below the known elevational range, and does not contain chaparral or pine forests.	Unlikely Area is not within, but near known range of the species and appropriate habitat is present.	Unlikely Area is not within, but near known range of the species and appropriate habitat is present.
Mt. Dellenbaugh sandwort <i>(Arenaria abertans)</i>	TNF - S	Found in meadows and meadow margins, primarily in oak-pine forests, but can also be found in open pine forests and among junipers. Elevation range between of 5,500 to 9,000 ft (AGFD 2004c).	Primarily occurs in central and northwestern Arizona. There is an isolated record from the northern Superstition Mountains (SEINet 2017).	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.	None Area is below the known elevational range, outside of the geographic range, and does not contain appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Nichol's Turk's Head cactus (<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>)	Endangered, no designated critical habitat	Occurs in unshaded micro-sites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountainsides (AGFD 2008b). Occurs at elevations ranging from 2,400 to 4,000 ft (USFWS 2009).	Known from 3 isolated sites in southwestern Pinal and north-central Pima counties, Arizona and one site in Sonora, Mexico; none of which are in proximity to the GPO Activity Areas mountainsides (AGFD 2008b). Species is not known to occur on TNF (Appendix C).	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.	None Area is well outside known isolated occurrences of the species.
Pima Indian mallow (<i>Abutilon parishii</i>)	TNF - S	Occurs on steep rocky slopes and hillsides in moist soils and full sun within higher elevation Sonoran desert scrub, and semidesert grassland. In riparian areas, it occurs on flat terraces above canyon bottoms. Elevation ranges from 1,700 to 4,900 ft (Arizona Game and Fish Department 2000b; Arizona Rare Plant Committee 2001).	Found in mountain ranges of Central Arizona including the Pinal, Mineral Hills, Superstition, Picacho, Tortolita, and Dripping Springs mountains of Pinal County (ARPC 2001). Known from Arizona Trail south of Picketpost Trailhead and Highway 60 southwest of Picketpost Mountain (SEINet 2017).	Unlikely Area is within known geographic range, but supports very limited areas of appropriate Sonoran desertscrub habitat.	Possible Area is within known geographic range and contains appropriate habitat although this may be limited in distribution. HDMS records within 5 miles.	Present Species was observed during survey in this area (West and Resources 2017b).	Unlikely Area is within known geographic range (ARPC 2001), contains Sonoran desertscrub, and there are HDMS records within 5 miles. However, rocky slopes and hillsides are here limited.	None Area is within known geographic range, and contains Sonoran desertscrub, but rocky slopes and hillsides are absent.	Possible Area is within known geographic range and contains appropriate habitat along its south reach although this may be limited in distribution.	Possible Area is within known geographic range and contains appropriate habitat although this may be limited in distribution. HDMS records within 5 miles.
Ripley wild buckwheat (<i>Eriogonum ripleyi</i>)	TNF - S	Occurs in white, calcareous substrates and volcanic tuff in Sonoran desert scrub and Piñon Juniper Woodlands (U.S. Forest Service 2011; Arizona Game and Fish Department 1997; Arizona Rare Plant Committee 2001).	Known from three isolated occurrences in Yavapai County and one in Coconino County (SEINet 2017).	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.	None Area is outside of known geographic range and does not contain habitat.
Salt River rockdaisy aka Gila rockdaisy (<i>Perityle gilensis</i> var. <i>salensis</i>)	TNF - S	Associated with seeps on cliff faces, ledges, and rock outcrops at elevations between 3,000 and 4,000 ft (eFloras 2016).	This variety is only known from a few localities in the Salt River Canyon (SEINet 2017).	None Area is outside of the highly restricted geographic range.	None Area is below the known elevational range and outside of the highly restricted geographic range.	None Area is below the known elevational range and outside of the highly restricted geographic range.	None Area is below the known elevational range and outside of the highly restricted geographic range.	None Area is below the known elevational range and outside of the highly restricted geographic range.	None Area is outside of the highly restricted geographic range.	None Area is outside of the highly restricted geographic range.
Tonto Basin agave (<i>Agave delamateri</i>)	TNF - S	Occurs in Arizona Upland Sonoran desert scrub in association with hilly slopes near larger rivers and is associated with pre-Columbian agricultural and settlement features (ARPC 2001).	Only known from the Tonto Basin, including Pinal Creek (Mark Taylor, USFS pers. comm.), and Verde Valley (Arizona Rare Plant Committee 2001; Southwest Environmental Information Network 2017).	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.	None Area is outside of known highly restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Toumey groundsel <i>Packera [Senecio] neomexicana var. toumeyii</i>	TNF - S	This variety is associated with loose rocky soil in oak chaparral or coniferous forests generally at elevations of 5,500 to 9,200 ft (AGFD 2004). One record from ~ 4,900 ft associated with ponderosa pines (SEINet 2017).	Known from isolated localities in east central Arizona including localities in the Pinal Mountains, and southeastern Arizona including Chiricahua, and Santa Catalina mountains (SEINet 2017).	None Area is located below the elevational range of the species as reported by AGFD (2004). Although there are localities to the east in the foothills of the Pinal mountains, the habitat on the parcel is not similar to this location.	None Area is below the known elevational range and outside of the geographic range and lacks appropriate habitat.	None Area is below the known elevational range and outside of the geographic range and lacks appropriate habitat.	None Area is below the known elevational range and outside of the geographic range and lacks appropriate habitat.	None Area is below the known elevational range and outside of the geographic range and lacks appropriate habitat.	None Area contains appropriate habitat but is outside known geographic range and suitable elevation.	None Area contains appropriate habitat but is outside known geographic range and below suitable elevation.
Verde breadroot <i>(Pedicularis verdeiense)</i>	TNF - S	Associated with Tertiary Verde limestone-derived soils and found in mixed Sonoran desert scrub and open juniper woodland as well as compacted soils along roadways (Welsh and Licher 2010). Elevational range 3,200 to 4,300 ft.	Known from several localities in the upper and middle Verde River Basin including near the towns of Camp Verde and Perkinsville, Yavapai County; (Welsh and Licher 2010). All known localities near within Yavapai County along the Verde River (Arizona Game and Fish Department 2015e).	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.	None Based on known range of the species described by AGFD (Arizona Game and Fish Department 2015e), area is outside known range.
INVERTEBRATES										
A Caddisfly <i>(Wormulia planae)</i>	TNF - S	Larvae require aquatic environments.	In Arizona, known only from a few localities (e.g. along Fossil and Beaver creeks in the Verde River basin, Gila and Yavapai counties) (Muñoz-Quesada and Holzenthal 2008).	None Area may contain a few sites of perennial water, but is well outside the known localities in Arizona.	None Area is well outside the known localities in Arizona.	None Area is well outside the known localities in Arizona.	None Area is well outside the known localities in Arizona.	None Area is well outside the known localities in Arizona.	None Area supports a perennial stream but is well outside the known localities in Arizona.	None Area contains a section of perennial water, but is well outside the known localities in Arizona.
A Mayfly <i>(Fallceon catoni)</i>	TNF - S	Larvae require aquatic environments.	Known only from a single locality in the Salt River Canyon in Gila County, Arizona and northern Sonora, Mexico (McCafferty 2006), and Riverside County, California (USFWS 2010).	None Area may contain a few sites of perennial water, but is far from the single known locality in Arizona.	None Area is far from the single known locality in Arizona.	None Area is far from the single known locality in Arizona.	None Area is far from the single known locality in Arizona.	None Area is far from the single known locality in Arizona.	None Area supports a perennial stream but is far from the single known locality in Arizona.	None Area supports a perennial stream but is far from the single known locality in Arizona.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Fossil springsnail <i>(Pyrgulopsis simplex)</i>	TNF - S	Little of this species natural history is known, but members of the genus are typically associated with rocks or aquatic macrophytes in moderate stream currents (Tonto National Forest 2000). Elevational range from 4,140 to 4,310 ft (AGFD 2003b).	Found only at a spring at the extreme NW corner of Gila County and at Fossil Springs, Yavapai County (AGFD 2003b).	None Area is outside known highly restricted geographic range.	None Area is outside known highly restricted geographic range.	None Area is outside known highly restricted geographic range.	None Area is outside known highly restricted geographic range.	None Area is outside known highly restricted geographic range.	None Area contains a perennial stream but is outside known highly restricted geographic. Additionally, targeted surveys did not detect any species of springsnails (WestLand Resources 2013b).	None Area contains a stretch of perennial water but is outside known highly restricted geographic range.
Net-winged midge <i>(Aquaton arizonicus)</i>	TNF - S	Requires swift-moving streams, typically with waterfalls, that support its larvae. Adults do not leave the riparian corridors (Tonto National Forest 2000). Elevation range from 6,000 to 9,300 ft (AGFD 2003e).	Currently known only from Workman Creek in the Sierra Ancha Mountains (Tonto National Forest 2000). Workman Creek drains the south end of the Anchas to the Salt River.	None Area does not contain appropriate habitat and is outside known elevational range and highly restricted geographic range.	None Area does not contain appropriate habitat and is outside known elevational range and highly restricted geographic range.	None Area does not contain appropriate habitat and is outside known elevational range and highly restricted geographic range.	None Area does not contain appropriate habitat and is outside known elevational range and highly restricted geographic range.	None Area does not contain appropriate habitat and is outside known elevational range and highly restricted geographic range.	None Area is outside known elevational range and highly restricted geographic range.	None Area is outside known elevational range and highly restricted geographic range.
Parker's clypeus riffle beetle <i>(Clypeopus parkeri)</i>	TNF - S	Associated with perennial, flowing streams (AGFD 2003g).	Known only known from two creeks in Bloody Basin (Tonto National Forest 2000; Arizona Game and Fish Department 2003g)	None Area does not contain known highly restricted geographic range.	None Area does not contain known highly restricted geographic range.	None Area does not contain known highly restricted geographic range.	None Area does not contain known highly restricted geographic range.	None Area does not contain known highly restricted geographic range.	None Area contains perennial stream habitat but is outside known highly restricted geographic range.	None Area supports a perennial stream reach but is outside known highly restricted geographic range.
FISH										
Desert sucker <i>(Catostomus clarki)</i>	TNF - S	Inhabits rapids and flowing pools of rivers and streams. Elevation ranges from 480 to 8,840 ft (AGFD 2002d).	Relatively widespread in Gila and Bill Williams systems (Colorado River drainage), Arizona (AGFD 2002d).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None While this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that likely preclude occupancy by native fish species (Robinson, Oranburt, and Crowder 2010).	None Area contains a perennial stream reach and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers. comm.), but fish surveys have only observed nonnative species (WestLand Resources 2017e).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
<i>Gila chub</i> (<i>Gila intermedia</i>)	Endangered, designated critical habitat. It should be noted that per USFWS (USFWS 2017b) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex which includes <i>Gila chub</i> .	Inhabits pools, springs, backwaters, and streams at elevations from 2,000 to 5,500 ft (USFWS 2015).	Endemic to the Gila River Basin. The species occurs in rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and possibly occurs in to the northeastern tip of Sonora, Mexico (USFWS 2015). Critical habitat for this species is designated for approximately 160.3 miles of stream reaches in Arizona and New Mexico (USFWS 2017a).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None	None

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas		
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek	
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO			
Gila topminnow (<i>Poeciliopsis occidentalis</i>)	Endangered; no designated critical habitat	Inhabits slow moving low gradient streams, springs, and backwaters at elevations below 4,500 ft, primarily in shallow areas with aquatic vegetation and debris for cover (AGFD 2001c).	Reintroduced and natural locations within historic distribution in the Gila River drainage and one locality in the Bill Williams River drainage (AGFD 2001c). Remaining natural occurrences in upper Santa Cruz River (Minckley and Marsh 2009).	None Area lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).	None Area lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).	None Area lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).	None Area lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).	None Area lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).	None Area lacks appropriate habitat.	None Although a portion of Queen Creek supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). As such, this species is not expected to occur in Devils Canyon.	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017c). As such, this species is not expected to occur in this portion of Queen Creek. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark E. Taylor, USFS, pers.comm.).
Loach minnow (<i>Tiaroga cobitis</i>)	Endangered; designated critical habitat	Inhabits small to large perennial creeks and rivers; a bottom dweller typically in shallow turbulent riffles with cobble substrate, swift currents, and filamentous algae (USFWS 2012a).	Endemic to the Gila River Basin. Found below 5,000 ft elevation in Navajo, Apache, Graham, Pinal, and Greenlee counties, Arizona and Hidalgo counties, New Mexico. In total, approximately 610 miles are designated critical habitat in Apache, Cochise, Gila, Graham, Greenlee, Pinal, and Yavapai Counties, Arizona, and Catron, Grant, and Hidalgo Counties in New Mexico (USFWS 2012a).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). As such, this species is not expected to occur in Devils Canyon.	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017c). As such, this species is not expected to occur in this portion of Queen Creek.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Razorback sucker (<i>Xytrachus texanus</i>)	Endangered, designated critical habitat	Inhabits primarily large riverine systems, generally in backwaters and eddies of fast moving waters (i.e. slack water habitats) and man-made lakes (Minckley and Marsh 2009). Elevational range is below 5,000 ft (AGFD 2002f). Critical habitat includes the 100-year floodplain of the Colorado River through the Grand Canyon from confluence with Paria River to Hoover Dam; Hoover Dam to Davis Dam, Parker Dam to Imperial Dam. Also Gila River from Arizona/New Mexico border to Coolidge Dam; and Salt River from Hwy 60/State Route 77 Bridge to Roosevelt Dam; and Verde River from FS boundary to Horseshoe Lake (USFWS 1994).	Endemic to the Colorado River Basin; presently only located in Lake Mohave and is believed to be extirpated downstream of Lake Havasu, Lake Mead, and Lake Havasu (Minckley and Marsh 2009; AGFD 2002f).	None Area lacks appropriate habitat and is outside of the current range of the species	None Area lacks appropriate habitat and is outside of the current range of the species	None Area lacks appropriate habitat and is outside of the current range of the species	None Area lacks appropriate habitat and is outside of the current range of the species	None Area lacks appropriate habitat and is outside of the current range of the species	None Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). Moreover, Devils Canyon is not a large riverine system and thus does not contain appropriate habitat. The area is also outside of the current range of the species.	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017c). Moreover, Queen Creek is not a large riverine system and thus does not contain appropriate habitat. The area is also outside of the current range of the species.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Roundtail chub <i>Gila robusta</i>	USFWS (2017b) withdrew the proposal to list the DPS as threatened or endangered.	This species typically inhabits the largest and deepest pools of middle to large streams and is considered to be less associated with dense cover than other chub species (Minckley and Marsh 2009; AGFD 2015c). Occurs from 1,210 to 7,220 ft; most common between 2,000 and 5,000 ft elevation throughout the Gila and Bill Williams drainage in Arizona and New Mexico (Minckley and Marsh 2009; AGFD 2015c).	Because of USFWS' determination that roundtail and headwater chub are the same species (USFWS 2017b), the distribution of <i>Gila robusta</i> in Arizona now includes tributaries and portions of the mainstem of the Gila, San Carlos, Salt, Bill Williams, Colorado, and Verde rivers. (AGFD 2015c).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). Surveys conducted by WestLand and AGFD have not observed this species (Crowder and Robinson 2011; Robinson, Orabutt, and Crowder 2010; WestLand Resources 2009a).	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017e).
Sonora sucker <i>Catostomus insignis</i>	TNF - S	Associated with perennial, flowing streams with deep pools and cover (e.g., log and debris piles) (Minckley and Marsh 2009; AGFD 2002g).	Relatively widespread in Gila and Bill Williams systems (Colorado River drainage) in Arizona (AGFD 2005d)	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). As such, this species is not expected to occur in Devils Canyon.	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017e).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Spikedace (<i>Meda fulgida</i>)	Endangered; designated critical habitat	Inhabits shallow riffles with sand, gravel, and rubble substrates of moderate to large perennial streams (USFWS 2012a).	Endemic to the Gila River Basin. In Arizona, the only known natural population occurs in in Aravaipa Creek in Graham, and Pinal counties. The species is stocked at 5 other locations, including Fossil Creek, Redfield Canyon, Hot Springs Canyon, Bonita Creek and the Blue River. (AGFD 2013c; USFWS 2012a). In total, approximately 630 miles of linear distance of rivers are designated critical habitat for this species. These areas include portions of the Verde River Complex, Black River Complex, Middle Gila/Lower San Pedro/Aravaipa Creek Complex, and San Francisco and Blue River Complex in Arizona, and portions of the San Francisco and Blue Rivers Complex and Upper Gila River Complex in New Mexico.	None Area lacks appropriate habitat and is outside of the current, known range of the species.	None Area lacks appropriate habitat and is outside of the current, known range of the species.	None Area lacks appropriate habitat and is outside of the current, known range of the species.	None Area lacks appropriate habitat and is outside of the current, known range of the species.	None Area lacks appropriate habitat and is outside of the current, known range of the species.	None Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native fish habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). The area is also outside of the current range of the species.	None Although a portion of Queen Creek supports perennial aquatic environments and USFS has reported longfin dace in this stretch (Mark E. Taylor, USFS, pers.comm.), the species is not known from this drainage and surveys of this stretch have not detected this species but have observed non-native fish (WestLand Resources 2017c). The area is also outside of the current range of the species.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
AMPHIBIANS										
Chiricahua leopard frog (<i>Lithobates [Rana] chiricahuensis</i>)	Threatened, designated critical habitat	Inhabits perennial to near-perennial aquatic environments including springs, creeks, cienegas and rivers, currently most often associated with man-made earthen ponds (Brennan and Holycross 2006). Occurs at elevations of 3,200 to 8,890 ft (USFWS 2012b)	At the time of listing (USFWS 2002), the frog was likely extant at an estimated 87 localities in Arizona and 31 to 41 localities in New Mexico. Current distribution in Arizona is limited to two areas, one within montane areas across the Mogollon Rim and the second in the mountains and valleys south of the Gila River (AGFD 2015a). Critical habitat includes a total of 10,346 acres in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai Counties, Arizona, and Catron, Grant, Hidalgo, Sierra, and Socorro Counties, New Mexico (USFWS 2012b).	Unlikely Area is outside current areas where species is known to occur in Arizona, but appropriate habitat does occur and lowland leopard frogs are known to occur (WestLand Resources 2017c). However, these surveys have not detected Chiricahua leopard frogs (Crowder and Robinson 2011; Robinson, Orabutt, and Crowder 2010; WestLand Resources 2004c, 2004d, 2012c, 2009a, 2017c). As such, it is unlikely for the species to occur in the area.	None Area is outside current areas where species is known to occur in Arizona and lacks appropriate habitat.	Unlikely Although habitat for leopard frogs exists in the area, the area and lowland leopard frogs (WestLand Resources 2017c) area known to occur in the area, the Tailings Area is outside current areas where Chiricahua leopard frog is known to occur in Arizona. Surveys of appropriate habitat in the area did not detect Chiricahua leopard frogs (WestLand Resources 2017c).	None Area is outside current areas where species is known to occur in Arizona and lacks appropriate habitat.	None Area is outside current areas where species is known to occur in Arizona and lacks appropriate habitat.	Unlikely Lowland leopard frogs have been observed in upper Devils Canyon (WestLand Resources 2017c) but the area is outside current areas where Chiricahua leopard frogs are known to occur in Arizona. Although this stream supports perennial aquatic environments with runs, riffles, and deep pools that represent potential native ranid frog habitat, the system is dominated by nonnative species including mosquitofish, crayfish and in particular green sunfish that preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010). Surveys conducted by WestLand and AGFD have not detected this species. As such, this species is unlikely to occur in the area (Crowder and Robinson 2011; Robinson, Orabutt, and Crowder 2010; WestLand Resources 2009a, 2017c).	Unlikely Although habitat for leopard frogs exists in the area, and lowland leopard frogs are known to occur in the area (WestLand Resources 2017c), Queen Creek is outside current areas where Chiricahua leopard frog is known to occur in Arizona. Surveys of appropriate habitat in the area did not detect Chiricahua leopard frogs (WestLand Resources 2017c). As such, it is unlikely for the species to occur in the area.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Lowland leopard frog <i>(Lithobates [Rana] yavapaiensis)</i>	TNF - S	Occurs in a variety of perennial to near perennial waters in desert grasslands to piñon juniper biotic communities (AGFD 2006a). Inhabit natural and man-made aquatic systems.	Found in central and southeastern Arizona with the majority found below the Mogollon Rim (AGFD 2006a).	Present Within geographic range.	None Area is within geographic range and there are HDMS records within 5 miles, but lacks appropriate habitat.	Present There is a historical record of this species	None Area is within geographic range and there are HDMS records within 5 miles, but lacks appropriate habitat.	None Area is within or near geographic range but lacks appropriate habitat.	Present One lowland leopard frog was observed.	Present Area is within geographic range and portions of Queen Creek contain appropriate habitat. Surveys by WestLand in 2017 detected this species.
Northern leopard frog <i>(Lithobates [Rana] pipiens)</i>	TNF - S	Usually in permanent water with rooted vegetation including ponds, canals, marshes, springs, and streams. Elevations range from 2,640 to 9,155 ft (AGFD 2002c).	Found in northern and central Arizona above the Mogollon Rim (AGFD 2002c). Few extant localities remaining in Arizona (Brennan and Holycross 2006).	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.
Western barking frog <i>(Craugastor [Eleutherada] cryus angustis cactorum)</i>	TNF - S	Occurs in areas with limestone, rhyolite, and other rock outcrops in Madrean evergreen woodlands of mountain ranges at elevations between 4,199 and 6,200 ft (Brennan and Holycross 2006).	Known from several sky islands in southeast Arizona (AGFD 2009; Brennan and Holycross 2006). A single historic record from the Sierra Anchas is considered by AGFD to probably be misidentified (AGFD 2009).	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.	None Area outside of known geographic range.
REPTILES										
Bezy's night lizard <i>(Xantusia bezyi)</i>	TNF - S	Primarily associated with crevices found in rock outcrops, cliff faces, and boulder fields in Arizona Upland Sonoran desert scrub, semi-desert Grassland, Interior Chaparral, and oak woodland communities. Elevations range from ~ 2,400 to 5,800 ft (Leavitt et al. 2007; Brennan 2008).	Found from the Mazatzal to the Galiuro mountains in central Arizona (Bezy 2005; Brennan and Holycross 2006). Little is known of its current distribution patterns and they are known from only a few disjunct areas (Brennan and Holycross 2006).	Possible Area is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Area is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Area is within/near known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Area is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Area is within known geographic range and contains appropriate habitat.	Possible Area is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Area is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Northern Mexican gartersnake <i>(Thamnophis eques megalops)</i>	Threatened; proposed critical habitat	Strongly associated with perennial aquatic environments that support a stable native prey base of fish and amphibians. Three general types of habitat are considered to be associated with the species: 1) cienegas, 2) lowland riparian gallery forests, and 3) upland stream gallery forests (Arizona Game and Fish Department 2012b). Avoids steep mountain canyons (Arizona Game and Fish Department 2012b).	Occurs at elevations from 130 to 8,497 ft. Extant population are disjunct and consist of the San Rafael Valley, Bill Williams River, Verde River, Tonto Creek, and Cienega Creek (Arizona Game and Fish Department 2012b; U.S. Fish and Wildlife Service 2014). In total, approximately 421,423 acres, including 912 stream miles are being proposed as critical habitat (USFWS 2013c).	None	None	None	None	None	None	None
Sonoran desert tortoise <i>(Gopherus morafkai)</i>	TNF - S (Previously a USFWS Candidate species; Determined to be not warranted for listing on October 6, 2015 (U.S. Fish and Wildlife Service; Arizona Ecological Services Field Office 2015))	Primarily occurs in rocky foothills and slopes of Arizona Upland subdivision of Sonoran desert scrub; occasionally lower bajadas of the Sonoran Desert (AGFD 2015d).	Occurs throughout southern Arizona in areas that support primarily Arizona Upland subdivision of Sonoran desert scrub (AGFD 2015d).	Unlikely Area occurs just outside of geographical range and while tortoise populations are occasionally associated with interior chaparral and Madraan oak woodland, they are usually transitional with Sonoran desertscrub (Van Devender 2002). Sonoran desert scrub does occur to the south of East Plant and there are HDMS records within 5 miles.	Possible Documented in the area nearby (WestLand Resources 2014b, 2013d) and habitat exists in small patches of undisturbed lands. HDMS records within 5 miles.	Present Tortoise and sign observed in the area during 2012, 2013 surveys (WestLand Resources 2013d, 2014b) but none (or sign) were observed during 2014 efforts (WestLand Resources 2016c). HDMS records within 5 miles.	Possible Species has been documented in the immediate vicinity (WestLand Resources 2013d, 2014b) but none (or sign) were observed during 2014 efforts (WestLand Resources 2016c). HDMS records within 5 miles.	Unlikely Although there are HDMS records within 5 miles, the area occurs in valley flats away from the lower bajada with primarily Lower Colorado desert scrub; observations of tortoise are generally uncommon in these areas (WestLand Resources 2016c)	Unlikely Species may occur in appropriate habitat in the surrounding uplands but would be unlikely to occur in the riparian zone in this area. HDMS records within 5 miles.	Possible Documented nearby and habitat occurs in the immediate vicinity (WestLand Resources 2013d, 2014b). HDMS records within 5 miles.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
B I R D S										
American peregrine falcon <i>(Falco peregrinus anatum)</i>	TNF - S	Occur in steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance. In Arizona, it is most often found in forested regions from piñon pine-jumper and evergreen oaks to ponderosa pine and mixed conifer, to cold-temperate desert scrub and Sonoran desert scrub. (Corman and Wise-Gervais 2005)	Found in all areas throughout the state wherever there is suitable habitat. Some individuals remain near breeding territories year-round, while others move to lowlands or migrate south to spend the winter (Arizona Game and Fish Department 2002a; Corman and Wise-Gervais 2005).	Present Documented in these areas (eBird 2017; WestLand Resources 2012b). Observed consistently from 2003 to 2011, including observed breeding activities, from Apache Leap (WestLand Resources 2012b). HDMS records within 5 miles.	Present Documented in vicinity of this site (SWCA 2013). Observed consistently from 2003-2011, including observed breeding activities, from Apache Leap (WestLand Resources 2012b). HDMS records within 5 miles.	Possible Has not been documented at the Tailings Area (WestLand Resources 2013e), but the area is within known geographic range, and contains appropriate foraging habitat. Habitat in this area is similar to that of which can be found at the West Plant Site, where the species has been documented (likely foraging). Also, known to roost along the nearby Apache Leap. HDMS records within 5 miles.	Possible Has not been documented along the Upper MARRCO, but the area is within known geographic range and contains appropriate foraging habitat. Habitat in this area is like that of which can be found at the West Plant Site, where the species has been documented (likely foraging), and the species is known to roost along the nearby Apache Leap. HDMS records within 5 miles.	Possible Has not been documented at the Filter Plant & Loadout Facility/Lower MARRCO, but the area is within known geographic range and contains appropriate foraging habitat.	Present Documented in this area (Jacobs and Fleisch 2007; Jacobs 2009). HDMS records within 5 miles.	Possible Reported to occur in this area by citizen scientists (eBird 2017). HDMS records within 5 miles.
Bald eagle <i>(Haliaeetus leucocephalus)</i>	Bald and Golden Eagle Protection Act	Nests in large riparian trees (cottonwoods, willows, sycamores) and pines, as well as on ledges and cliff faces. Nest locations are typically in areas of low human disturbance with unimpeded views, and are located near foraging areas with abundant prey. Wintering habitat has an adequate food supply, and open water (AGFD 2011a). In Arizona, bald eagles feed primarily on fish, but waterfowl, small mammals, and carrion also constitute a portion of the diet (USFWS 2011).	A small, primarily year-round resident population occupies areas in Central Arizona, while a wintering population occupies areas in both Central and Northern Arizona (AGFD 2011a). Current breeding territories in Arizona are associated with rivers and lakes throughout the state, but none are known from the vicinity of the Project (AGFD 2011a).	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	Possible Area is within the known geographic range and contains appropriate suitable habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	Possible Area is within the known geographic range and contains suitable habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Golden eagle <i>(Aquila chrysaetos)</i>	Bald and Golden Eagle Protection Act	Breeds in piñon-juniper woodlands, Sonoran desertscrub, Madraan evergreen oak woodlands, semiarid grasslands, chaparral, and landscapes dominated by big sagebrush. It is known to construct its nest in areas with little to no human activity, in tall trees, cliffs, canyons, or rock ledges, near large open areas where they forage for prey (Corman and Wise-Gervais 2005). Golden eagles are known to forage within 4.4 miles of the nest (Tesky 1994), generally in open habitats where prey is available (Kochert et al. 2002).	In Arizona, the species is described as a fairly common resident in suitable habitat throughout the state (Corman and Wise-Gervais 2005).	Possible Reported by citizen scientists to occur in this area (eBird 2017). HDMS records within 5 miles.	Possible Reported by citizen scientists to occur in this area (eBird 2017). HDMS records within 5 miles.	Possible Area is within the known geographic range and contains appropriate foraging habitat. Species has also been documented nearby at the West Plant Site, which contains similar foraging habitat. HDMS records within 5 miles.	Possible Area is within the known geographic range and contains appropriate foraging habitat. Species has also been documented nearby at the West Plant Site, which contains similar foraging habitat. HDMS records within 5 miles.	Possible Area is within the known geographic range and contains appropriate foraging habitat.	Present Documented in this location (WestLand Resources 2012b). HDMS records within 5 miles.	Present Documented in this location (Tucson Audubon Society 2011).
Mexican spotted owl <i>(Strix occidentalis lucida)</i>	Threatened; designated critical habitat	Largely occurs in mature montane forests and woodlands of mixed conifer dominated by Douglas fir, pine, or true fir, or in ponderosa pine/Gambel oak at elevations of 4,000 to 9,000 ft (Gutiérrez, Franklin, and Lahaye 1995). AGFD (2005c) reports elevational range from 2,720 to 10,000 ft. Also, found in narrow canyons dominated by vertical-walled rocky cliffs within complex watersheds. Nesting typically occurs near a water source (USFWS 2004). Wintering habitat can include lower elevation habitats such as piñon-juniper woodlands and dense riparian areas (Gutiérrez, Franklin, and Lahaye 1995; AGFD 2005c).	Patchy distribution, reflecting the availability of appropriate habitats (Ganey and Balda 1989). Has the same range for breeding and wintering, although some individuals periodically move to lower elevations during the winter, or even migrate relatively short distances in search of prey (Corman and Wise-Gervais 2005). In total, 8.6 million acres are designated critical habitat for the species in Arizona, Colorado, New Mexico, and Utah on Federal lands (USFWS 2004).	None Area lacks appropriate habitat for nesting or wintering). Was not detected during raptor surveys in 2004 (WestLand Resources 2004c). Critical Habitat occurs approximately 5 miles to the east at the higher elevation in the Pinal Mountains.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat. Was not detected during surveys in 2013 raptor survey (WestLand Resources 2004c).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	Unlikely Area lacks suitable nesting habitat but could provide wintering habitat for the species. Was not detected during 2007 or 2009 bird surveys (Jacobs and Flesch 2007; Jacobs 2009). Designated Critical Habitat is just under 5 miles from this area.	Unlikely Area lacks suitable nesting habitat but could provide wintering habitat for the species.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Northern goshawk (<i>Accipiter gentilis atricapillus</i>)	TNF - S	Favors cool, mature to old-growth forests of tall pine, fir, and/or spruce, including riparian drainages. Breeding records mostly from pure ponderosa pine forests. Also known from mixed conifer forests, ponderosa pine-Gambel's oak associations, and Madrean pine-oak woodlands between 6,000 and 9,500 ft (Corman and Wise-Gervais 2005). AGFD (2013b) reports the elevational range of the species between 4,750 to 9,120 ft. High canopy closure and open understories are most suitable (Squires and Reynolds 1997).	In Arizona found in most of the high-elevation, heavily forested regions of the state (Corman and Wise-Gervais 2005). In southeast Arizona, found in Madrean evergreen oak woodlands in lower elevations (Snyder 1995).	Possible Area is within the known geographic range and contains appropriate habitat for the species.	None Area appropriate suitable habitat.	None Area is outside the known elevation range and lacks appropriate habitat.	None Area is outside the known elevation range and lacks appropriate habitat.	None Area is outside the known elevation range and lacks appropriate habitat.	Possible Has not been documented in this area but it is within the known geographic range and has been reported in nearby riparian areas, such as Queen Creek (WestLand Resources 2004c, 2012b, 2017a).	Possible Has not been documented along Queen Creek, but it is within the known geographic range and is reported by citizen scientists to occur at Boyce Thompson Arboretum (eBird 2017).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint				Downstream Areas		
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered; designated critical habitat	Dependent on cottonwood/willow and/or tamarisk riparian communities along rivers and streams. Suitable habitat includes riparian areas with complex habitats, dense under- and mid-story vegetation that is ≥ 10 ft in height, with or without canopy cover, and in close proximity to surface water (AGFD 2002).	A neotropical migrant that winters in Mexico and Central America and breeds throughout the greater southwestern U.S. In Arizona, this species breeds very locally along dynamic riparian systems, including the middle Gila, Salt, Verde rivers; middle to lower San Pedro River and upper San Francisco River (USFWS 2013a). In total, approximately 1,227 stream miles are designated as critical habitat for the species in California, Nevada, Utah, Colorado, Arizona, and New Mexico.	Unlikely Area is within the geographic range but lacks appropriate habitat. However, willow flycatchers have been detected in this parcel. Willow flycatcher detections on the parcel were not distinguished by subspecies and eBird reports detections occurred during the non-breeding season for this subspecies (eBird 2017). As such, it is likely that these detections could be individuals of non-listed subspecies. Based on this information, Southwestern willow flycatcher is unlikely to occur in the area. HDMS records within 5 miles, and are likely individuals detected nearby at Boyce Thompson Arboretum and along Lower Queen Creek (Mark Taylor, USFS pers. comm.).	None Area is within geographic range but does not contain appropriate habitat.	Unlikely Several canyons in the area and vicinity do support limited riparian vegetation in the form of individual, discontinuous patches, or narrow bands of Fremont cottonwood and Goodding's willow. These areas are of very limited extent and transition abruptly to Sonoran desertscrub communities. The drainages within the Tailings Area are typically dry, supporting only occasional, intermittent surface flows. As such, this area contains little to no appropriate habitat. Area is within geographic range and there are HDMS records within 5 miles, likely from Whitlow Dam or Boyce Thompson Arboretum where the species is known to occur. Based on the available data, there is limited to no potential for the southwestern willow flycatcher to use the area for migratory stopover.	None Although there are HDMS records of this species within 5 miles of this area, the area does not contain appropriate habitat.	None Area does not contain appropriate habitat.	Unlikely Area does not contain large patches of appropriate habitat, particularly for breeding. A sighting of willow flycatcher is recorded in Devils Canyon upstream of US 60. The sighting, however, occurred during the non-breeding season for Southwestern willow flycatcher and as such could be an individual of a non-listed subspecies. Moreover, Southwestern willow flycatchers were not detected during 2007 or 2009 bird surveys (Jacobs and Fleisch 2007; Jacobs 2009). Based on the available data, there is limited potential for the Southwestern willow flycatcher to use the area for migratory stopover.	Present One known occurrence record of this species [REDACTED] (Mark Taylor, USFS pers. comm.). Surveys conducted in 2017 [REDACTED] also a detected willow flycatcher, although subspecies was not confirmed (Westland Resources 2017c). HDMS has records of southwestern willow flycatcher within 5 miles of this area.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Sulphur-bellied flycatcher <i>(Myiodynastes luteiventris)</i>	TNF - S	Primarily associated with tall riparian woodlands and forests although they are known to forage in pine and oak woodlands adjacent to riparian deciduous forests in the form of individual, discontinuous patches, or narrow bands of Fremont cottonwood and Goodding's willow. Elevations range between 3,640 and 7,500 ft (Corman and Wise-Gervais 2005).	Breeds and migrates from central to, primarily, southeastern Arizona. Found from southeastern Arizona to the Mogollon Rim, although more common in southeastern portions of the state (Corman and Wise-Gervais 2005).	Unlikely Area is within the known geographic range and contains limited appropriate foraging habitat. Was not detected during summer surveys in 2009 (WestLand Resources 2009b), or breeding a bird census in 2009 (WestLand Resources 2010a).	None Area is below the known elevation range and lacks appropriate habitat.	Unlikely Area is within the known geographic range and although it is below the known elevation range, and contains limited appropriate habitat. Species was not noted during 2013 bird and raptor surveys (WestLand Resources 2013c).	None Area is below the known elevation range and lacks appropriate habitat.	None Area is below the known elevation range and lacks appropriate habitat.	Unlikely Area is within the known geographic range and although it is at the lower limit of the known elevation range, it contains appropriate foraging habitat.	Unlikely Area is within the known geographic range and although it is at the lower limit of the known elevation range, it contains appropriate foraging habitat.
Yellow-billed cuckoo <i>(Coccyus americanus occidentalis)</i>	Threatened; proposed critical habitat	Typically associated with dense riparian forest and woodland environments including cottonwood-willow galleries and mesquite bosques. In southeastern Arizona, they are known to nest along intermittent streams supporting dense stands of mesquite and netleaf hackberry (Corman and Wise-Gervais 2005). Dense understory foliage is an important factor in nest site selection (AGFD 2011d). This species has also been found in areas of upland-associated vegetation and in drainages dominated by oaks and junipers (WestLand Resources 2013c, 2015a).	Found west of the Rocky Mountains in North America south to southern Baja California. In Arizona, species is generally found in southern, central, and extreme northeast portions of the state, but has been documented in all counties (AGFD 2011d).	Unlikely Area is within the geographic range and there are HDMS records within 5 miles. There are limited areas of dense oaks within drainages, however, the species has never been detected in the area. Species-specific surveys in 2017 did not detect the species (WestLand Resources 2017d). Based on the limited amount of habitat and available survey data, it is unlikely that the species occurs in the area.	None Area is within the geographic range and there are HDMS records within 5 miles; however, the area lacks appropriate habitat for the species and it is not expected to occur.	Unlikely Area is within known geographic range. There are HDMS records within 5 miles of the area, but it is likely that these records are either from Whitlow Dam or Boyce Thompson Arboretum. Appropriate habitat is limited to a few patches within the area and the species was not detected during species-specific surveys in 2016 and 2017 (WestLand Resources 2016b, 2017d). Based on the limited amount of appropriate habitat and available survey data, it is unlikely that the species occurs in the area.	None Area is within the geographic range and there are HDMS records within 5 miles; however, the area lacks appropriate habitat for the species and it is not expected to occur.	None Area is within the geographic range, but lacks appropriate habitat.	Present Species has been documented at this site in 2015 (WestLand Resources 2015b). HDMS record within 5 miles.	Present Species has been documented along [REDACTED] Arizona 2017; WestLand Resources 2016a, 2017c). HDMS record within 5 miles.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
Yellow-eyed junco <i>(Junco phaeonotus)</i>	TNF - S	Associated with moist, conifer forests and canyons and are absent from more arid mountain ranges. Elevations range between 5,900 and 10,000 ft (Corman and Wise-Gervais 2005).	Found in the higher southeastern mountain ranges of Arizona (Corman and Wise-Gervais 2005).	None Area is below the known elevation range and lacks appropriate habitat. Was not detected during winter surveys in 2008 (WestLand Resources 2008), summer surveys in 2009 (WestLand Resources 2009), or breeding bird census in 2009 (WestLand Resources 2010a).	None Area is below the known elevation range and lacks appropriate habitat.	None Area is below the known elevation range and lacks appropriate habitat. Species was not noted during 2013 bird and raptor surveys (WestLand Resources 2013c)	None Area is below the known elevation range and lacks appropriate habitat.	None Area is below the known elevation range and lacks appropriate habitat.	None Area is below the known elevation range and lacks appropriate habitat.	Unlikely Area is below the known elevation range and lacks appropriate habitat. There are records of the species from Boyce Thompson Arboretum (eBird 2017). The Arboretum, however, contains vegetation and habitats that are not characteristics of those found along Queen Creek.
Yuma clapper rail <i>(Rallus longirostris yumanensis)</i>	Endangered; no designated critical habitat	Found in freshwater marshes with emergent cover (often cattails, bulrushes, or sedges). Suitable habitat also characterized by high water coverage, low stem density, and mixture of vegetation ages (Rush et al. 2012). Nests in shallower waters and forages in moderate water depths during breeding season. Generally, in Arizona occur at elevations of 100 to 1,500 ft (AGFD 2006b).	Found along the lower Colorado River from Yuma to Havasu National Wildlife Refuge, from Cibola National Wildlife Refuge to the Mexican border and the Gila River in Tacna, and on the Gila River from Gillespie Dam to the Salt River confluence (Corman and Wise-Gervais 2005). There are inconsistent reports of migratory behavior within this subspecies; populations on the Gila River likely do winter elsewhere (Corman and Wise-Gervais 2005; Rush et al. 2012).	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	None Area lacks appropriate habitat.	

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO	Devils Canyon	Queen Creek
M A M M A L S										
Allen's big-eared bat aka. Allen's lappet-browed bat (<i>Idionycteris phyllotis</i>)	TNF - S	Occurs in woodlands and riparian areas in proximity to cliffs, rocky outcrops, or lava flows, often above water. Typically, roosts in caves and abandoned underground mines, but trees are also used. Elevations range from 1,320 and 9,800 ft. Associated with Mohave desertscrub, ponderosa pine, piñon juniper, and riparian areas with sycamore, cottonwoods and willows (AGFD 2001a).	Found across most of Arizona, except the southwestern deserts. Generally, found along Mogollon Rim (AGFD 2001a).	Unlikely Area is within known geographic and elevation range but does not contain the types of habitat most commonly associated with the species. The area does contain appropriate roosting habitat of abandoned mines, but this species has not been detected during multiple surveys of Oak Flat, Apache Leap, Devils Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2004b, 2012a).	Unlikely Area is within known geographic and elevation range and contains appropriate roosting habitat, but does lack typical foraging habitat and has not been detected during surveys of Oak Flat, Apache Leap, Devils Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2012a).	Unlikely Area is within known geographic and elevation range and may contain appropriate roosting habitat, but does lack typical foraging habitat and has not been detected during surveys in the vicinity of Oak Flat, Apache Leap, Devils Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2012a).	None Area is within known geographic range. Area does lack appropriate foraging and roosting habitat. Has not been detected during surveys in the vicinity of Oak Flat, Apache Leap, Devils Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2012a).	None Area is within known geographic range. Area lacks appropriate foraging and potential roosting habitat.	Possible Area is within known geographic and elevation range, and contains appropriate foraging habitat. This area may contain appropriate roosting habitat. Has not been detected during surveys of Oak Flat, Apache Leap, Devils Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2012a).	Possible Area is within known geographic and elevation range, and contains riparian habitat associated with the species. This area may contain appropriate roosting habitat but has not been detected during surveys of Queen Creek and its vicinity including Oak Flat, Boyce Thompson, and Apache Leap (WestLand Resources 2012a).
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuense</i>)	Endangered; no designated critical habitat	Sonoran desertscrub through semi-desert grasslands and into oak woodlands where columnar cacti and agaves occur. Roosts in caves, abandoned mines and occasionally old buildings (AGFD 2011b).	In Arizona, the species occurs in the southern portion of the state from the Picacho Mountains southwest to the Agua Dulce Mountains and southeast to the Galiuro and Chiricahua mountains and then southerly into Mexico.	None Area is outside known geographic range. Although inactive mine features occur in the area, this species has not been detected during multiple surveys conducted in and along Apache Leap, Oak Flat, and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. Species has not been detected during multiple surveys conducted in and along Apache Leap, Oak Flat, and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. Species has not been detected during multiple surveys conducted in and along Apache Leap, Oak Flat, and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. Species has not been detected during multiple surveys conducted in and along Apache Leap, Oak Flat, and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	None Area is outside known geographic range.	None Area is outside known geographic range and lacks appropriate roosting habitat. This species has not been detected during multiple surveys of the site and its immediate vicinity (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	None Area is outside known geographic range and lacks appropriate roosting habitat. This species has not been detected during multiple surveys of the site and its immediate vicinity (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Pale Townsend's big-eared bat <i>(Corynorhinus townsendii pallascens)</i>	TNF - S	Occurs in a variety of xeric habitats including sagebrush, desertscrub, chaparral, deciduous forests, and coniferous forests. Roosts in caves and abandoned mines. Maternity colonies form from May through July and disperse in August. Elevational range between 550 and 7,520 ft (AGFD 2003).	Widespread throughout Arizona (AGFD 2003).	Present Area is within known geographic and elevation range and has been detected in vicinity. Species was observed [REDACTED]	Possible Area is within known geographic and elevation range, contains appropriate roosting and foraging habitat, and has been detected in vicinity (WestLand Resources 2004b, 2012a).	Possible Area is within known geographic and elevation range, contains appropriate roosting and foraging habitat, and has been detected within Oak Flat/East Plant and vicinity, in Devils Canyon, and Boyce Thompson Arboretum (WestLand Resources 2012a).	Possible Area is within known geographic and elevation range, contains appropriate roosting and foraging habitat, and has been detected in vicinity (WestLand Resources 2012a).	Possible Area is within known geographic and elevation range, contains appropriate roosting and foraging habitat, and has been detected within Oak Flat/East Plant and vicinity, in Devils Canyon, and Boyce Thompson Arboretum (WestLand Resources 2012a).	Present Acoustically detected in 2011 (WestLand Resources 2012a).	Present Area is within known geographic and elevation range and contains appropriate roosting and foraging habitat. This species was not detected during surveys of portions of Queen Creek (WestLand Resources 2012a) but is likely to be foraging and drinking in the area. Captured during AGFD surveys of [REDACTED] in 2001 and 2012 (WestLand Resources 2004b).
Ocelot <i>(Leopardus pardalis)</i>	Endangered; no designated critical habitat	Species occurs in densely vegetated habitats throughout its range including tropical rainforest, pine forest, gallery forest, riparian forest, semi-deciduous forest, and dry tropical forest, savanna, shrublands, thornscrub, chaparral, and marshlands (AGFD 2010).	In Arizona, known from very few localities. Mostly observed in southern Arizona (Cochise County). Observations from Arizona and Texas; represents extreme northern edge of its range. In April of 2010, a dead ocelot was found along highway 60 between Superior and Globe. In February 2011, a young healthy male was treed on a local ranch in the Huachuca Mountains (AGFD 2010).	None Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF (USFS 2017).	None Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF (USFS 2017).	None Although there is a record of this species between Superior and Globe, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF (USFS 2017).	None Although there is a record of this species between Superior and Globe, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. Area lacks appropriate habitat.	None Although there is a record of this species between Superior and Globe, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. Area lacks appropriate habitat.	None None observed during six years of camera reconnaissance (WestLand Resources 2016d). Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF (USFS 2017).	None Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF (USFS 2017).
Sonoran pronghorn <i>(Antilocapra americana sonoriensis)</i>	Endangered; no designated critical habitat	Uses habitat consisting of broad alluvial valleys separated by block-faulted mountain and surface volcanics. The species ranges in elevation from 2000 to 4,000 ft (AGFD 2002b).	Extreme southwestern Arizona, particularly within the Cabeza Prieta National Wildlife Refuge, Organ Pipe Cactus National Monument, and the Luke Air Force Barry M. Goldwater Gunnery Range (AGFD 2002b).	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.	None Area is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	GPO Footprint					Downstream Areas	
				East Plant	West Plant	Tailings Area ¹	MARRCO Corridor		Devils Canyon	Queen Creek
							Upper MARRCO	Filter Plant & Loadout Facility and Lower MARRCO		
Spotted bat <i>(Euderma maculatum)</i>	TNF - S	Associated with low to high elevation desert scrub where they apparently roost singly in cracks and crevices on rocky cliffs near surface water (Tonto National Forest 2000). Also, occupy riparian, piñon-juniper woodlands, and coniferous forests in northwestern Arizona. It is considered an elevational migrant and occurs at elevations between 110 and 8,670 ft (AGFD 2003b).	Northwestern Arizona with isolated records near Yuma and Seligman (AGFD 2003b). This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).	None Area is outside known geographic range. This species was not detected during surveys in the Analysis Area and vicinity (WestLand Resources 2004b, 2012a).
Western Red Bat <i>(Lasiurus blossevillii)</i>	TNF - S	Associated with broad leaf deciduous riparian forests and woodlands and upland areas, roosting in foliage of trees and occasionally shrubs. Roost primarily in cottonwood galleries, 1,900 to 7,200 ft elevation (AGFD 2011c).	Found in south central to southern and southeastern Arizona, with a few observations along the Colorado River near Bill Williams, and occasionally in the Grand Canyon. Historic records include observations from the Grand Canyon, Sierra Ancha, Queen Creek, San Pedro Valley, Santa Rita Mountains, Canelo Hills, Huachuca and Peloncillo mountains, and San Bernardino Ranch (AGFD 2011c).	Present Acoustically detected in 2011 (WestLand Resources 2012a)	Unlikely Area within known geographic and elevation range, but lacks appropriate riparian habitat (cottonwood galleries) required for roosting. While there are a few individual cottonwoods in the area, they do not constitute a cottonwood gallery. However, species was detected nearby in Queen Creek (WestLand Resources 2012a).	None Although this area is within known geographic and elevation range and HDMS has records of this species within 5 miles of this site, but it lacks appropriate suitable riparian habitat required for roosting.	None Although this area is within known geographic and elevation range and HDMS has records of this species within 5 miles of this site, it does not contain suitable riparian habitat required for roosting.	None Area within known geographic and elevation range, but it lacks appropriate riparian habitat required for roosting.	Present Captured in 2011 (WestLand Resources 2012a)	Present Acoustically detected in 2011 along Queen Creek (WestLand Resources 2012a). Was not detected during AGFD surveys in 2001 and 2012 (WestLand Resources 2012a).

TNF - S = Tonto National Forest - Sensitive
 EPNE = Experimental Population, Non-Essential

APPENDIX A – REFERENCES

- Arizona Game and Fish Department. 1997. “Ripley Wild Buckwheat (*Eriogonum Ripleyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Errioripl.fo.pdf.
- _____. 2000a. “Arizona Giant Sedge, Cochise Sedge (*Carex Ultra*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Careultr.fo_001.pdf.
- _____. 2000b. “Parish’s Indian Mallow (*Abutilon Parishii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Abutpari.fo_001.pdf.
- _____. 2001a. “Allen’s Lappet-Browed Bat (*Idionycteris Phyllotis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Idiophyl.fi_004.pdf.
- _____. 2001b. “Fish Creek Fleabane (*Erigeron Piscaticus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Erigpisc.fo_001.pdf.
- _____. 2001c. “Gila Topminnow (*Poeciliopsis Occidentalis Occidentalis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona. https://www.azgfd.gov/w_c/edits/documents/Poecococ.fo_002.pdf.
- _____. 2002a. “American Peregrine Falcon (*Falco Peregrinus Anatum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Falcpelan.fi_006.pdf.
- _____. 2002b. “Aravaipa Sage Aka Galiuro Sage (*Salvia Amissa*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Salvamis.fo_001.pdf.
- _____. 2002c. “Blumer’s Dock (*Rumex Orthoneurus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Rumeorth.fo.pdf.
- _____. 2002d. “Desert Sucker (*Catostomus Clarkii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish. https://www.azgfd.gov/w_c/edits/documents/Catoclar.fo_000.pdf.

- _____. 2002e. “Northern Leopard Frog (*Lithobates [Rana] Pipiens*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithpipi.fi.pdf.
- _____. 2002f. “Razorback Sucker (*Xyrauchen Texanus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Xyratexa.f_002.pdf.
- _____. 2002g. “Sonora Sucker (*Catostomus Insignis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Catoinsi.fo_000.pdf.
- _____. 2002h. “Sonoran Pronghorn Antelope (*Antilocapra Americana Sonoriensis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Antiamso.d_001.pdf.
- _____. 2002i. “Southwestern Willow Flycatcher (*Empidonax Traillii Extimus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Empitrex.d_004.pdf.
- _____. 2003a. “Arizona Hedgehog Cactus (*Echinocereus Triglochidiatus Var. Arizonicus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Echitrar.fo.pdf.
- _____. 2003b. “Fossil Springsnail (*Pyrgulopsis Simplex*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pyrgsimp.d_003.pdf.
- _____. 2003c. “Hohokam Agave Aka. Murphey Agave (*Agave Murpheyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Agavmurp.fo_002.pdf.
- _____. 2003d. “Hualapai Milkwort (*Polygala Rusbyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003e. “Net-Winged Midge (*Agathon Arizonicus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Agatariz.fo.pdf.

- _____. 2003f. “Pale Townsend’s Big-Eared Bat (*Corynorhinus Townsendii Pallescens*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Corytopa.fi_003.pdf.
- _____. 2003g. “Parker’s Cylloepus Riffle Beetle (*Cylloepus Parkeri*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Cyllpark.f.pdf.
- _____. 2003h. “Spotted Bat (*Euderma Maculatum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Eudemacu.fi_003.pdf.
- _____. 2004a. “Aravaipa Woodfern (*Thelypteris Puberula* Var. *Sonorensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Thelpuso.d_002.pdf.
- _____. 2004b. “Arizona Alum Root (*Heuchera Glomerulata*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Heucglom.d_000.pdf.
- _____. 2004c. “Chihuahuan Sedge (*Carex Chihuahuensis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Carechih.d.pdf.
- _____. 2004d. “Fish Creek Rock Daisy (*Perityle Saxicola*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Perisaxi.fo.pdf.
- _____. 2004e. “Mt. Dellenbaugh Sandwort (*Arenaria Aberrans*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2004f. “Toumey Groundsel (*Packera [Senecio] Neomexicana* Var. *Toumeyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Seneneto.d.pdf.
- _____. 2005a. “Arizona Phlox (*Phlox Amabilis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Phloamab.d.pdf.

- _____. 2005b. “Mapleleaf False Snapdragon (*Mabrya* [*Maurandya*] *Acerifolia*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Mabracer.d.pdf.
- _____. 2005c. “Mexican Spotted Owl (*Strix Occidentalis Lucida*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2005d. “Sonoyta Mud Turtle (*Kinosternon Sonoriense Longifemorale*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2006a. “Lowland Leopard Frog (*Lithobates Yavapaiensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithyava.fi.pdf.
- _____. 2006b. “Yuma Clapper Rail (*Rallus Longirostris Yumanensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2008a. “Mineral Creek Fish Survey, April 21-22, 2008. Arizona Game & Fish Department Technical Report.”
- _____. 2008b. “Nichol’s Turk’s Head Cactus (*Echinocactus Horizontalonius* Var. *Nicholii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Echihoni.fo_002.pdf.
- _____. 2009. “Western Barking Frog (*Craugastor* [*Eleutherodactylus*] *Augusti Cactorum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Crauauca.fi_001.pdf.
- _____. 2010. “Ocelot (*Leopardus Pardalis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Leopard.d_001.pdf.
- _____. 2011a. “Bald Eagle (*Haliaeetus Leucocephalus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
https://www.azgfd.gov/w_c/edits/documents/Halileuc.fi_000.pdf.

- _____. 2011b. “Lesser Long-Nosed Bat (*Leptonycteris Curasoae Yerbabuenae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Leptcuye.fi_001.pdf.
- _____. 2011c. “Western Red Bat (*Lasiurus Blossевilli*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lasiblos.fi_002.pdf.
- _____. 2011d. “Yellow-Billed Cuckoo (*Coccyzus Americanus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Coccamer.fi_000.pdf.
- _____. 2012a. “Arizona Bugbane (*Actaea Arizonae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Actaariz.fo.pdf.
- _____. 2012b. “Northern Mexican Gartersnake (*Thamnophis Eques Megalops*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Thameqme.fi_004.pdf.
- _____. 2013a. “Acuña Cactus (*Echinomastus Erectocentrus* Var. *Acuñensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Echierac.d_004.pdf.
- _____. 2013b. “Northern Goshawk (*Accipiter Gentilis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Accigent.d_009.pdf.
- _____. 2013c. “Spikedace (*Meda Fulgida*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2015a. “Chiricahua Leopard Frog (*Lithobates Chiricahuensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithchir.fi_002.pdf.
- _____. 2015b. “Headwater Chub (*Gila Nigra*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Gilanigr.fi_005.pdf.
- _____. 2015c. “Roundtail Chub (*Gila Robusta*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.

- _____. 2015d. "Sonoran Desert Tortoise (*Gopherus Morafkai*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Gophmora.pdf.
- _____. 2015e. "Verde Breadroot (*Pediomelum Verdiense*) Draft." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pediverd.d.pdf.
- Arizona Rare Plant Committee. 2001. *Arizona Rare Plant Field Guide: A Collaboration of Agencies and Organizations*. Edited by Lynn Richards. Washington, D.C.: U.S. Government Printing Office.
- Audubon Arizona. 2017. "Western Yellow-Billed Cuckoo (*Coccyzus Americanus*); 2017 Yellow-Billed Cuckoo Surveys on Queen and Arnett Creeks." *Prepared for Resolution Copper*. Phoenix, Arizona: Audubon Arizona.
- Bezy, R.L. 2005. "The Night Lizards (*Xantusia*) of Arizona." *Sonoran Herpetologist* 18 (2).
- Brennan, T.C. 2008. "Online Field Guide to The Reptiles and Amphibians of Arizona - *Xantusia Bezyi*." Thomas C. Brennan. <http://www.reptilesfaz.org/Lizards-Subpages/h-x-bezyi.html>.
- Brennan, T.C., and A.T. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona*. Phoenix, Arizona: Arizona Game and Fish Department.
- Corman, Troy, and Cathryn Wise-Gervais. 2005. *Arizona Breeding Bird Atlas*. Albuquerque: University of New Mexico Press.
- Crowder, Clayton D., and Anthony T. Robinson. 2011. "Devils Canyon Drainage Stock Tank Surveys During 2010 and 2011." Phoenix, Arizona: Arizona Game and Fish Department.
- Devender, T.R. Van. 2002. "Natural History of the Sonoran Desert Tortoise: Life in a Rock Pile." In *The Sonoran Desert Tortoise: Natural History, Biology, and Conservation*, edited by T.R. Van Devender, 3–28. Tucson, Arizona: University of Arizona Press.
- eBird. 2017. *eBird: An Online Database of Bird Distribution and Abundance [Web Application]*. eBird. Ithaca, New York: Cornell Lab of Ornithology. www.ebird.org.
- eFloras. 2016. "Perityle Gilensis." *Flora of North America Vol. 21*. www.eFloras.org.
- Ganey, J. L., and Russell P. Balda. 1989. "Distribution and Habitat Use of Mexican Spotted Owls in Arizona." *The Condor* 91: 355–61.
- Gutiérrez, R J, A B Franklin, and W S Lahaye. 1995. "Spotted Owl (*Strix Occidentalis*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.

- Jacobs, S. 2009. "Vegetation and Wildlife Survey of Devil's Canyon, Tonto National Forest."
- Jacobs, S., and A. Flesch. 2007. "Vegetation and Wildlife Survey of Devil's Canyon, Tonto National Forest."
- Kochert, M. N., K. Steenhof, C. L. McIntyre, and E. H. Craig. 2002. "Golden Eagle (*Aquila Chrysaetos*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Leavitt, D.H., R.L. Bezy, K.A. Crandall, and J.W. Sites, Jr. 2007. "Multi-Locus DNA Sequence Data Reveal a History of Deep Cryptic Vicariance and Habitat-Driven Convergence in the Desert Night Lizard *Xantusia Vigilis* Species Complex (Squamata: Xantusiidae)." *Molecular Ecology* 16: 4455–81.
- McCafferty, W.P. 2006. "Rediscovery of Fallceon *Eatoni* (Kimmins) (Ephemeroptera: Baetidae)." *Proceedings of the Entomological Society of Washington* 108: 248.
- Minckley, W.L., and P.C. Marsh. 2009. *Inland Fishes of the Greater Southwest. Chronicle of a Vanishing Biota*. Tucson, Arizona: The University of Arizona Press.
- Montgomery & Associates. 2013. "Technical Memorandum, Phase I Hydrogeologic Field Investigations, Near West Tailings Site, Pinal County, Arizona."
- Montgomery & Associates, and WestLand Resources. 2017. "Spring and Seep Catalog: Resolution Copper Project Area, Upper Queen Creek and Devils Canyon Watersheds." *Prepared for Resolution Copper*. Tucson, Arizona: Montgomery & Associates.
- Muñoz-Quesada, F.J., and R.W. Holzenthal. 2008. "Revision of the Nearctic Species of the Caddisfly Genus *Wormaldia* McLachlan (Trichoptera: Philopotamidae)." *Zootaxa* 1838 (1): 1–75.
- Robinson, A., D. Orabutt, and C. Crowder. 2010. "Devils Canyon and Mineral Creek Fish Surveys during 2009."
- Rush, Scott A., Karen F. Gaines, William R. Eddleman, and Courtney J. Conway. 2012. "Yuma Clapper Rail (*Rallus Longirostris*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Snyder, Helen. 1995. "Apache Goshawk Conservation Biology in Southeast Arizona."
- Southwest Environmental Information Network. 2017. "SEINet - Arizona Chapter." *SEINet*. <http://swbiodiversity.org/seinet/index.php>.
- Squires, John R., and Richard T. Reynolds. 1997. "Northern Goshawk (*Accipiter Gentilis*)." Edited by P.G. Rodewald. *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. doi:10.2173/bna.298.

- SWCA Environmental Consultants. 2013. "Vegetation Diversity Management Plan for the West Plant Site at the Magma Mine in Superior, Pinal County, Arizona. Appendix B Wildlife Species Observed." *Prepared for Resolution Copper Mining*. Phoenix, Arizona.
- Taylor, Dan, and Sheryl Ducummon. 1996. "A Report on a Bat Survey of Abandoned Underground Mine Working at BHP Copper-Superior Operations, With Recommendations for Bat Conservation." *North American Bats and Mines Project Survey*. Bat Conservation International.
- Tesky, Julie L. 1994. "Aquila Chrysaetos." *In: Fire Effects Information System, [Online]*. Rocky Mountain Research Station, Fire Sciences Laboratory: U.S. Department of Agriculture, Forest Service.
- Tomoff, C.S. 1989. "Boyce Thompson Arboretum, Bird Checklist. Fieldwork Conducted between 1986 and 1989." Prescott College, August 1989.
- Tonto National Forest. 2000. "Tonto National Forest Threatened, Endangered, and Sensitive (TES) Species 2000 Draft Abstracts." U.S. Forest Service.
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_018579.pdf.
- Tucson Audubon Society. 2011. "About the Arizona IBA Program." *Arizona Important Bird Areas Program*.
- U.S. Fish and Wildlife Service. 1994. "Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub." *Federal Register* 59 (54): 13374–400.
- _____. 2002. "Endangered and Threatened Wildlife and Plants; Listing of the Chiricahua Leopard Frog (*Rana Chiricahuensis*); Final Rule." *Federal Register* 67 (114). U.S. Fish and Wildlife Service: 23.
- _____. 2004. "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl; Final Rule." *Federal Register*. U.S. Fish and Wildlife Service.
- _____. 2009. "Nichol Turk's Head Cactus (*Echinocactus Horizontalonius* Var. *Nicholii*), 5 Year Review: Summary and Evaluation." Phoenix, Arizona.
<https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/NicholsTurksHead/NicholTurksHeadCactus5-YearReview.pdf>.
- _____. 2010. "Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List a Stonefly (*Isoperla Jewetti*) and a Mayfly (*Fallceon Eatonii*) as Threatened or Endangered with Critical Habitat." *Federal Register* 75 (65): 17363–67.
- _____. 2011. "Bald Eagle (*Haliaeetus Leucocephalus*)." *General Species Information*. Arizona Ecological Services Field Office.

- _____. 2012a. “Endangered and Threatened Wildlife and Plants; Endangered Status and Designations of Critical Habitat for Spikedace and Loach Minnow.” *Federal Register* 77 (36). U.S. Fish and Wildlife Service: 10810–934.
- _____. 2012b. “Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog; Final Rule.” *Federal Register* 77 (54): 16324–424.
- _____. 2013a. “Endangered and Threatened Wildlife and Plants, Designation of Critical Habitat for Southwestern Willow Flycatcher, Final Rule.” *Federal Register* 78 (2): 344–534.
- _____. 2013b. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Acuña Cactus and the Fickeisen Plains Cactus; Proposed Rule.” *Federal Register* 78 (130): 40673–86.
- _____. 2013c. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake; Proposed Rule.” *Federal Register* 78 (132): 41550–608.
- _____. 2013d. “Endangered and Threatened Wildlife and Plants; Endangered Species Status for Echinomastus Erectocentrus Var. Acunensis (Acuña Cactus) and Pediocactus Peeblesianus Var. Fickeiseniae (Fickeisen Plains Cactus) Throughout Their Ranges; Final Rule.” *Federal Register* 78 (190): 60608–52.
- _____. 2014. “Endangered and Threatened Wildlife and Plants; Threatened Status for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake; Final Rule.” *Federal Register* 79 (130): 38678–746.
- _____. 2015. “Gila Chub (Gila Intermedia) Draft Recovery Plan.” Albuquerque, New Mexico: U.S. Fish and Wildlife Service, Southwest Region.
https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/GilaChub/GilaChub_DraftRecoveryPlan_Final_October2014.pdf.
- _____. 2017a. “Critical Habitat Portal.” U.S. Fish and Wildlife Service.
- _____. 2017b. “Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Headwater Chub and Roundtail Chub Distinct Population Segment.” *Federal Register* 82 (66). U.S. Fish and Wildlife Service: 16981–88. <https://www.gpo.gov/fdsys/pkg/FR-2017-04-07/pdf/2017-06995.pdf>.
- U.S. Fish and Wildlife Service. Arizona Ecological Services Field Office. 2015. “Sonoran Desert Tortoise Does Not Warrant Endangered Species Protection.” *News Release*, October.

- U.S. Forest Service. 2017. "Mammals of the Tonto National Forest." Accessed December 1. https://www.fs.usda.gov/detail/tonto/landmanagement/resourcemanagement/?cid=fsbdev3_018781.
- _____. 2011. "Botany Specialists Report: Travel Management Rule Environmental Impact Statement Coconino National Forest."
- Welsh, S.L., and M. Licher. 2010. "Pediomelum Rrydberg (Leguminosae) in Arizona and Two Previously Undescribed Species." *Western North American Naturalist* 70: 9–18.
- WestLand Resources. 2004a. "2004 Arizona Hedgehog Cactus Survey. Federal Parcel, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004b. "2004 Bat Survey, Federal Parcel, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004c. "2004 Raptor Survey Federal Parcel, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004d. "Baseline Biology and Land Use Report." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004e. "2004 Reptile and Amphibian Survey Federal Parcel, Pinal County, Arizona." *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2008. "Draft Baseline Biological Winter Bird Surveys." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2009a. "2007-2008 Fish Survey Resolution Baseline Biological Surveys Pinal County, Arizona." *Prepared for Resolution Copper Mining*. WestLand Resources, Inc.
- _____. 2009b. "Raptor Survey and 2008 Bird Census." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2010a. "2009 Bird Census." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2010b. "Spring-Associated Plants in Devils Canyon and Upper Queen Creek." *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012a. "2011 Bat Species Survey of the Resolution Copper Mine Study Area." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.

- _____. 2012b. "2011 Raptor Surveys of Mine and Vicinity." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012c. "Amphibian and Reptile Surveys." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012d. "Wetland Plant Survey of Springs in the Resolution Project Area." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2013a. "2012 Prefeasibility Activities Arizona Hedgehog Cactus Action Area Survey (Conservation Measure 5)." Tucson.
- _____. 2013b. "2012 Springsnail Survey Devils Canyon, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2013c. "2013 Survey for Yellow-Billed Cuckoo (*Coccyzus Americanus*) in the Patagonia Mountains, near Harshaw, Arizona." *Prepared for Arizona Minerals, Inc.* Tucson, Arizona: WestLand Resources, Inc.
- _____. 2013d. "Biological Evaluation of the Near West Analysis Area." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2013e. "Results of Bird Surveys Conducted at Near West 2013." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2014a. "2014 Arizona Hedgehog Cactus Survey Report." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2014b. "Results of Sonoran Desert Tortoise Survey in the Tonto National Forest near Superior, Arizona 2013." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015a. "2014 Yellow-Billed Cuckoo (*Coccyzus Americanus*) Survey: Rosemont Copper Project." *Prepared for Hudbay*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015b. "2015 Yellow-Billed Cuckoo (*Coccyzus Americanus*) Survey Whitlow Ranch Dam, Devils Canyon and Mineral Creek, Pinal County, Arizona." *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015c. "Arizona Hedgehog Cactus Survey Report East and West Plant Sites." Tucson, Arizona: Prepared for Resolution Copper Mining.

- _____. 2016a. “2016 Yellow-Billed Cuckoo (*Coccyzus Americanus*) Survey Whitlow Ranch Dam, Devils Canyon and Mineral Creek, Pinal County, Arizona.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2016b. “2016 Yellow-Billed Cuckoo Survey Baseline Activities Area, Pinal County, Arizona.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2016c. “Preliminary Sonoran Desert Tortoise Survey and Habitat Assessment of the MARRCO Corridor, Pinal County, Arizona.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2016d. “Wildlife Camera Monitoring Report.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017a. “2016 Raptor Survey Report Whitlow Ranch Dam, Devils Canyon, and Mineral Creek, Pinal County, Arizona.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources Inc.
- _____. 2017b. “2017 Forest Sensitive Plant Species Survey within the Resolution Copper Project Area.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017c. “2017 Southwestern Willow Flycatcher Survey for the Resolution Copper Project.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017d. “2017 Yellow-Billed Cuckoo Survey for the Resolution Copper Project.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017e. “Fish and Aquatics Survey for the Resolution Project Area.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources Inc.
- _____. 2017f. “Survey of Surface Water Features in the Resolution Project Area.” *Prepared for Resolution Copper*. Tucson, Arizona: WestLand Resources, Inc. In draft.
- Wilken, D.H., and J.M. Porter. 2005. “Vascular Plants of Arizona: Polemoniaceae.” *Canotia* 1: 1–37.

APPENDIX B

**Potential for
Occurrence Table
of Special-Status
Species within
the Lands
Involved in
the Land
Exchange**

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
P L A N T S													
<i>Acuña cactus</i> (<i>Echinomastus erectocentrus</i> <i>var. aculénsis</i>)	Endangered; designated critical habitat BLM - S (Gila and PHX)	Occurs on small knolls and ridges, terraces, flats, and slopes of broad dissected hills with fine to coarse grained granite or andesite gravels in Arizona Upland Sonoran deserts (USFWS 2013a; ARPC 2001).	Occurs as small disjunct populations from northeastern Pinal to southeastern Maricopa and western Pima counties in Arizona; also known from Sonora, Mexico. Occurs from 1,198 to 3,773 ft in elevation (AGFD 2013a).	None Vegetation in this area is a mostly not within the Arizona-Upland Sonoran deserts scrub biotic community and is largely chaparral and not suitable habitat for the species. The area is also outside known geographic range and at the very edge of the reported elevational range of the species.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range. A known population occurs in the Mineral Mountains approximately 20 miles from Dripping Springs (USFWS 2013f, 2013d).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
<i>Alamos deerweh</i> (<i>Lotus alamosanus</i>)	COR - S	Considered an obligate wetland species (Lichvar 2014). Reported to occur in wet soil, springs, and canyons (SEINet 2017).	In Arizona, known only from Bear Valley or Sycamore Canyon, and the Pajarito Mountains in Santa Cruz County. Also a single record from the Tonto National Forest in the Superstition Mountains (SEINet 2017). Records range from Sinaloa, Mexico to northern California (SEINet 2017).	None Parcel contains limited areas of appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona. However, the species not known to occur in Parcel and has not been detected during surveys of aquatic features (WestLand Resources 2017).	None Parcel likely contains appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona.	None Parcel is well outside of the known areas where the species is known to occur in Arizona.	None Parcel likely contains appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona.	None Parcel likely contains appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona.	None Parcel does not contain appropriate habitat and is well outside of the known areas where the species is known to occur in Arizona.	None Parcel likely contains appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona.	None Parcel does not contain appropriate habitat and is well outside of the known areas where the species is known to occur in Arizona.	None Parcel likely contains appropriate habitat, but is well outside of the known areas where the species is known to occur in Arizona.	None Parcel does not contain appropriate habitat and is well outside of the known areas where the species is known to occur in Arizona.
<i>Alcove bog orchid</i> (<i>Platanthera cothecina</i>)	COC - S	Perennially wet environments in canyons including seeps, springs, and hanging gardens. Elevations of 5,000 to 9,000 ft (AGFD 2004).	In Arizona, occurs along Colorado River Drainage near Grand Canyon; east, west and south of Flagstaff in West Fork Oak Creek Canyon (AGFD 2004).	None Parcel does not contain appropriate habitat and is well outside known geographic range.	None Parcel may contain appropriate habitat, but is well outside known geographic range.	None Parcel does not contain appropriate habitat and is well outside known geographic range.	None Parcel may contain appropriate habitat, but is well outside known geographic and elevational range.	None Parcel may contain appropriate habitat, but is well outside known geographic range.	None Parcel does not contain appropriate habitat and is well outside known geographic range.	None Parcel may contain limited areas of potential habitat, but is well outside the known geographic and elevational range of the species.	None Parcel does not contain appropriate habitat and is well outside known geographic range.	None Parcel is well outside known geographic range and species was not observed during floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel does not contain appropriate habitat and is well outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Aravaipa sage <i>(Salvia amissa)</i>	BLM - S (Gila)	Upper floodplain terraces in shady canyon bottoms in understory of mature sycamore, ash, walnut and mesquite; gravel, sand and silt substrates, from 1,500 to 5,000 ft (ARPC 2001).	Occurs in the Galiuro and Superstition mountains, historically in Santa Catalina Mountains (ARPC 2001). Also known from a few locations in Graham and Greenlee counties, Arizona, including Eagle Creek (SEINet 2017).	None Parcel is within geographic range, but does not contain habitat.	Unlikely Parcel is outside, but near known geographic range of the species and contains suitable habitat.	None Parcel is outside known range of the species.	None Parcel is outside known range of the species.	None Parcel is outside known range of the species.	None Parcel is within geographic range, but does not contain habitat.	Possible Parcel within known geographic range of the species and contains suitable habitat.	None Parcel is within geographic range, but does not contain habitat.	None Parcel is outside known range of the species.	None Parcel is within geographic range, but does not contain habitat.
Aravaipa woodfern <i>(Thelypteris puberula</i> var. <i>sonorensis)</i>	TNF - S COR - S BLM - S (Gila and PHX)	Occurs in moist soils in mesic canyons, along riverbanks, and meadow habitats in shade and often associated with boulders. Elevation ranges from 2,220 to 7,000 ft (AGFD 2004a; SEINet 2017).	In Arizona, disjunct populations are found in Coconino, Gila, Maricopa, Pima, Pinal and Yavapai counties including a locality near Superior (AGFD 2004a; SEINet 2017).	None Area is within the broad, general range of this species but lacks appropriate habitat.	Unlikely Parcel is within broad, general geographic range of this species, but there are no records in the nearby vicinity, and suitable habitat is limited.	Unlikely Parcel is within broad, general geographic range of this species, but there are no records in the nearby vicinity, and suitable habitat is limited.	Possible Parcel is within broad, general range of this species and appropriate habitat occurs.	Possible Parcel is within broad, general range of this species and appropriate habitat occurs. Species is known to occur upstream of parcel in Bear Canyon, a tributary to E. Clear Creek (SEINet 2017).	None Parcel is within the broad, general range of this species but lacks appropriate habitat.	Unlikely Generally, not associated with wide alluvial channels and no boulders are on the parcel but species is known to occur upstream in nearby Aravaipa Canyon and associated tributaries. (SEINet 2017).	None Parcel is within the broad, general range of this species but lacks appropriate habitat.	Unlikely Habitat does occur in parcel and the area is within known geographic range. However, species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is within the broad, general range of this species but lacks appropriate habitat.
Arid throne fleabane <i>(Erigeron arisiolus)</i>	COR - S	Found in Semidesert Grassland and Madrean Evergreen Woodland; grasslands or oak woodlands; in grassy open areas along roads, often in moist areas at elevations from 4,265 to 5,650 ft (AGFD 2001g; SEINet 2017).	Found in southcentral to southeastern Arizona south of Interstate 10, with one historical observation recorded in Apache County (AGFD 2001g; SEINet 2017).	Unlikely Parcel is well north of the primary distribution, but is at the northernmost extent of the historical range of the species when the Apache County record is considered. Although there are limited areas of suitable habitat, it is unlikely that the species occurs on the parcel.	None Parcel is well north of the northernmost record of the species.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is well north of the primary distribution, but is at the northernmost extent of the historical range of the species when the Apache County record is considered. However, the parcel does not contain suitable habitat.	None Parcel is north of the primary distribution of the species, but is at the northernmost extent of the historical range of the species when the Apache County record is considered. However, the parcel is below the elevational range of the species.	None Parcel is well north of the primary distribution, but is at the northernmost extent of the historical range of the species when the Apache County record is considered. However, the parcel does not contain suitable habitat.	Present Species has been documented on the parcel.	None Parcel is well north of the primary distribution, but is at the northernmost extent of the historical range of the species when the Apache County record is considered. However, the parcel does not contain suitable habitat.
Arizona slum root <i>(Heuchera glomerulata)</i>	TNF - S COR - S	Associated with north-facing shaded rocky slopes near seeps, springs, and riparian areas. Occurs at elevations ranging from 4,000 to 9,000 ft (AGFD 2004b).	Known from small, isolated populations in several mountain ranges in southeastern Arizona including the Pinal Mountains in Gila County (AGFD 2004b).	Unlikely Area is within range of the species, but appropriate habitat is limited.	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat and is outside known geographic range.	None Parcel lacks appropriate habitat and is outside known geographic range.	None Parcel may contain appropriate habitat but is outside known geographic range.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographical range, but well below known elevational range and does not contain appropriate habitat.	None Parcel is within known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat; species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Within known geographic range but lacks appropriate habitat.
Arizona bugbane <i>(Actaea arizonica)</i>	TNF - S COC - S	Moist, shady areas in deep narrow ravines; associated with riparian, conifer and deciduous trees forming dense canopies at elevations of 4,700 to 8,800 ft (AGFD 2012a; ARPC 2001).	Species is known from isolated location in central Arizona including Bill Williams Mountain (Kaibab National Forest), tributaries to Oak Creek, and West Clear Creek (Coconino National Forest), Coconino County; and Sierra Ancha Mountains (Tonto National Forest), Gila County (AGFD 2012a).	None Parcel is outside known geographic range and does not contain habitat.	Possible Appropriate habitat occurs in parcel and species is known to occur approximately 10 km east in Sierra Ancha Wilderness (SEINet 2017).	None Parcel is outside known geographic range and does not contain habitat.	None Parcel is outside known geographic range and does not contain habitat.	Possible Appropriate habitat occurs in parcel. Species is known to occur approximately 10 km upstream in Clear Creek (SEINet 2017).	None Parcel is outside known geographic range and does not contain habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and does not contain habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and does not contain habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
<i>Arizona cliffrose</i> (<i>Purshia subintegra</i>)	Endangered; no designated critical habitat	Occurs in sparsely vegetated areas in rolling, rocky, limestone hills and slopes within Sonoran desert scrub. Often found associated with white Tertiary (Miocene and Pliocene) limestone lakebed deposits high in lithium, nitrates, and magnesium (ARPC 2001). Occurs from 2,100 to 4,000 ft elevation (ARPC 2001; SEINet 2017).	Species endemic to Arizona; known primarily from four isolated areas in central Arizona including around Burro Creek near Bagdad, around Cottonwood, Horseshoe Reservoir in the TNF, and around Bylas on the San Carlos Apache reservation, with a few other scattered localities.	None Parcel is outside known highly restricted geographic range and lacks appropriate habitat.	None Parcel is outside known highly restricted geographic range and lacks appropriate habitat.	None Parcel is within the known elevation range of the species and may contain appropriate habitat. However, the species is only known from four disjunct localities (USFWS 1994).	None Parcel is within the known elevation range of the species and may contain appropriate habitat. However, the species is only known from four disjunct localities (USFWS 1995).	None Parcel is outside known highly restricted geographic range.	None Parcel is within the known elevation range of the species and may contain appropriate habitat. However, the species is only known from four disjunct localities (USFWS 1995).	None Parcel is outside known highly restricted geographic range.	None Parcel is within the known elevation range of the species and may contain appropriate habitat. However, the species is only known from four disjunct localities (USFWS 1995).	None Parcel is outside known highly restricted geographic range.	None Parcel is within the known elevation range of the species and may contain appropriate habitat. However, the species is only known from four disjunct localities (USFWS 1995).
<i>Arizona coralroot</i> (<i>Hesalictis arizonica</i>)	COR - S	Found in oak woodlands, on the wooded sides of canyons, and on canyon bottoms, on limestone to calcareous sandy or organic soils at elevations from 3,480 to 6,950 ft (Coleman 2002).	In Arizona known only from Chiricahua, Dragon, Santa Rita, Patagonia, Peloncillo and Whetstone mountains of southern Arizona. May also occur in the Rincon Mountains and Canelo Hills (Coleman 2002; WestLand 2013).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
<i>Arizona eryngo</i> (<i>Eryngium sparganophyllum</i>)	BLM - S (Gila)	Wet soils of arid land cienegas in desert scrub or oak woodland (NMRP Technical Council 1999).	Occurs as small disjunct populations in Arizona, Pima County north and east of Tucson and Cochise County in upper San Pedro valley (SEINet 2017). Also from a few scattered springs in the four-corners region of Arizona, New Mexico, Sonora, and Chihuahua. Known from Hidalgo County at Las Playas Springs in New Mexico (NMRP Technical Council 1999).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range, but contains limited suitable habitat.	None Parcel is outside known geographic range.	None The parcel is within the geographic range of the species, but does not contain springs or cienegas and the species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
<i>Arizona hedgehog cactus</i> (<i>Echinocactus triglochidatus</i> var. <i>arizonicus</i>)	Endangered; no designated critical habitat BLM - S (Gila and PHN)	Found in ecotone of Interior Chaparral and Madrean Evergreen Woodland and into desert grassland from 3,300 to 5,700 ft. Associated with four major rock types: Tertiary Apache Leap Tuff (dacite), Cretaceous or Tertiary Schultze Granite, Precambrian Apache Group Pioneer Quartzite, and Precambrian Pinal Schist (WestLand Resources 2013a).	Occurs in northeastern Pinal and southwestern Gila counties in the Pinal, Dripping Springs, Superstition, Mescal mountains, and the higher elevation areas between Globe and Superior (AGFD 2003b). The currently identified number of individual Arizona hedgehog cactus' is over 6,000 individuals with an estimated population size of approximately 10,000 to 250,000 individuals. Predicted habitat is an estimated 44 square miles.	Present Known to occur at this site (WestLand Resources 2004a, 2014). 2015 surveys confirmed presence and detected several new individuals; a total of ~ 18 individuals have been detected to date here (WestLand Resources 2015b). HDMS records within 5 miles.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Possible Potential in areas within the appropriate elevational range and where appropriate geologic substrate exists. Suitable habitat of Apache Leap tuff geology and Interior Chaparral exists within elevational range. HDMS records within 5 miles.	None Parcel is outside known restricted geographic range.	Unlikely Parcel is outside, but close to, known geographic range but contains suitable habitat.	None Parcel is outside known restricted geographic range.	Possible Potential in areas within the appropriate elevational range and where suitable geologic substrate exists. Suitable habitat of Apache Leap tuff geology and Interior Chaparral exists within elevational range. HDMS records within 5 miles.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Arizona leatherflower aka. Clustered leatherflower (<i>Clematis hirsutissima</i> var. <i>hirsutissima</i>)	COC - S	Generally, occurs on limestone soils on rocky hillslopes in moist meadows, prairies, and open woodlands of mixed conifer species. Elevation range from 6,800 to 9,000 ft (ARPC 2001).	In Arizona, populations in north-central and extreme northeastern Arizona. Found along the Rio de Flag, Lower Lake Mary, and upper Volunteer Canyon on the Coconino National Forest (ARPC 2001).	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.	None Parcel is outside known geographic, below known elevational range, and does not contain habitat.
Arizona manihot (<i>Manihot davisi</i>)	COR - S	Found in Semidesert Grassland, limestone slopes at elevations from 3,500 to 4,000 ft (ARPC 2001; SEINet 2017).	Known from the Baboquivari, Las Guijas, Rincon, Santa Catalina, and Santa Rita mountains (ARPC 2001; SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Arizona passionflower (<i>Passiflora arizonica</i>)	COR - S	Found in Sonoran Desertscrub, Semidesert Grassland, rocky desert hillsides, limestone outcrops, canyons, cliffs, and arroyos at elevations from 3,300 to 5,900 ft (AGFD 2006c).	Occurs in southern Arizona and Sonora, Mexico (AGFD 2006c).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Arizona phlox (<i>Phlox amabilis</i>)	TNF - S COC - S	Occurs in exposed limestone and rocky slopes in open areas associated with piñon-juniper communities, pine-oak communities, coniferous forests and shrublands, and open grassland-juniper woodlands at elevations between 3,500 and 7,800 ft (AGFD 2005a; Fehlberg and Ferguson 2012; SEINet 2017; Wilken and Porter 2005).	Species primarily occurs in central to northwestern Arizona at or above the Mogollon Rim (SEINet 2017).	None Parcel is outside known geographic range.	Unlikely Parcel is within known elevational and geographic range, and may contain limited areas of suitable habitat.	Unlikely Parcel is within known geographic range, but is below the elevation range and may contain limited suitable habitat.	None Parcel is within geographic range of the species, but well below the elevational range. Upland vegetation is not similar to known suitable habitat.	Possible Parcel is within the known geographic and elevational range of the species and contain suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Arizona sneezeweed (<i>Helianum arizonicum</i>)	COC - S	Found in ponderosa pine associated with mesic environments, e.g., springs, seeps, ponds and bogs (AGFD 2005b; SEINet 2017).	Endemic to north-central Arizona, mainly in Coconino County, but also found in Apache, Gila and Navajo counties (AGFD 2005b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range and contains elements of suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Arizona Sonoran rosewood <i>(Vauquelinia californica ssp. Sonorensis)</i>	BLM - S (Gila and PHX)	Inhabits desert scrub and desert grassland, in woodland or forest at base of cliffs, along canyon bottoms and on moderate to steep slopes (AGFD 2005c).	Occurs in Southwestern Arizona in the Ajo, Diablo, Mesquite, and Santa Rosa mountains of Pima County, and Sand Tank Mountains of Maricopa County (AGFD 2005c; SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Arizona sunflower <i>(Helianthus arizonensis)</i>	COC - S	Little is known regarding habitat requirements but appears to be associated with dry, sandy soils and open pine and pinyon-juniper woodlands (AGFD 2013b; Jackson 1963; USFS 2011).	In Arizona, known from 7 localities in central Arizona in Apache, Coconino and Navajo counties and from Sonora, Mexico immediately south of southwestern New Mexico in Animas Valley; based on records in SEINet (2017).	None Parcel is outside known geographic range.	Possible Parcel is within the known geographic range and contains potentially suitable habitat.	Possible Parcel is within the known geographic range and contains potentially suitable habitat.	None Parcel is outside known geographic range.	Possible Parcel is within the known geographic range and contains potentially suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Ayenia <i>(Ayenia juliscana [= A. truncate])</i>	COR - S	Found on rocky slopes, hillsides, and canyon bottoms, and in grassy plains at elevations from approximately 3,900 to 4,000 ft (AGFD 2010b).	Known only from the Las Guijas Mountains in Pima County and Santa Rita Mountains in Santa Cruz County (AGFD 2010b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Bartram Stonecrop <i>(Graptopetalum bartramii)</i>	COR - S BLM - S (Gila)	Grows as solitary rosettes or in clumps on ledges or slopes of steep walled canyons in granite or limestone bedrock crevices. Usually associated with north aspect, litter cover, shade, and increased moisture (AGFD 2001c).	Occurs in mountain ranges in southern Arizona with the Rincon Mountains being the most northern known location (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within the known geographic range and contains potentially suitable habitat.	None Parcel is outside known geographic range.
Beardless chinchweed <i>(Pectis imberbis)</i>	COR - S	Occurs in open grassland and oak woodland, disturbed areas, road cuts at elevations from 3,600 to 6,475 ft (AGFD 2012b).	Found in southern Arizona, eastern Sonora, and western Chihuahua, Mexico (AGFD 2012b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.
Bebb's willow <i>(Salix bebbiana)</i>	COC - S	Riparian areas associated with open, wet meadows, and spring/seep areas; does not tolerate drought or dense shading. Elevations range from 6,000 to 10,200 ft (SEINet 2017; USFS 2011).	Occurs through northeastern Arizona primarily in Coconino and Apache counties with a few records from northern Greenlee County: White Mountains, canyons of the Mogollon Rim, and the Flagstaff area (SEINet 2017; USFS 2011).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range and contains appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Blumer's dock <i>(Rumex orthoneurus)</i>	TNF - S COC - S COR - S	Restricted to high-elevation riparian and cienega habitats in moist soils (ARPC 2001). Elevations range from 4,480 to 9,660 ft (AGFD 2002c).	Occurs in central and east-central Arizona and at isolated localities in southeastern Arizona including the Sierra Ancha, White, Pinalero, Chiricahua, and Huachuca mountains, as well as a record near East Clear Creek (ARPC 2001).	None Parcel is within the general geographic range, but lacks appropriate habitat.	Possible Parcel is within known geographic and elevation range and contains appropriate habitat.	None Parcel is outside known geographic range and below known elevational range.	None Parcel is outside known geographic range and below known elevational range.	Possible Parcel is within known geographic range and contains appropriate habitat.	None Parcel is within the general geographic range, but lacks appropriate habitat.	None Parcel is outside known geographic range, below known elevational range, and lacks appropriate habitat.	None Parcel is outside known geographic range, below known elevational range, and lacks appropriate habitat.	None Parcel is within the general geographic range but lacks appropriate habitat.	None Parcel is within the general geographic range and lacks appropriate habitat.
Brady pincushion cactus <i>(Pediocactus bradyi)</i>	Endangered; no designated critical habitat	Grows on benches and terraces in Great Basin desert scrub; associated with substrates composed of Kaibab limestone chips overlying soil derived from Moenkopi shale and sandstone outcrops 3,850-4,500 ft in elevation (USFWS 2012a).	Endemic to northwestern Coconino Co, AZ, restricted to both sides of Marble Canyon of the Colorado River and associated tributaries (USFWS 2012a).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Broadleaf groundcherry <i>(Physalis latifolia)</i>	COR - S	Found in desert scrub or grassland, washes, in the shade of shrubs or boulders, on granitic, gravelly soils at elevations from 3,000 to 4,700 ft (AGFD 2004c).	Found in southern Arizona endemic with few known locations in Baboquivari and Santa Rita mountains, and Altar Valley (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Bush violet <i>(Browallia eludens)</i>	COR - S	Found in temperate, moist summer habitats in and around the boundaries of Madreen Evergreen Woodland at elevations from 5,065 to 5,250 ft (AGFD 2003c).	Known only from the Canelo Hills (AGFD 2003c).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
California flannelbush <i>(Fremontodendron californica)</i>	BLM - S (PHX)	Inhabits well-drained rocky hillsides and ridges, usually north aspect, in chaparral and oak/pine woodland (AGFD 2005d).	Known from Superstition, Mazatzal, Weaver and Aquarius mountains, and upper Verde Valley, Arizona. Also known from the tributaries of upper Queen Creek (SEINet 2017).	Unlikely Parcel is outside known restricted geographic range. One collection roughly 3.7 miles north of Oak Flat in upper reaches of Queen Creek (SEINet 2017).	Possible Parcel is within geographic range, does contain appropriate habitat, and there are records in the nearby vicinity (SEINet 2017).	Unlikely Parcel is within geographic range, and may contain limited appropriate habitat.	Unlikely Parcel is within geographic range, and may contain limited appropriate habitat.	Unlikely Parcel is within known geographic range, and may contain limited appropriate habitat.	Unlikely Parcel is within known geographic range, and may contain limited appropriate habitat.	None Parcel is outside known restricted geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Canelo Hills ladies'-tresses <i>(Spiranthes delticescens)</i>	Endangered; no designated critical habitat	Marshy wetland or cienega, intermingled with tall grasses and sedges 4,000 to 5,000 ft in elevation (ARPC 2001).	Only known to occur at four cienegas in southeastern Arizona in Cochise and Santa Cruz counties (ARPC 2001).	None Parcel is outside known restricted geographic range and lacks appropriate habitat.	None Parcel is outside known restricted geographic range and lacks appropriate habitat.	None Parcel is outside known restricted geographic range and lacks appropriate habitat.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Wetland habitat may occur in parcel associate with unoccupied artesian well but cienega habitat does not exist and area is outside known restricted geographic range.	None Parcel is outside known restricted geographic range and lacks appropriate habitat.	Unlikely Parcel is within known range and may contain limited appropriate habitat. However, wetland habitat is restricted to small areas associated with earthen ponds maintained by wells and "Finley Spring", and the species was not observed during floral surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range and lacks appropriate habitat.
Catalina beardtongue <i>(Penstemon discolor)</i>	COR - S	Occurs in bedrock openings in chaparral or pine-oak woodland at elevations from 4,400 to 7,200 ft (ARPC 2001).	Found in the Dragoon, Galluro, Santa Catalina, and Santa Teresa mountains of southern Arizona (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Chihuahuan scurf-pea <i>(Pediomelum pentaphyllum)</i>	COR - S BLM - S (Gila)	Found in desert grasslands, associated with mesquite at elevations from 3,600 to 4,500 ft (AGFD 2001f).	Found in southern Arizona, southwestern New Mexico, western Texas, and Chihuahua, Mexico. Reported from the Chiricahua Mountains and Graham County, Arizona (AGFD 2001f).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Chihuahuan sedge <i>(Carex chihuahuensis)</i>	TNF - S COR - S	Typically occurs in north- and northwest-facing slopes in wet soils in streambeds, wet meadows, cienegas, at elevations of 3,600 and 7,200 ft (AGFD 2004d).	Species is known from localities from central to southeastern Arizona from the Sky Islands to the Sierra Ancha and White Mountains (SEINet 2017).	None Parcel is within known geographic range, but lacks appropriate habitat.	Possible Appropriate habitat occurs in parcel. Known to occur approximately 10 km east in Sierra Ancha Wilderness (SEINet 2017).	Unlikely Parcel contains appropriate habitat, but is below the known elevation range of the species. Known to occur in Sierra Ancha Wilderness (SEINet 2017).	Unlikely Parcel is within known geographic range and contains potential habitat, but is below the known elevation range of the species.	Possible Parcel is within known geographic range and contains potential habitat.	None Parcel is within known geographic range, but lacks appropriate habitat.	Unlikely Parcel is within known geographic range and contains potential habitat, but is below the known elevation range of the species. Known to occur upstream in Aravaipa Canyon, a tributary to San Pedro River (SEINet 2017). However, species has not been observed in floristics surveys.	None Parcel is within known geographic range, but lacks appropriate habitat.	None The species is known to occur in nearby Canelo Hills Nature Preserve (SEINet 2017) but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001) and the parcel does not contain appropriate habitat.	None Parcel is within known geographic range, but lacks appropriate habitat.
Chiltepin <i>(Capsicum annuum var. glabriusculum)</i>	COR - S	Found in canyons and slopes of desert riparian habitats in mesquite and oak woodlands at elevation from 3,600 to 4,400 ft (AGFD 2003e; SEINet 2017).	Known from the Baboquivari and Tumacac mountains and Organ Pipe Cactus National Monument in southwestern Arizona (AGFD 2003e; SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Chiricahua cinquefoil <i>Potentilla rhyolitica</i> var. <i>chiricahuensis</i>	COR - S	Found in crevices of rhyolitic and quartzitic outcrops in open pine forests at elevations from 8,500 to 9,500 ft (Erter 2007).	Endemic to summit areas of the Santa Rita and Huachuca Mountains (Erter 2007).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Chiricahua fleabane <i>Erigeron kaschei</i>	COR - S	Found on shaded, north-facing granitic cliffs and rock ledges with high moss cover at elevations from 7,000 to 9,500 ft (ARPC 2001).	Endemic to the Chiricahua Mountains, with only four known populations (ARPC 2001).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Chiricahua mountain brookweed <i>Samolus vagans</i>	COR - S	Found in wet, sandy soils at elevations from 3,500 to 6,000 ft (SEINet 2017).	In Arizona, known from Pima, Santa Cruz, and Cochise counties, in the Rincon, Santa Rita, Pajarita, Huachuca, and Chiricahua mountains (AGFD 2015c)	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Chiricahua mudwort <i>Limosella pubiflora</i>	COR - S	Found in cienegas, springs, streams, pond margins (SEINet 2017).	In Arizona, known only from the Chiricahua Mountains (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Chiricahua rockcress <i>Arabis tricorata</i>	COR - S	Found on steep and rocky slopes in the understory with pine trees and on road banks at elevations from 6,000 to 8,840 ft (AGFD 2006a; SEINet 2017).	Known from the Chiricahua, Huachuca and Santa Rita mountains (AGFD 2006a; SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range but does not contain appropriate habitat.	None Parcel is outside known geographic range.
Chiricahua rock daisy <i>Perilyth cochisensis</i>	COR - S	Found in moist north-facing cliff faces at elevations from 5,500 to 7,000 ft (ARPC 2001).	Known only from the Chiricahua and Dos Cabezas Mountains (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Clifton rock daisy <i>Perilyth ambrosiifolia</i>	BLM - S (Gila)	Inhabits rock crevices, cliff faces, and canyons between 1,400 to 4,900 ft elevation (SEINet 2017).	Occurs in the vicinity of Clifton and Morenci in Greenlee County (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Coleman's crested coralroot <i>Hexaletris colemani</i>	COR - S	Found in oak and oak-pine-juniper forests within Madrean Evergreen Woodland near the transition zone with Semidesert Grassland. Under trees and shrubs on the edges of canyon bottoms at elevations from 4,500 to 5,200 ft (Coleman 2002).	In Arizona known only from Chiricahua, Dragon, Santa Rita, Patagonia, Peloncillo and Whetstone mountains of southern Arizona (Coleman 2002).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Cochise sedge aka Giant Sedge (<i>Carex ultra</i> ; also <i>Carex spissa</i> var. <i>ultra</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHX)	Associated with saturated soils near or in perennial seeps, streams, and springs from elevations of 2,000 to 6,000 ft (AGFD 2000a; ARPC 2001; SEINet 2017).	Cochise County: Huachuca, Chiricahua, Dragon and Galiuro Mountains; Graham County: Galiuro Mountains; Pinal County: Aravaipa Canyon; Pima County: Santa Rita Mountains, Rincon Valley; Santa Cruz County: Santa Rita and Atascosa Mountains; Yavapai County: Hieroglyphic and Mazatzal Mountains (AGFD 2000a).	None Parcel lacks appropriate habitat.	Unlikely Parcel is within known elevational range and contains appropriate habitat but is outside known geographic range.	Possible Appropriate habitat occurs in parcel. Known to occur on Tangle Creek (SEINet 2017). HDMS records within 5 miles.	Possible Parcel is within known elevational range and contains appropriate habitat, and there are occurrence records nearby.	Unlikely Parcel is above known elevational range but contains appropriate habitat.	None Parcel lacks appropriate habitat.	Possible Potential in areas within the appropriate wetland habitat. Known to occur upstream in Aravaipa Canyon, a tributary to San Pedro River (SEINet 2017). However, species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel lacks appropriate habitat.	None Parcel is within known geographic range but does not contain appropriate habitat and has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel lacks appropriate habitat.
Crenulate moonwort (<i>Botrychium crenulatum</i>)	COC - S	Associated with marshy areas but in the drier, bare gravelly soils near spruce trees and down dead wood at elevations from 10,000 to 11,000 ft (AGFD 2005e; USFS 2011)	In Arizona, known only from the San Francisco Peaks and the White Mountains (SEINet 2017).	None Parcel is outside known geographic and elevation range and does not contain appropriate habitat.	None Parcel contains appropriate habitat but is outside known geographic and elevation range.	None Parcel contains elements of appropriate habitat but is outside known geographic and elevation range.	None Parcel contains appropriate habitat but is outside known geographic and elevation range.	None Parcel contains elements of appropriate habitat but is outside known geographic and elevation range.	None Parcel is outside known geographic and elevation range and does not contain appropriate habitat.	None Parcel contains elements of appropriate habitat but is outside known geographic and elevation range.	None Parcel is outside known geographic and elevation range and does not contain appropriate habitat.	None Parcel contains elements of appropriate habitat but is outside known geographic and elevation range.	None Parcel is outside known geographic range.
Dalhousie spleenwort (<i>Asplenium dalhousiae</i>)	BLM - S (Gila)	Occur in moist, rocky ravines, among and at bases of rocks in Madran Oak Woodland between 4,000 to 6,000 ft elevation (AGFD 2004e; ARPC 2001).	Known only from the Mule, Huachuca, and Baboquivari mountains of southern Arizona (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel contains appropriate habitat and is within known elevation range, but is outside known geographic range.	None Parcel is outside known geographic range.
Eastwood alum root (<i>Heuchera eastwoodiae</i>)	TNF - S COC - S	Occurs along moist slopes in ponderosa pine forests and canyons at elevations between 3,500 and 8,000 ft (AGFD 2005f; TNF 2000).	Occurs in central Arizona from the Tonto Basin northwest to the Bradshaw Mountains.	None Parcel is within known geographic and elevation range but lacks appropriate habitat.	Possible Parcel is within known geographic and elevation range and contains appropriate habitat.	Unlikely Parcel is within known geographic range and contains appropriate habitat but is below known elevation range of the species.	None Parcel is within known geographic range but is below known elevation range and does not contain appropriate habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	None Parcel is within known geographic and elevation range but lacks appropriate habitat.	None Parcel is within known geographic range, but does lack appropriate habitat. Species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.	None Parcel is within known elevation range but is outside known geographic range and lacks appropriate habitat. Species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is within known geographic range but lacks appropriate habitat.
Erter's rose (<i>Rosa woodsii</i> var. <i>erterae</i>)	COC - S	Well drained soils, and along creek bottom and riparian forests from 5,300 to 7,300 ft (AGFD 2015d; Lewis and Erter 2010; SEINet 2017)	Only known from Oak Creek Canyon and the West Fork of Oak Creek Canyon; may also occur in adjacent tributary canyons (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Fickelsen Plains cactus <i>(Pediocactus peeblesianus fickelseniae)</i>	Endangered; designated critical habitat BLM - S (PHX)	This cactus occupies margins of canyon rims, flat terraces or benches, or on the toe of well-drained hills with less than 20 percent slope in Plains and Great Basin grasslands and Great Basin desert scrub habitats at elevations between 4,200 and 5,950 ft (AGFD 2013g). Suitable substrate includes shallow, gravelly, and well-drained soils derived from exposed layers of Kaibab limestone (USFWS 2013d).	Occurs only in Arizona, endemic to the Colorado Plateau (USFWS 2013d).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Fish Creek fleabane <i>(Erigeron piscaticus)</i>	TNF - S BLM - S (Gila)	Associated with perennial streams and is found on upper floodplain terraces in moist, shady canyon bottoms in sand and silt alluvium between elevations of 2,250 and 3,500 ft (TNF 2000).	Known from very few records across its range in Arizona; 4 records in SEINet (2017). Known from tributaries to Aravaipa Creek in Galiuro Mountains, with a possible occurrence in Box Canyon in the Santa Catalina Mountains, and historically (1931) from Fish Creek in Superstition Mountains (AGFD 2001; SEINet 2017).	None Parcel does not contain appropriate habitat.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel does not contain appropriate habitat.	None Parcel does not contain appropriate habitat.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel does not contain appropriate habitat.
Fish Creek rockdaisy <i>(Perilyte saxicola)</i>	TNF - S	Occurs in cracks and crevices on cliff faces, large boulders, and rocky outcrops in canyons and on buttes in xeric east and northeast facing exposures in Sonoran desertscrub at elevations between 2,000 and 3,500 ft (TNF 2000).	Species occurs in the area of Tonto National Monument and Roosevelt Dam in central Arizona in drainages associated with the Salt River Canyon (SEINet 2017).	Possible Parcel is near known geographic range, within known elevation range, and contains elements of appropriate habitat.	None Parcel is within known geographical range but is outside of known elevation range and does not contain appropriate habitat.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	Unlikely Parcel is near known geographic range and contains elements of appropriate habitat, but is outside of known elevation range.	None Parcel is outside known highly restricted geographic range.	Possible Parcel contains other limestone endemics, and AGFD refers to a Dripping Springs record, but does not provide further detail (AGFD 2004f)	None Parcel is outside known highly restricted geographic range.	Unlikely Parcel is near known geographic range and contains elements of appropriate habitat, but is outside of known elevation range.
Flagstaff beardtongue <i>(Penstemon nudiflorus)</i>	COC - S	Inhabits xeric environments in ponderosa pine forests at elevations between approximately 4,500 and 7,375 ft (AGFD 2003g; USFS 2011).	Primarily central Arizona on the Mogollon Rim with a few localities in east-central Arizona below the Rim from Flagstaff to White River (SEINet 2017).	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range and contains appropriate habitat.	None Parcel is within known geographic range but is below known elevation range and does not contain appropriate habitat.	None Parcel is within known geographic range but is below known elevation range and does not contain appropriate habitat.	Possible Parcel is within known geographic range and elevation range and contains appropriate habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic range.
Flagstaff pennyroyal <i>(Hedeoma diffusum)</i>	COC - S	Occurs in shallow soils on Kaibab limestone in ponderosa pine forest from 4,500 to 7,140 ft (AGFD 2003h; ARPC 2001; USFS 2011).	Central Arizona; endemic to vicinity of Flagstaff and upper Oak Creek and Sycamore canyons in southwestern Coconino and northeastern Yavapai counties (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Possible Parcel is within the vicinity of the known geographic range and contains appropriate habitat.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Galluro sage aka Aravaipa sage <i>(Salvia amissa)</i>	TNF - S COR - S BLM - S (Gila)	Occurs in shady canyon bottoms, near streams within oak woodlands or deciduous riparian woodlands near permanent water. Substrates include alluvium comprised of gravel, sand and silt at elevations between 1,500 and 5,000 ft (AGFD 2002c; ARPC 2001; SEINet 2017).	Galluro, Sierra Ancha, and Supersition Creek near Morenci (AGFD 2002c; SEINet 2017).	None Parcel is within known geographic range but does not contain appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within the vicinity of the known geographic range and contains appropriate habitat.	None Parcel is within known geographic range but does not contain appropriate habitat.	Possible Parcel is within known geographic range and elevation range but does not contain appropriate habitat.	None Parcel is within known geographic range and elevation range but does not contain appropriate habitat.	None Parcel is outside known geographic range and does not contain appropriate habitat.	None Parcel is outside known geographic range.
Gentry indigo bush <i>(Dalea tenuicaulis)</i>	COR - S BLM - S (Gila)	Inhabits canyon bottom on cobble terraces prone to flooding from 3,600 to 4,580 ft (AGFD 2001).	Occurs in small area southwest of Tucson in southern Arizona (SEINet 2017), and also known from the Atascosa and Pajarito mountains in Santa Cruz County (AGFD 2001j).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Goodding's onion <i>(Allium gooddingii)</i>	COR - S	Found in shaded sites on north-trending drainages, on slopes, or in narrow canyons within mixed conifer and spruce-fir forests at elevations from 7,500 to 11,250 ft (SEINet 2017).	Only known from White and Santa Catalina mountains (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Greene milkweed <i>(Asclepias uncialis ssp. unialis)</i>	COR - S	Found in open woodlands and high desert scrub at elevations from 5,000 to 7,000 ft (SEINet 2017).	Known only from Patagonia and White mountains (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Possible <i>Asclepias uncialis</i> (unknown ssp.) has been documented on the parcel	None Parcel is outside known restricted geographic range.
Heathleaf wild buckwheat <i>(Eriogonum ericifolium var. ericifolium)</i>	COC - S	Occurs in dry, rocky lacustrine silt deposits and in mixed grasslands, chaparral, and oak woodlands (AGFD 2005g).	Most known localities occur in the Verde Valley in northeast Yavapai Co. and is considered restricted to this area (eFloras 2016a; SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Heliograph Peak fleabane <i>(Erigeron heliographis)</i>	COR - S	Found in granite rock cliffs and outcrops, usually somewhat mesic, in mixed conifer forests at elevations from 8,500 to 10,400 ft (AGFD 2003j).	Restricted to the Pinalero Mountains (AGFD 2003j).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Hinckley's polemonium <i>(Polemonium pauciflorum ssp. hinckleyi)</i>	COR - S	Found in moist, humusy soils derived from igneous substrates along streams in shaded canyons, in pine-oak-juniper, oak, or fir forests; occasionally on loose talus in oak forests (Natureserve 2015).	Arizona populations limited to Cochise County (Natureserve 2015).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is adjacent to the known geographic range of the species and appropriate habitat is on the parcel, but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Hohokam agave aka. Murphey agave <i>(Agave murpheyi)</i>	TNF - S BLM - S (PHX)	Occurs on alluvial terraces or hilly slopes above major drainages in desert scrub habitat. Associated with pre-Columbian agricultural and settlement features at elevations between 1,500 and 2,400 ft (AGFD 2003k).	In Arizona, found in Verde River Drainage, and Bradshaw, Paradise Valley (Phoenix Basin), McDowell, New River, and Wickenburg mountains, Maricopa County; South Bradshaw and Hieroglyphic mountains, Castle Creek and Agua Fria rivers, Yavapai County; Roosevelt Lake, Mazatzal and Sierra Ancha mountains, and Tonto Basin, Gila County; Queen Creek near Superior, Pinal County (AGFD 2003k).	None Parcel is within known geographic range but is above the known elevation range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	Possible Parcel contains appropriate habitat, and a large prehistoric site occurs on the floodplain of Tangle Creek within the parcel (Resolution Copper Mining 2015).	Possible Parcel contains appropriate habitat, and prehistoric sites occur along Cave Creek within the parcel (SEINet 2017) HDMS records within 5 miles.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is within known geographic range but is outside known elevation range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic and elevation range.	None Parcel is outside known geographic and elevation range.	None Parcel is within known geographic range but lacks appropriate habitat.
Horseshoe deer vetch <i>(Lotus nearnsii var. equisolenis)</i>	TNF - S	Occurs in powdery, gypsaceous limestone soils formed from Tertiary lakebed deposits at 2,100 ft elevation (ARPC 2001).	Only one population known from Horseshoe Reservoir along the lower Verde River (ARPC 2001; SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Huachuca cinquefoil <i>(Potentilla rhyolitica var. rhyolitica)</i>	COR - S	Occurs in rocky openings in mixed conifer forests at elevations from 8,500 to 9,500 ft (Erter 2007).	Endemic to upper elevations of the Chiricahua Mountains (Erter 2007).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Huachuca golden aster <i>(Hesperotheca ratterii)</i>	BLM - S (Gila)	Occurs in level, grassy plains at elevations between 4,000 and 5,000 ft (ARPC 2001).	Known only in the vicinity of the Huachuca and Santa Rita mountains of southern Arizona (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range and contains appropriate habitat but has not been observed in floristic surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Huachuca groundsel <i>(Senecio multidentatus var. huachucae)</i>	COR - S	Occurs on steep, rocky, high-elevation mountain slopes and in canyon bottoms within pine-oak or mixed-conifer-dominated forests between 7,000 and 9,500 ft. in moist loam soils associated with granite rock outcroppings and/or stabilized talus (AGFD 2004g).	In Arizona, found in the Santa Rita, Huachuca, and Chiricahua mountains (AGFD 2004g)	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None The parcel is within the geographic range of the species, but is well below known elevation range, lacks appropriate habitat and has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Huachuca milkvetch <i>(Astragalus hypoxylus)</i>	BLM - S (Gila)	Occurs in open, limestone rocky clearings in oak-juniper-pinyon woodland between 5,300 and 6,100 ft (AGFD 1999b; ARPC 2001).	Known only in the vicinity of the Huachuca and Patagonia mountains of southern Arizona (ARPC 2001).	None Parcel is outside known geographic range.	None Parcels are outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within the known geographic range and contains appropriate habitat, but is below known elevation range.	None Parcel is outside known geographic range.
Huachuca Mountains lupine <i>(Lupinus huachucae)</i>	COR - S	Found in pine forests on moderate to steep slopes at elevations from 5,000 to 6,700 ft (AGFD 2000b).	In Arizona, known from the Santa Rita, Huachuca, and Chiricahua Mountains (AGFD 2000b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range but only includes a small portion of the known elevation range and lacks appropriate habitat.	None Parcel is outside known geographic range.
Huachuca water-umbel <i>(Lilaeopsis schaffneriana var. recurva)</i>	Endangered; designated critical habitat BLM - S (Gila)	Found in cienegas or marshy wetlands at 2,000 to 6,000 ft elevation, and within Sonoran desert scrub, grassland, oak woodland, and conifer forest. Occurs in shallow water, saturated soil near seeps, springs, and streams. Requires perennial water, gentle stream gradients, and small- to medium-sized drainage areas (AGFD 2003).	Found in the Huachuca Mountains, headwaters of the San Pedro River, San Bernardino Valley/Black Draw, Canelo Hills/Turkey Creek, Sonota Creek, and San Rafael Valley (AGFD 2003; ARPC 2001).	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range although appropriate habitat may occur.	None Parcel is outside known geographic range and lacks appropriate habitat.	Possible Parcel includes appropriate habitat. Known to occur upstream and downstream from the parcel (SEINet 2017), but has not been identified on parcel (Celeste Andresen, TNC Property Manager).	None Parcel is outside known geographic range and lacks appropriate habitat.	Present Species was experimentally introduced to [REDACTED] (Titus and Titus 2008).	None Parcel is outside known geographic range and lacks appropriate habitat.
Hualapai milkwort <i>(Polygala rusbys)</i>	TNF - S COC - S	Strongly associated with ancient lacustrine, limestone-derived, soils in open desertscrub, desert grassland and juniper woodlands at elevations between 3,150 and 5,000 ft (AGFD 2003m; ARPC 2001; USFS 2011).	Species is known from central and west-central Arizona, in Yavapai and Mohave counties (AGFD 2003).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range and contains appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Joshua tree <i>(Yucca brevifolia)</i>	BLM - S (PHX)	Inhabits rocky, gravelly flats and slopes in Mohave desertscrub between 1,300 to 6,000 ft (SEINet 2017).	Found in California, Nevada, Utah and Arizona (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Kearney's blue star <i>(Amsonia kearneyana)</i>	BLM - S (Gila)	Occurs in two distinct habitats: open woodland on unconsolidated slopes of over 20 degrees, and canyon bottoms in full sun to partial shade (USFWS 2013a).	Species is known only from the slopes and canyons of the Baboquivari range of Pima County in southern Arizona at elevations from 3,600 to 6,000 ft (USFWS 2013a).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Kofa Mt. Barberry <i>(Berberis harrisoniana)</i>	BLM - S (PHX)	Occurs in the bottoms of deep, shady, rocky canyons at elevations of 2,200 to 3,500 ft (ARPC 2001).	Found in the Kofa, Sand Tank and the north end of the Ajo mountains in southwestern Arizona (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Large-flowered blue star <i>(Amsonia grandiflora)</i>	COR - S	Found on canyon bottoms and slopes in oak woodlands at elevations from 3,700 to 4,500 ft (AGFD 2003n).	Known only from Atascosa and Patagonia mountains of southern Arizona (AGFD 2003n).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Lemmon milkweed <i>(Asclepias lemmonii)</i>	COR - S	Found on canyons, roadsides, and in open woodlands in mountainous areas, often on limestone substrates at elevations from 5,050 to 7,200 ft (AGFD 2006a).	Known from Huachuca, Chiricahua, Baboquivari, and Santa Rita mountains (AGFD 2006b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Lemmon's lupine <i>(Lupinus lemmonii)</i>	COR - S	Found in desert grassland, oak-juniper woodlands, pine forests, sandy ridges, sandy washes at elevations from 4,000 to 6,800 ft (SEINet 2017).	In southern Arizona, known from Chiricahua, Dragon, Quitlan, Winchester mountains, and north of the Grand Canyon (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Lemmon's stevia <i>(Stevia lemmonii)</i>	COR - S	Found in oak and pine-oak forests and woodlands, rocky canyon slopes, ravines streambeds at elevations from 3,000 to 5,500 ft (AGFD 2004h).	Found in the Santa Rita, Santa Catalina, Rincon, Quitlan, and Patagonia mountains (AGFD 2004h).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range and contains appropriate habitat, but was not observed during floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Lemon lily (<i>Lilium parryi</i>)	COR - S	Found in montane conifer forest, mesic, shady canyon bottoms along perennial streams or adjacent hillside springs. Sandy soil that is high in organic material and remains saturated year-round at elevations from 5,500 to 7,800 ft (AGFD 2001m).	Known from the Santa Rita, Huachuca, and Chiricahua mountains (AGFD 2001m).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
Lyngholm's brake fern (<i>Pellaea lyngholmii</i>)	COC - S	Associated with talus and bedrock slopes in piñon - juniper woodlands (USFS 2011).	Known from only a few isolated sites in drainages in vicinity of Sedona, Yavapai and Coconino counties (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Maguire's coppermine milkvetch (<i>Astragalus cobrensis</i> var. <i>maguirei</i>)	COR - S	Found in shady canyons (near stream bottoms) and lower ledges both in full sun (often on rocky soils) and in shade (found on more organic soils composed of leaf litter) at elevations from 5,080 to 7,450 ft (AGFD 1999c; SEINet 2017).	Known only from Chiricahua and Patoncello mountains in southeastern Arizona (AGFD 1999c; SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Mapleleaf false snapdragon (<i>Mahrya [Maunandya] acerifolia</i>)	TNF - S	Occurs in rhyolite rock crevices and overhangs on shaded cliffs and rock ledges, generally with north- to east-facing walls at an elevation of 1,800 to 3,350 ft (AGFD 2005b).	Known only from Superstition Mountains and nearby vicinity, known from Hewitt Wash (SEINet 2017).	Possible Parcel is within known geographic and elevation range and may contain appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is outside known geographic and elevation range but may contain appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Mearns sage (<i>Salvia dorrii</i> ssp. <i>mearnsii</i>)	COC - S	Occurs in Sonoran desert scrub and Great Basin conifer woodland in powdery limestone-derived soils and clay and sandy soils (ARPC 2001; USFS 2011).	Endemic to central Arizona in the upper Verde River basin in Yavapai County; not known to occur in Coconino County (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Metcalfe's tick-trefoil (<i>Desmodium metcalfei</i>)	COC - S COR - S	Inhabits rocky slopes and canyons in grasslands and oak-piñon-juniper woodlands. (ARPC 2001; USFS 2011).	Occurs in portions of central and southeastern Arizona (SEINet 2017).	Possible There are no known records in the vicinity of the parcel but contains appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	None Parcel lacks appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	Possible There are no known records in the vicinity of the parcel, but it contains appropriate habitat.	Unlikely There are no known records in the vicinity of the parcel, but it contains appropriate habitat. However, species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Mexican hemlock parsley (<i>Conioselinum mexicanum</i>)	COR - S	Found on cool, shaded mountain slopes at elevations from 6,000 to 9,900 ft (AGFD 2001n; SEINet 2017).	Found from the Huachuca and Santa Rita mountains and San Francisco River north of Clifton (AGFD 2001n; SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is near to known geographic range but lacks appropriate habitat.	None Parcel is outside known geographic range.
Mexican tansy aster (<i>Ptilactis gentryi</i> [= <i>Machaeranthera mexicana</i>])	COR - S	Found in moist habitats, highland meadows, fields, roadsides, and stream and lake margins at elevations from 5,900 to 9,180 ft (AGFD 2004d).	Restricted to the Huachuca Mountains (AGFD 2004d).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range and contains limited amounts of appropriate habitat, but is below the known elevation range and has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Mogollon fleabane (<i>Eriogonum antichana</i>)	TNF - S	Occurs in granitic rock crevices or ledges on boulders and vertical rock faces, usually in canyons in association with chaparral up to pine forests. Elevations range from 3,500 to 7,000 ft (ARPC 2001).	Endemic to central Arizona occurring from the vicinity of Prescott to the Superstition Mountains (Pinal County) (SEINet 2017).	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.	Unlikely Parcel is within known geographic range and contains appropriate habitat, but is below known elevation range.	Unlikely Parcel is within known geographic range and contains appropriate habitat, but is below known elevation range.	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.	None Parcel is outside known geographic and elevation range, and lacks appropriate habitat.	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic and elevation range, and contains appropriate habitat.
Mogollon thistle (<i>Cirsium parryi</i> ssp. <i>mogollanicum</i>)	COC - S	Inhabits mesic soils along stream bottoms with conifer overstory at approximately 7,200 ft (AGFD 2005f; ARPC 2001).	Endemic to a spring in Dane Canyon in extreme southern Coconino County (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is near known highly restricted geographic range, but below known geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Mt. Dellenbaugh sandwort (<i>Arenaria aberrans</i>)	TNF - S COC - S	Found in meadows and meadow margins, primarily in oak and pine forest, but also associated with pine and juniper woodlands. Elevations range between of 5,500 to 9,000 ft (AGFD 2004j).	Primarily occurs in central and northwestern Arizona. There is an isolated record from the northern Superstition Mountains (SEINet 2017).	None Parcel is below the known elevational range and outside geographic range.	Unlikely Parcel is within known geographic range and contains appropriate habitat, but only spans a limited portion of the known elevation range.	None Parcel is within known geographic range but is below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range but is below known elevation range and lacks appropriate habitat.	Possible Parcel is within known geographic and elevation range and contains appropriate habitat.	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.	None Parcel is outside known geographic and elevation range and lacks appropriate habitat.
Navajo sedge (<i>Carex speciosa</i>)	Threatened; no designated critical habitat	Occurs near seep-springs on vertical cliffs of Navajo, Kayenta, DeChelly and Cedar Mesa sandstone within piñon-juniper woodland, from 4,200 to 7,600 ft (AGFD 2015e).	Formerly known only from a few localities in the Navajo Creek drainage (Coconino County). Recent surveys have documented this species in other drainage systems in Apache and Navajo Counties, as well as in San Juan County, Utah. (Arizona Ecological Services Field Office 2002).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
New Mexico bitterweed (<i>Hymenocys ambigua</i> var. <i>neomexicana</i>)	COR - S	Found in open woodlands (SEINet 2017).	Known only from the Animas and Peloncillo mountains in New Mexico (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Nichol's Turk's Head cactus <i>(Echinocactus horizontalis</i> var. <i>nicholii</i>)	Endangered; no designated critical habitat BLM - S (Gila)	Occurs in unshaded micro-sites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountainsides (AGFD 2008). Occurs at elevations ranging from 2,400 to 4,000 ft (USFWS 2009b).	Species is known from 3 isolated sites in southwestern Pinal and north-central Pima counties, Arizona and one site in Sonora, Mexico; none of which are in proximity to the GPO Activity Areas (USFWS 2009b). Species is not known to occur on TNF (Appendix A).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Nodding blue-eyed grass <i>(Sisynchium cernuum)</i>	COR - S	Found in pine-oak woodlands, wet edges of flowing streams or springs at elevation from 3,300 to 9,000 ft (SEINet 2017).	Records from several mountain ranges in southeastern Arizona, with most records from Rincon Mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Page springs agave <i>(Agave yavapaiensis)</i>	COC - S	Grows in semi-arid desert grassland to piñon-juniper woodland, at elevations between 3,000 and 4,000 ft (AGFD 2014b). Associated with pre-Columbian agricultural and settlement archeological features on open ridges above perennial stream reaches (Hodgson and Salywon 2013).	Known in Yavapai County, only from localized area in upper Verde Valley and tributaries (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Pecos Mariposa lily <i>(Calochortus gunnisonii</i> var. <i>perpulcher</i>)	COR - S	Found on hills and mountains (SEINet 2017).	Known only from vicinity of Santa Fe, New Mexico (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Peebles Navajo Cactus <i>(Pediocactus peeblesianus</i> var. <i>peeblesianus</i>)	BLM - S (Gila)	Occupies low hills and gentle slopes on all aspects in the Plains and Great Basin Grassland biotic community at elevations between 5,100 and 5,650 ft (U.S. Fish and Wildlife Service 2008a).	An endemic species to Arizona occupying a very small geographic area (7 miles in length by 1 mile in width) extending northwest to southeast within the immediate vicinity of Joseph City and Holbrook, Navajo County, Arizona (U.S. Fish and Wildlife Service 2008a).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Pinos altos flameflower (<i>Talinum humile</i>)	COR - S	Occurs in dry, shallow, gravelly, well-drained, rhyolitic soil terraces, often overlying bedrock. Known populations occur in Semidesert Grassland/Madreaan Evergreen Woodland transition communities at elevations from 4,000 to 8,000 ft (AGFD 2004).	Primarily found in southwestern New Mexico and Durango and Chihuahua, Mexico. Only two known populations in Arizona, both southeast of Sonoita in the Canelo Hills (AGFD 2004).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
Porsild's starwort (<i>Stellaria porsilii</i>)	COR - S	Found in partially shaded understory of pine, Douglas fir, and oak; also in open meadows at elevations from 7,000 to 9,200 ft (AGFD 2004).	Southeastern Arizona and a single peak in southwestern New Mexico. In Arizona, restricted to the Chiricahua Mountains (AGFD 2004).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Phillips' agave (<i>Agave phillipsiana</i>)	COC - S	Occurs in desert scrub associated with alluvial benches along perennial streams and riparian areas; several sites are located near pre-Columbian agricultural and settlement features (Hodgson 2001; Arizona Rare Plant Committee 2001; U.S. Forest Service 2011).	Originally known from 4 sites in Grand Canyon National Park; now known to occur in the Verde Valley on Coconino National Forest (Arizona Rare Plant Committee 2001; Southwest Environmental Information Network 2016).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Pima Indian mallow (<i>Abutilon parishii</i>)	TNF - S COR - S BLM - S (Gila) and PHX	Occurs on steep rocky slopes and hillsides in moist soils and full sun within higher elevation Sonoran desert scrub and semidesert grassland. In riparian areas, it occurs on flat terraces above canyon bottoms. Elevation ranges from 1,700 to 4,900 ft (Arizona Rare Plant Committee 2001; Arizona Game and Fish Department 2017).	Found in mountain ranges of Central Arizona including the Mineral Hills, Superstition, Picacho, Tortolita, and Dripping Springs mountains of Pinal County (ARPC 2001), the Santa Catalina, Rincon, Silverbell, and Tucson mountains of Pima County, the Santa Rita and Tumacacori mountains of Santa Cruz County, and in Little Shipp Wash and Cottonwood Creek near Bagdad in Yavapai County (AGFD 2000). Known from Arizona Trail south of Picketpost Trailhead and Highway 60 southwest of Picketpost Mountain (SEINet 2017).	Unlikely Area is within known geographic range and supports very limited areas of appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within close proximity to the known geographic range and contains appropriate habitat. HDMS record within 5 miles is likely from south of Picketpost Mountain.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Parcel is within geographic range and contains appropriate habitat. HDMS records within 5 miles.	Unlikely Parcel is within known geographic range and contains limited amounts of appropriate habitat, but the species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	Possible Parcel is within close proximity to known geographic range and contains appropriate habitat. HDMS records within 5 miles is likely from south of Picketpost Mountain.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Pima pineapple cactus <i>(Coryphantha scheeri var. robustispina)</i>	BLM - S (Gila)	Found at elevations below 4,000 ft, in desert scrubland or ecotone between desert scrubland and desert grassland, on relatively flat areas (less than 10 percent slope) (U.S. Fish and Wildlife Service 2007a).	Geographically restricted to southeast Arizona, specifically the valley floors between the Baboquivari Mountains on the west and the Santa Rita Mountains to the east, and in low densities in the northern areas of Sonora, Mexico (U.S. Fish and Wildlife Service 2007a).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Ripley wild buckwheat <i>(Eriogonum ripleyi)</i>	TNF - S COC - S	Occurs in white, calcareous substrates and volcanic tuff in Sonoran desert scrub and Pinyon Juniper Woodlands at elevations between 2,000 and 6,000 ft. (Arizona Rare Plant Committee 2001; Arizona Game and Fish Department 2017; U.S. Forest Service 2011).	Found near Horseshoe Lake and Chalk Mountain in Maricopa and Yavapai Counties, near Cottonwood in Yavapai County, in southwest Coconino County and adjacent areas in Mohave and Yavapai Counties, and near Frazier Wells in Coconino County (AGFD 1997).	None Parcel is outside known geographic range.	Unlikely Parcel is near the known geographic range, but lacks appropriate habitat.	None Parcel is outside known geographic range.	Unlikely Parcel is near the known geographic range and within the known elevation range, but lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Rock fleabane <i>(Erigeron saxatilis)</i>	COC - S	Inhabit sheer canyon walls, moist north-facing slopes, steep solid rock, and bedrock outcrops. Elevations range from 4,400 to 8,350 ft. Various exposure. Coconino sandstone seems to be preferred substrate. (Arizona Game and Fish Department 2017)	Coconino and Yavapai counties, above Mogollon Rim (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Appropriate habitat occurs in parcel and within known geographic range. HDMS records within 5 miles.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Round-leaf broom <i>(Eriogonum rotundatum)</i>	BLM - S (Gila)	Occurs on sandstone pavement and ledges, in sandy crevices among rocks, or in loose, drifted sand (SEINet 2017).	Known in a few localities in northeastern Arizona, all within the drainage of the Little Colorado River (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Rusby hawkweed <i>(Hieracium abscissum [= H. rusbyi])</i>	COR - S	Found in mixed conifer forests at high elevations from 8,800 to 9,300 ft (ARPC 2001).	In Arizona, known only from the Santa Catalina, Pinaleno, Chiricahua, and Huachuca Mountains (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Rusby's milkvetch <i>(Astragalus rusbyi)</i>	COC - S	Generally, found in relatively open-canopy areas or meadow environments in ponderosa pine forests or aspen groves at elevations of 5,400 to 8,000ft (ARPC 2001).	Vicinity of Flagstaff (west and northwest), slopes of San Francisco Peaks, south to Oak Creek Canyon on Coconino National Forest. Considered a narrow endemic to this area (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Rutter's false golden aster (<i>Heterotheca rutteri</i>)	COR - S	Found in grassland and oak savanna, level open grasslands, roadcuts, disturbed areas at elevations from 4,500 to 6,500 ft (SEINet 2017).	Found in areas south, east, and west of the Santa Rita Mountains in southern Arizona (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
Sacred mountain agave (<i>Agave verdensis</i>)	COC - S	Associated with pre-Columbian agricultural and settlement archaeological features. Found in semi-arid desert grassland to piñon-juniper woodland on ridges above perennial to intermittent water features (Hodgson and Salywon 2013).	Known from populations in the Verde Valley primarily in Yavapai County, but also occurs in south-central Coconino County, Arizona (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
Saiya (<i>Amoreuxia gonzalezii</i>)	COR - S	Found on rocky limestone hillsides at elevations from 4,200 to 4,600 ft (AGFD 2011, SEINet 2017).	Only known from Baboquivari, Rincon and Santa Rita mountains (AGFD 2011, SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Salt River rockdaisy aka Gila rockdaisy (<i>Pectyle gileensis</i> var. <i>salsensis</i>)	TNF - S	Associated with seeps on cliff faces, ledges, and rock outcrops at elevations between 3,000 and 4,000 ft (eFloras 2016b).	This variety is only known from a few localities in the Salt River Canyon (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.
San Francisco Peaks ragwort (San Francisco Peaks groundsel) (<i>Puckeria [Senecio] franciscana</i>)	Threatened; no designated critical habitat	Grows on gravelly, sandy loams associated with talus slopes in alpine tundra above southwestern spruce-fir or bristlecone pine forests at elevations greater than 10,900 ft (Arizona Ecological Services Field Office 2009b; Arizona Rare Plant Committee 2001; U.S. Fish and Wildlife Service 2010; Arizona Rare Plant Committee 2001).	Known range limited to San Francisco Peaks, Coconino County; populations occur on Humphreys, Agassiz, Fremont, and Doyle peaks (Arizona Ecological Services Field Office 2009b; Arizona Rare Plant Committee 2001).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
San Pedro River wild buckwheat (<i>Eriogonum terrenatum</i>)	BLM - S (Gila)	Occurs on clayey outcrops and eroded, clay slopes and flats (SEINet 2017).	Known from two geographically separate areas: near Vail in Pima County, and near Fairbanks in Cochise County (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Santa Cruz beehive cactus (<i>Coryphantha recurvata</i>)	COR - S	Found in alluvial soils of valleys and foothills in desert grassland and oak woodland. Plants are either on rocky hillsides with good grass cover or in rock crevices where runoff accumulates and provides more moisture than the surrounding soils (AGFD 2001, SEINet 2017).	Generally, north and west of Nogales in Tumacacori, Atascosa, and Pajarito Mountains (AGFD 2001, SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Santa Cruz starleaf (<i>Choiya mollis</i>)	COR - S	Found on bottoms and slopes of canyons on gravelly, sandy, and cobbly loams in the shade of oaks or other trees, or rocks in Madrean Evergreen Woodland at elevations from 4,000 to 4,900 ft (ARPC 2001, SEINet 2017).	Found in Atascosa, Pajarito, Patagonia and south end of the Whetstone mountains (ARPC 2001, SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Santa Cruz striped agave (<i>Agave parviflora</i> sp. <i>parviflora</i>)	COR - S	Found in desert grassland and oak woodland, open rocky or gravelly slopes and ridges at elevations from 3,600 to 4,600 ft (ARPC 2001, SEINet 2017).	Found in San Luis and Pajarito mountains of southern Arizona (ARPC 2001, SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Schott Wire-lettuce (<i>Stephanomeria schottii</i>)	BLM - S (PHX)	Inhabits semi-stabilized sand dunes between 400 to 800 ft (ARPC 2001).	In Arizona known only from southern Yuma and Maricopa counties (ARPC 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Sentry milk-vetch (<i>Astragalus crenophyllax</i> var. <i>crenophyllax</i>)	Endangered, no designated critical habitat	Grows on a white layer of Kaibab limestone with little or no soil, in an unshaded opening in the piñon-juniper-cliffrose plant community above 4,000 ft (Arizona Ecological Services Field Office 2001).	Known only from three locations on the South and North Rim of the Grand Canyon (Arizona Ecological Services Field Office 2001).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Shade violet (<i>Viola umbraticola</i>)	COR - S	Occurs in shady areas in canyon bottoms, usually in riparian ponderosa pine stands at elevations from 5,200 to 7,500 ft (AGFD 2004).	Found in southern Arizona and northern Mexico (AGFD 2004).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Siler pincushion cactus (<i>Pediocactus sileri</i>)	Threatened; no designated critical habitat	Grows on gypsiferous clay and sandy soils of the Moenkopi Formation within the Great Basin Desert Shrub community from 2,800 to 5,400 ft. (U.S. Fish and Wildlife Service 2008c; Arizona Rare Plant Committee 2001).	All known localities occur in Kane and Washington Counties, Utah, and in northern Mohave and northwestern Coconino counties, Arizona. (Arizona Rare Plant Committee 2001; U.S. Fish and Wildlife Service 2008c).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Smooth baby bonnets (<i>Coursetia glabella</i>)	COR - S	Found in dry, partially shaded slopes in Madrean oak woodland, oak-juniper, and pine-oak forest at elevations from 5,000 to 7,200 ft (AGFD 2001)	Known from the Huachuca, Chiricahua, and Patagonia Mountains and Canelo Hills (AGFD 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Sonoran noseburn (<i>Troglia laciniata</i>)	COR - S	Found in mountainous areas with pine-oak woodland and areas of low rolling hills dissected by narrow, steep-walled canyons at the transition zone between Madrean Evergreen Woodland communities and Semidesert Grassland communities at elevations from 5,000 to 7,025 ft (AGFD 2004).	Found in southeastern Arizona, Sonora, and Chihuahua (AGFD 2004).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.
Southwestern muhly (<i>Muhlenbergia palmeri</i>) [= <i>M. duboides</i>]	COR - S	Can be found in rocky drainages and sandy soil along creeks (SEINet 2017).	Known from the Baboquivari, Huachuca, and Santa Rita mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Sunset crater beardtongue (<i>Penstemon claret</i>)	COC - S	Inhabits volcanic cinder fields where other plant species are generally lacking in flat to gently rolling topography in ponderosa pine forest (Arizona Game and Fish Department 2017; U.S. Forest Service 2011).	Known from north-central Arizona; Sunset Crater and vicinity, immediately north of Flagstaff (SEINet 2017).	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.	None Parcel is outside known highly restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Supine bean (<i>Macropitium supinum</i>)	COR - S	Found in desert grassland, oak-jumper woodlands, pine forests, sandy ridges, sandy washes at elevations from 4,000 to 6,000 ft (ARPC 2001, SEINet 2017).	Reported from the Atascosa, Pajarito, San Luis, and Patagonia mountains, and also in the southern Santa Cruz River drainage (ARPC 2001, SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Sycamore Canyon muhly (<i>Muhlenbergia elongata</i> [= <i>M. serophylla</i>])	COR - S	Grows on rock outcrops, cliffs, canyon walls, and moist rock walls on rhyolitic and volcanic conglomerates (SEINet 2017).	Known from the Baboquivari, Chiricahua, Huachuca, Pajarito, Santa Catalina, and Santa Rita mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Tepic flameflower (<i>Tatnium marginatum</i>)	COR - S	Found in "mountainous areas with pine-oak woodland and areas of low rolling hills dissected by narrow, steep-walled canyons at the transition zone between Madrean Evergreen Woodland communities and Semidesert Grassland communities" at elevations from 5,000 to 7,025 ft (AGFD 2004).	Found in southeastern Arizona and the Sierra Madre Occidental of Mexico. In the U.S., limited to a few isolated populations in the Huachuca Mountains and Canelo Hills (AGFD 2004).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the known geographic range and may contain limited areas of appropriate habitat, but only spans a limited portion of the known elevation range, and the species has not been observed in floristics surveys (McLaughlin, Geiger and Bowers 2001).	None Parcel is outside known restricted geographic range.
Texas purplespike (<i>Healectris warnockii</i>)	COR - S	Found in rich humus soils beneath rocks and fallen oaks along streambeds in shady canyon bottoms at elevations from 5,000 to 7,000 ft (Coleman 2002).	In Arizona, known only from the Chiricahua, Mule, and Huachuca mountains (Coleman 2002).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known restricted geographic range.
Tonto Basin agave (<i>Agave delamateri</i>)	TNF - S COC - S	Occurs in Arizona Upland Sonoran desert scrub in association with hilly slopes near larger rivers between 2,350 and 5,100 ft, and is associated with pre-Columbian agricultural and settlement features (ARPC 2001).	Only known from the Tonto Basin, including Pinal Creek (Mark Taylor, USFS pers. comm.), and Verde Valley (Southwest Environmental Information Network 2016; Arizona Rare Plant Committee 2001).	None Parcel is outside known restricted geographic range.	Possible Parcel is within known geographical range, contains potential habitat, and species occurs in the vicinity.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Toumey groundsel (<i>Packera [Senecio] neomexicana</i> var. <i>toumeyi</i>)	COR - S TNF - S	This variety is associated with loose rocky soil in oak chaparral or coniferous forests, generally at elevations of 5,500 to 9,200 ft (Arizona Game and Fish Department 2017). One record from ~4,000 ft. associated with ponderosa pines (SEINet 2017).	Known from isolated localities in east central Arizona including localities in the Pinal Mountains, and southeastern Arizona including Chiricahua, and Santa Catalina mountains (SEINet 2017).	Unlikely Parcel contains limited amounts of appropriate habitat and is within the known geographic range, but is below the known elevation range.	None Parcel contains appropriate habitat but is outside known geographic range.	None Parcel contains appropriate habitat but is outside known geographic and elevation range.	None Parcel contains appropriate habitat but is outside known geographic and elevation range.	None Parcel contains appropriate habitat but is outside known geographic range.	Unlikely Parcel contains appropriate habitat and is within known geographic range, but is below the known elevation range.	None Parcel is within known geographic range, but is below the known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but is below the known elevation range and lacks appropriate habitat.	Unlikely Parcel is within known geographic range and contains appropriate habitat, but the species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel contains appropriate habitat but is outside known geographic range.
Trans-Pecos Indian paintbrush (<i>Castilleja nervata</i>)	COR - S	Found on rocky slopes or openings, pine to pine-oak or pine woods, rarely in pine-fir at elevations from 2,460 to 7,550 ft (SEINet 2017).	Isolated occurrences from the Chiricahua, Santa Rita and White mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Trelease agave (<i>Agave schottii</i> var. <i>releasei</i>)	COR - S	Found in gravelly to rocky places, mostly in desert scrub grasslands, juniper and oak woodlands (SEINet 2017).	Only known from Santa Catalina Mountains (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Tumamoc globeberry (<i>Tumamoca macdougalii</i>)	BLM - S (Gila and PHX)	Occurs in the shade of nurse plants along gullies and sandy washes in Sonoran desertscrub below 3,000 ft (Arizona Game and Fish Department 2017).	Found throughout Pima County, and also occurs in the extreme southern portions of Pinal and Maricopa counties.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is adjacent to the known geographic range, above the known elevation range, and lacks appropriate habitat.	None Parcel is outside known geographic range.
Tusayan rabbitbrush aka Disturbed rabbitbrush (<i>Chrysothamnus molestus</i>)	COC - S	Typically associated with openings with piñon-juniper woodland and shrub-grasslands on slopes and flats; rarely found on steep hillsides. Grows on calcareous soils formed from Kaibab Limestone, basalt, and the Chinle Formation. Species often establishes after human (mechanical) disturbance to the landscape (Anderson and Hevron 1993; Arizona Game and Fish Department 2017; U.S. Forest Service 2011).	Known from localities in Coconino County from the South Rim of Grand Canyon to north of Flagstaff. Two other localities on the Navajo Nation in Navajo County (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Verde breadroot (<i>Pediomelum verdiense</i>)	TNF - S COC - S	Associated with Tertiary Verde limestone-derived soils and found in mixed Sonoran desert scrub and open juniper woodland as well as compacted soils along roadways between 3,200 and 4,350 ft (Welsh and Licher 2010).	Known from several localities in the upper and middle Verde River Basin including near the towns of Camp Verde and Perkinsville, Yavapai County (Welsh and Licher 2010).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is adjacent to known geographic range and may contain suitable habitat, but is below the known elevation range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Virlet paspalum (<i>Paspalum virletii</i>)	COR - S	Found in sandy soil in canyon bottoms at elevations from 2,600 to 3,350 ft (SEINet 2017).	Occurs from southern Arizona and Mexico. Arizona specimens from Pajarito Mountains and Brawley Wash (SEINet 2017).	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.	None Parcel is outside known restricted geographic range.
Welsh's milkweed (<i>Asclepias welshii</i>)	Threatened; designated critical habitat	Occurs in open, sparsely vegetated, sand dunes derived from Navajo sandstone, and on the lee slopes of actively drifting sand dunes from 4,700 to 6,250 ft. Surrounding vegetation communities include sagebrush, juniper, and ponderosa pine (U.S. Fish and Wildlife Service 2016b).	Known from a few concentrated areas on the Coral Pink Sand Dunes and the Sand Hills area of Kane County, Utah. Small populations are known from near Page, Coconino County, Arizona, and the Paria-Vermillion Cliffs Wilderness Area near the Utah/Arizona border. Recently collected in Navajo Co., AZ (U.S. Fish and Wildlife Service 2016b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Whiskfern (<i>Pistotum nudum</i>)	COR - S	Found in rock crevices, on trees, and on ground at elevations up to 4,000 ft (SEINet 2017).	Arizona specimens are from Sycamore Canyon, the Pajarito Mountains, and one from the Rincon Mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is adjacent to known restricted geographic range and may contain appropriate habitat, but is above known elevation range.	None Parcel is outside known geographic range.
Whiteflowered cinquefoil (<i>Potentilla albiflora</i>)	COR - S	Found in open coniferous forests and rocky slopes at elevations from 7,500 to 9,500 ft (Kearney and Peebles 1960).	Occurs in eastern half of Arizona from Mexico to Utah, with most known occurrences in the Huachuca, Rincon, Santa Catalina, and Pinaleno mountains (SEINet 2017).	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range and may contain appropriate habitat, but is below the known elevation range.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.	None Parcel is within known geographic range, but below known elevation range and lacks appropriate habitat.
Wiggin's milkweed vine (<i>Metastelma mexicanum</i> [= <i>Cynanchum wigginsii</i>])	COR - S	Found in rocky slopes and canyons, oak woodlands in desert mountain ranges at elevations from 3500-5500 ft (SEINet 2017).	Known from the Canelo Hills and the Mule, Pajarito, Patagonia and Santa Rita mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and appropriate habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
<i>Wislizeni gentian</i> (<i>Gentianella wislizeni</i>)	COR - S	Found in rocky sites in pine-oak and pine woodlands at elevations from 6,560 to 8,370 ft (SEINet 2017).	Restricted to Chiricahua and White mountains (SEINet 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
INVERTEBRATES													
<i>A Caddisfly</i> (<i>Lepidostoma knullii</i>)	COC - S	Natural history information specific to this species is lacking, however the genus occurs in headwater springs and streams and has a strictly aquatic larval stage (Morse and Holzenthal 2008b).	The species is known from Oak Creek Canyon, south of Flagstaff, and Greer in the White Mountains of Arizona (Ross 1946; Morse and Holzenthal 2008b; Blinn and Ruitter 2009).	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range for the species and contains potentially suitable aquatic habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.
<i>A Caddisfly</i> (<i>Wormaldia planae</i>)	TNF - S COC - S	The species has a strictly aquatic larval stage and is found in erosional stream environments (Morse and Holzenthal 2008a).	In Arizona, known only from a few localities which include Fossil and Beaver creeks in the Verde River basin within Gila and Yavapai counties (Muñoz-Quesada and Holzenthal 2008; Morse and Holzenthal 2008b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
<i>A Caddisfly</i> (<i>Limnephilus Granti</i>)	COR - S	This species occurs in flowing water in Ponderosa pine habitats (NatureServe 2017).	Location information for this species of caddisfly is limited to the type locality (Grant Creek, Pinaleno Mountains, Graham County) and two locations near Greer, Arizona (Apache County) (NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
<i>A Cave Obligate Pseudoscorpion</i> (<i>Tuberochernes uhicksi</i>)	COR - S	The species is known from a single locality where it was found under stones within Fly Cave in the Santa Rita Mountains. (Muchmore 1997).	The species has been documented from a single locality, Fly Cave, Gardner Canyon within the Santa Rita Mountains in Santa Cruz County, Arizona (Muchmore 1997).	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.	None Parcel is outside known geographic range which is limited to a single cave in the Santa Rita Mountains.
<i>A Mayfly</i> (<i>Fallcoon autoni</i>)	TNF - S	Little is known about the habitat requirements of this species, but mayfly larvae require aquatic environments.	Within Arizona the species is only known from a single specimen reported in a collection from 1892 within Salt River Canyon, Gila County, Arizona (McCafferty 2006).	None Parcel is outside known geographic range which is limited to a single locality from the Salt River Canyon reported in 1892.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.	None Parcel is outside known geographic range and the species is known from only a single locality in Arizona.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
A Mayfly <i>(Moribaetis mimbresaurus)</i>	COC - S	Little is known about the habitat requirements of this species but mayfly larvae require aquatic environments and an adult of the species was collected within aquatic habitat.(McCafferty 2007).	The species is known from a single locality in Oak Creek Canyon at Pumphouse Wash, Coconino County (McCafferty 2007).	None	None	None	None	None	None	None	None	None	None
Arizona cave amphipod <i>(Stygobromus arizonensis)</i>	BLM - S (Gila)	Inhabits aquatic habitats in underground mines and caves (Arizona Game and Fish Department 2003a).	Found in extreme southeast Arizona, Cochise County; at Flying "H" Ranch (10 miles southwest of Bisbee) and at a small mine spring near Paradise, Arizona (Arizona Game and Fish Department 2003a).	None	None	None	None	None	None	None	None	None	None
Balmorhea saddle-case caddisfly <i>(Protophila balmorhea)</i>	COC - S	Occur in stream and spring environments with strong discharge and cobble substrates supporting algae for larval forage (Moulton, Stewart, and Young 1994). Have a strictly aquatic larval stage.	In Arizona, known only from springs and streams in Oak Creek in the vicinity of Page Springs (town) including Bubbling Ponds Fish Hatchery and Oak Creek below Page Springs Fish Hatchery, Yavapai County (Moulton, Stewart, and Young 1994).	None	None	None	None	None	None	None	None	None	None
Bearded mountaineer <i>(Oreohelix barbara)</i>	COR - S	Found in rock rubble with an abundance of leaf litter from deciduous trees along creeks in canyon bottoms (BISON-M 2017b).	Restricted to the Mogollon Mountains of New Mexico and the Chiricahua Mountains of Arizona (BISON-M 2017b).	None	None	None	None	None	None	None	None	None	None
Bylas springsnail <i>(Pyrgulopsis arizonae)</i>	BLM - S (Gila)	Associated with mildly thermal springs along the Gila River (Arizona Game and Fish Department 2015a).	The known range of the species is limited to three spring complexes near Bylas, Arizona; Tom Niece Spring complex, Cold Springs and Porter Wash, and Bylas Spring (Arizona Game and Fish Department 2015a).	None	None	None	None	None	None	None	None	None	None

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
California floater <i>Anodonta californiensis</i>	COC - S	Inhabit shallow areas in unpolluted lakes, reservoirs, and perennial streams with stable water levels and low velocity flow. Typically found in mud or sand within pools, near channel banks, and in sedge occupied substrates. Dependent on fish as hosts during its larval stage (Culver, Fitak, and Myers 2012; Arizona Game and Fish Department 2017).	Historically found throughout the Colorado and Gila River basins; in Arizona, currently only found in the Black River a tributary of the Salt River. Believed to be severely restricted in the Upper Black River drainage of east-central Arizona (Wells and Allen 2014; Culver, Fitak, and Myers 2012).	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	Unlikely Parcel is within historic geographic range and may contain appropriate habitat; however, this species' current range is over 50 miles from this area.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	Unlikely Parcel is within historic geographic range and contains appropriate habitat; however, this species' current range does not include this area which within Arizona is currently limited to the Black River. HDMS records within 5 miles are likely historic records.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.	None Parcel is outside known geographic range, which within Arizona is currently limited to the Black River.
Cestus skipper <i>Atrytonopsis cestus</i>	COR - S	Habitat for the species typically consists of steep-sided rocky canyons and gullies, and rocky outcrops along hills with steep faces within Sonoran desertscrub and semi-desert grasslands within the elevations containing saguaro cactus (CITE). The larval food plant for the species is known to be bamboo mulhly (Glasberg 2001).	Primarily found in the Baboquivari Mountains and adjacent foothills; also reported from the Atascosa, Tumacacori, Santa Catalina, and Galuro Mountains (Arizona Game and Fish Department 2003d).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range, and the larval host plant, bamboo mulhly.	None Parcel is outside known geographic range, and the larval host plant, bamboo mulhly.	None Parcel is outside known geographic range, and the larval host plant, bamboo mulhly.	None Parcel is outside known geographic range, and the larval host plant, bamboo mulhly.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely The parcel is within the geographic range of the species and potential habitat is on the parcel but species has not been observed in floristics surveys (McLaughlin, Geiger, and Bowers 2001).	None Parcel is outside known geographic range.
Chiricahua water scavenger beetle <i>Cymbiodysia arizonica</i>	COR - S	Larvae and adults are aquatic, most often found along water's edge. Pupation occurs in moist soil along water's edge (Arizona Game and Fish Department 2003f).	The known range of the species is restricted to the Chiricahua Mountains in Arizona (Arizona Game and Fish Department 2003f).	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.	None Parcel is outside known geographic range, which is limited to the Chiricahua Mountains.
Clark Peak talussnail <i>Sonorella christeneni</i>	COR - S	Found in rockclides (AGFD 2003k).	The known range of the species is restricted to Clark Peak in the Pinalacho Mountains from 6,530 to 9,100 ft (AGFD 2003k).	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.	None Parcel is outside known geographic range, which is limited to Clark Peak in the Pinalacho Mountains.
Fossil springsnail <i>Pyrgulopsis simplex</i>	TNF - S COC - S	Little of this species natural history is known, but members of the genus are typically associated with rocks or aquatic macrophytes in moderate stream currents (Tonto National Forest 2000). Elevational range from 4,140 to 4,310 ft (AGFD 2003i).	The species is known from only two localities near Strawberry, Arizona. One is an unnamed spring in the NW corner of Gila County and the other locality is Fossil Springs in Yavapai County (AGFD 2003i).	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.	None Parcel is outside known geographic range for the species which is limited to Fossil Springs, and an unnamed spring near Strawberry, Arizona.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
<i>Gila tryonia</i> (<i>Tryonia gila</i>)	BLM - S (Gila)	Associated with mildly thermal springs along the Gila River (Hershler 1994).	The known range is limited to several springs that occur north of Gila River Drainage in the immediate vicinity of Bylas, Arizona (Hershler and Landye 1988).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
<i>Huachuca giant skipper</i> (<i>Agathymus evansi</i>)	COR - S	Found in mixed pine-oak-juniper woodland with stands of its host, <i>Agave parryi</i> var. <i>huachuensis</i> . May also use <i>Agave palmeri</i> (Arizona Game and Fish Department 2001b).	Restricted to the Huachuca Mountains from 5,600 to 5,800 ft (Arizona Game and Fish Department 2001b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is adjacent to known geographic range.	None Parcel is outside known geographic range.
<i>Huachuca springsnail</i> (<i>Pyrgulopsis thompsoni</i>)	COR - S	Occurs in marshy areas characterized by various aquatic and emergent plant species that occur within plains grasslands, oak and pine-oak woodlands, and coniferous forest vegetation communities (AGFD 2003s).	Occurs in springs and cienegas in and around the Huachuca Mountains and the Canelo Hills at elevations between 4,500 and 7,000 ft (Arizona Game and Fish Department 2003s).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel contains appropriate habitat and is within known range.	None Parcel is outside known geographic range, which is limited to the Huachuca Mountains and Canelo Hills.
<i>Hydrobiid springsnail</i> (<i>Pyrgulopsis</i> spp.)	BLM - S (Gila and PHX)	Generally, associated with spring systems in Arizona but also associated with other lotic systems (streams, creeks, cienegas) (Hershler 1994).	In Arizona, species are restricted to isolated occurrences within the Colorado River, Verde River, Gila River, and Rio Yaqui River drainages (Hershler 1994).	None Parcel is outside known geographic range.	Unlikely Parcel may contain appropriate aquatic habitat but no spp. recorded from this drainage (Hershler and Landye 1988).	None Parcel is approximately 10 miles south of isolated occurrence in Verde River but does not contain appropriate habitat (Hershler and Landye 1988).	Unlikely Parcel may contain appropriate aquatic habitat but no spp. recorded from this drainage (Hershler and Landye 1988).	Unlikely Parcel may contain appropriate aquatic habitat but no spp. recorded from this drainage (Hershler and Landye 1988).	None Parcel lacks appropriate habitat.	Unlikely Parcel may contain appropriate aquatic habitat but no spp. recorded from this drainage (Hershler and Landye 1988).	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
<i>Kanab ambersnail</i> (<i>Oxyloma haydeni kanabensis</i>)	Endangered; no designated critical habitat	Occurs in semiaquatic vegetation supplied by springs or seeps at the base of sandstone or limestone cliffs at elevations of approximately 2,900 ft. Requires shallow standing water or a perennially wet soil surface, as well as grass or sedge cover (U.S. Fish and Wildlife Service 1995).	Known from two populations: Vasey's Paradise along the Colorado River in the Upper Grand Canyon, Coconino County, AZ, and one site in Kane County, Utah (U.S. Fish and Wildlife Service 1995).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
<i>Mimic talussnail</i> (<i>Sonorella imitator</i>)	COR - S	Found in rockslides (Arizona Game and Fish Department 2015j).	Restricted to Clark Peak in the Pinaleno Mountains from 6,680 to 10,280 ft (Arizona Game and Fish Department 2015j).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Monarch butterfly <i>(Danaus plexippus plexippus)</i>	BLM - S (Gila and PHX)	Monarch larvae (caterpillars) in Arizona are known to feed almost exclusively on milkweed species in the genus <i>Asclepias</i> and have occasionally been observed feeding on fringed twinevine (<i>Funastrum cynanchoides</i>) (Morris, Kline, and Morris 2015).	Adult monarchs are also known to overwinter and breed in the low deserts of Arizona in areas where water and food (flower nectar) resources are abundant. These areas are generally represented by urban environments (e.g., Yuma, Phoenix and vicinity, Tucson) (Morris, Kline, and Morris 2015).	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.
Net-winged midge <i>(Agallion arizonicus)</i>	TNF - S	Requires swift-moving streams, larvae typically associated with waterfalls, that support its larvae. Adults do not leave the riparian corridors (Tonto National Forest 2000).	Reported as occurring in Gila and Graham counties within Arizona (Arizona Game and Fish Department 2003p). Currently known only from Workman Creek in the Sierra Ancha Mountains (Tonto National Forest 2000). Workman Creek drains the south end of the Anchas to Salt River.	None Parcel does not contain appropriate habitat and is outside known geographic range.	Unlikely Parcel drains eastern slopes of Sierra Anchas and occurs in the general vicinity of known locality; unlikely that this small headwater stream supports swift-moving water or waterfalls.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
New Mexico talus snail <i>(Sonorella hachiana peloncillensis)</i>	COR - S	Found in rubble and talus slopes (Lang and Gilbertson 2010).	This species has been reported only from the type locality in Skull Canyon, Peloncillo Mountains, Hidalgo Co. (Metcalfe and Smart 1997).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within the known geographic range, but lacks suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Page springsnail <i>(Pyrgulopsis morrisoni)</i>	COC - S	Typically occurs on firm substrates (rocks, vegetation, floating algal mats and submerged woody debris) in association with slow to moderate flows at the spring source. Numbers of individuals appear to decline with increasing distance from the spring source (Arizona Game and Fish Department 2017).	Known from several springs along Oak and Page Spring creeks complex, Yavapai County, Arizona (Arizona Game and Fish Department 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Parker's cyloepus riffle beetle <i>(Cyloepus parkeri)</i>	TNF - S	Associated with perennial, flowing streams within stream riffles (Arizona Game and Fish Department 2017).	Known only from two creeks in Bloody Basin (Arizona Game and Fish Department 2017, Tonto National Forest 2000).	None Parcel is outside known geographic range and does not contain suitable habitat.	Unlikely Parcel is adjacent known geographic range.	Unlikely Parcel is near known localities and there are HDMS records within 5 miles, but lacks appropriate habitat.	Unlikely Parcel is adjacent known geographic range, contains potential habitat.	Unlikely Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Finaléño monkey grasshopper <i>(Eumorsea pinaleno)</i>	COR - S	Found in spruce-fir forests (Arizona Game and Fish Department 2001h).	Restricted to Pinaléño Mountains above 9,000 ft. Known from only four specimens. Lack of wings limits dispersal ability (Arizona Game and Fish Department 2001h).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Finaléño mountain snail <i>(Oreohelix grahamensis)</i>	COR - S	Found in leaf litter in and around talus (Arizona Game and Fish Department 2015f).	Found between Clark Peak and Heliograph Peak in the Pinaléño Mountains from 6,590 to 10,080 ft (Arizona Game and Fish Department 2015f).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Finaléño talussnail <i>(Sonorella grahamensis)</i>	COR - S	Found in rockslides (Arizona Game and Fish Department 2015i).	Restricted to the northeastern slope of Mt. Graham south to the vicinity of the Arcadia Campground in the Pinaléño Mountains from 6,000 to 10,000 ft (Arizona Game and Fish Department 2015i).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Sabino Canyon damselfly <i>(Argia sabino)</i>	COR - S	Found in upper Sonoran riparian, sycamore and ash (Arizona Game and Fish Department 2001d). The larvae of the species is aquatic and primarily associated with stream habitats (AGFD 2001).	Known only from the Santa Catalina Mountains from 3,000 to 5,000 ft (Arizona Game and Fish Department 2001d).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range of the species, but does not contain suitable aquatic habitat for the larval stages of this species.	None Parcel is outside known geographic range.
Sonoran talussnail <i>(Sonorella magdalenensis)</i>	COR - S BLM - S (Gila)	Usually found in taluses or "slides" of coarse broken rock, generally found in crevices one to several feet below the surface at elevations between 2,750 to 6,000 ft (839-1150 m) (Arizona Game and Fish Department 2017).	In Arizona from Pima and Santa Cruz counties. Also in Sonora, Mexico (Arizona Game and Fish Department 2017).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is within known geographic range but does not contain appropriate habitat of taluses or slides.	None Parcel is outside of known geographic range.
Stephan's riftle beetle <i>(Heterobis stephani)</i>	COR - S	Occurs in waterlogged, decomposing wood, leaf litter, and detritus in small seeps and springs (Arizona Game and Fish Department 2002h).	Total range is limited to Bog, Kent, and Sylvester Springs, all in Madera Canyon in the Santa Rita Mountains from elevations from 5,000 to 7,000 ft (Arizona Game and Fish Department 2002h).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Succineid snails (<i>Succineidae</i> spp.)	BLM - S (Gila and PHX)	Terrestrial, air breathing snails that are generally found in the immediate vicinity of moist/wet environments (Arizona Game and Fish Department 2017).	Very little definitive information is available regarding the distribution and of occurrence of this family in Arizona. Some species are considered to be widespread and common (e.g., <i>Succinea</i> spp.) while others have highly restricted ranges (e.g., <i>Oxytoma haydeni</i> ; known in Arizona only from isolated springs in the Grand Canyon) (Bequaert and Miller 1973; Arizona Game and Fish Department 2017).	Possible Parcel may contain appropriate moist/wet environments (springs) but these are not common.	Possible Parcel may contain appropriate habitat.	None Parcel lacks appropriate habitat.	Possible Parcel may contain appropriate habitat.	Possible Parcel may contain appropriate habitat.	None Parcel lacks appropriate habitat.	Possible Parcel may contain appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
Sunrise skipper (<i>Adopaeoides privitzi</i>)	COR - S	Found in cienegas in arid grassland regions of southeastern Arizona uplands (Arizona Game and Fish Department 2001a).	Presently known from Pima, Cochise and Santa Cruz counties (Arizona Game and Fish Department 2001a).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is outside known geographic range.	Present Species has been documented within the parcel.	None Parcel is outside known geographic range.
Wet Canyon talussnail (<i>Sonorella macrophallus</i>)	COR - S	Found on talus slopes near the canyon bottom along a perennial reach (Arizona Game and Fish Department 2015k).	Restricted to Wet Canyon on the northeastern slope of the Pinaleno Mountains from 6,050 to 7,400 ft (Arizona Game and Fish Department 2015k).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
FISH													
Apache trout (<i>Oncorhynchus apache</i>)	Threatened; no designated critical habitat	Occurs at elevation of 5,780 ft or higher in cool, clear streams and rivers or in pools with cover, such as overhanging trees (Arizona Game and Fish Department 2001q).	Currently restricted to the headwaters of the Salt, Little Colorado, and Blue rivers in the White Mountains of Arizona (Arizona Game and Fish Department 2001q).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Bluehead sucker (<i>Catostomus discobolus</i>)	BLM - S (Gila)	Occur in a variety of aquatic habitats from headwater streams to large rivers (Minckley and Marsh 2009; Arizona Game and Fish Department 2017).	Found throughout much of the Colorado River and its major tributaries upstream of Lake Mead, including the Little Colorado River and East Clear Creek. May be found in a few areas on the Navajo Reservation, and in the San Juan Drainage (Arizona Game and Fish Department 2017; Minckley and Marsh 2009).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Possible Parcel is located within tributary with documented occurrence records and contains appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Colorado pikeminnow <i>(Psychocheilus lucius)</i>	Endangered; no designated critical habitat	Inhabits the mainstem of large rivers, usually over coarse (e.g., cobble) substrates associated with swift flows; habitat includes eddies, and large pools (Minkley and Marsh 2009).	Found at elevations below 4,000 ft, endemic to the Colorado River basin. Historically, the range for this species included Wyoming, Colorado, Utah, Nevada, California, New Mexico, and Baja California Norte and Sonora, Mexico. Naturally occurring populations are considered extirpated from Arizona. Two "experimental non-essential" populations have been reintroduced to the Salt River drainage and the Verde River drainage; status of these populations is unknown. (Arizona Game and Fish Department 2017).	None Parcel lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown but for the purposes of this report we consider at least some perennial water to be present, but parcel is outside of known reintroduced locations.	None Parcel lacks appropriate habitat.	None Parcel is outside of known reintroduced locations.	None Parcel is outside of known reintroduced locations.	None Parcel lacks appropriate habitat.	None Considered extirpated from Arizona and introduced populations are not in proximity to this parcel. San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an uncapped artesian well (C. Andresen, TNC, pers. comm.).	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
Desert pupfish <i>(Cyprinodon macularius)</i>	Endangered; designated critical habitat BLM - S (Gila and PHX)	Occurs in perennial aquatic habitats (Minkley and Marsh 2009). This species tolerates saline and warm water (U.S. Fish and Wildlife Service 1986). Historically inhabited shallow springs, small streams, and marshes at elevations below 4,000 ft.	Critical habitat for this species is designated for 17.95 acres in extreme SW Pima County, Arizona (at Quitobaquito Spring' in Organ Pipe National Monument) and Imperial County, California (SI FR 10842). No natural populations of this fish remain in Arizona, but it has been introduced at Ayer Lake at the Boyce Thompson Arboretum (Tonto National Forest 2000). Introduced to cold spring, AD Wash, and Finley Tank in Arizona (cite)	None Parcel lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown but for the purposes of this report we consider at least some perennial water to be present, but parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	None Parcel may contain appropriate perennial water habitat but the extent to which it does is unknown; area is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	None Considered extirpated from Arizona and introduced populations are not in proximity. San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an uncapped artesian well (C. Andresen, TNC, pers. comm.).	None Parcel lacks appropriate habitat.	None Parcel contains suitable habitat.	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Desert sucker (<i>Catostomus clarki</i>)	TNP - S COC - S COR - S BLM - S (Gila and PHX)	Inhabits rapids and flowing pools of rivers and streams. Elevation ranges from 480 to 8,840 ft (AGFD 2002f)	Relatively widespread in Gila and Bill Williams systems (lower Colorado River drainages). Arizona (Arizona Game and Fish Department 2017).	None Parcel lacks appropriate habitat.	Present The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present WestLand (WestLand Resources 2004e) reports an AGFD pers. comm. that this species has been recorded from or very near parcel and species is known from [REDACTED] (Desert Fishes Team 2004). There are HDMS records within 5 miles of the parcel.	Unlikely Parcel does not support perennial surface flows; species could occur during wet periods when stream is connected with perennial reaches but species would not persist. Although there are HDMS records within 5 miles of the parcel, the species has not been recorded by Desert Fishes Team (Desert Fishes Team 2004).	Possible Parcel contains intermittent water with some potential for perennial pools. The species has not been recorded by Desert Fishes Team (Desert Fishes Team 2004). There are HDMS records within 5 miles of the parcel.	Possible Parcel is within the known range for the species and contains suitable habitat.	None Parcel lacks appropriate habitat.	Unlikely The parcel is within the known range of the species, but lacks significant amounts of suitable habitat.	None Parcel lacks appropriate habitat.	None Reach on parcel is ephemeral and green sunfish and crayfish are extant at perennial water sites upstream (R. Cogan, pers. comm.). Although there are HDMS records within 5 miles of the parcel, these species may wash down and are documented to preclude occupancy by native fish species (Robinson, Grubert, and Crowder 2010).	None Parcel lacks appropriate habitat.
Gila chub (<i>Gila intermedia</i>)	Endangered; designated critical habitat. per USFWS (USFWS 2017a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex which includes Gila chub. BLM - S (Gila and PHX)	Inhabits pools, springs, backwaters, and streams at elevations from 2,000 to 5,500 ft (USFWS 2015c).	Endemic to the Gila River Basin. The species occurs in rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and possibly occurs in to the northeastern tip of Sonora, Mexico (USFWS 2015c). Critical habitat for this species is designated for approximately 160.3 miles of stream reaches in Arizona and New Mexico.	None Parcel lacks appropriate habitat. Designated Critical Habitat within 5 miles of this site (Mineral Creek)	Possible The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present. It should be noted that USFWS (U.S. Fish and Wildlife Service 2016a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex. USFWS currently considers chub in Turkey Creek to be headwater chub (U.S. Fish and Wildlife Service 2015b).	None Parcel is within the geographic range of the species but lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	Unlikely Not known to occur in the lower San Pedro River (Minckley and Marsh 2009) San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an uncapped artesian well (C. Andresen, TNC, pers. comm.). Species does occur in upstream tributaries, and potential exists that individuals could wash into this reach following flood events, but species would be unlikely to persist.	None Parcel lacks appropriate habitat.	None There are no perennial stream environments for this species on these parcels.	None Parcel lacks appropriate habitat. Designated Critical Habitat within 5 miles of this parcel.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
<i>Gila longfin dace</i> (<i>Agosia chrysoaster</i>)	BLM - S (Gila and PHX)	Found in a variety of aquatic habitats in medium to small streams and creeks that can vary from low-elevation sandy bottomed desert streams to cool to clear mountain streams. During low water, may take refuge in moist detritus and algal mats. It is tolerant of high temperatures and low dissolved oxygen (Arizona Game and Fish Department 2017). Can crowd in intermittent pools during drying periods (Minckley and Marsh 2009).	Primarily in the Gila and Bill Williams drainages and introduced into the Virgin River basin, Arizona. Also occurs in San Pedro River and Cienega Creek (Arizona Game and Fish Department 2017). Known to occur in Mineral Creek (Robinson, Orabutt, and Crowder 2010).	None Although there are HDMS records within 5 miles, the area does not contain stream environments.	Possible The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present. Parcel is within known geographic range and may contain appropriate habitat. Not reported as occurring in this creek (Desert Fishes Team 2004).	Unlikely Parcel is within known geographic range and species is reported from this creek (Desert Fishes Team 2004). Parcel does not support perennial surface flows; species could occur during wet periods when stream is connected with perennial reaches but species would not persist. HDMS records within 5 miles are likely from locations with perennial water.	Possible Parcel contains intermittent water with some potential for perennial pools. Species was artificially introduced to this creek (Desert Fishes Team 2004) but current status is unknown.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat. Known to occur in Mineral Creek (Robinson, Orabutt, and Crowder 2010). HDMS records within 5 miles are likely from locations with perennial water.	Possible Parcel is within known geographic range and may contain appropriate aquatic environments at the perennial wetland or seasonally when this reach flows. Not reported from parcel (Celeste Andresen, TNC, pers. comm. August 2016). Reported from this general reach (Desert Fishes Team 2004).	None Parcel lacks appropriate habitat.	None Reach on parcel is ephemeral and green sunfish and crayfish are extant at perennial water sites upstream (R. Cogan, pers. comm.).	None Parcel lacks appropriate habitat. Known to occur in Mineral Creek (Robinson, Orabutt, and Crowder 2010). HDMS records within 5 miles are likely from locations with perennial water.
<i>Gila topminnow</i> (<i>Poeciliopsis occidentalis occidentalis</i>)	Endangered; no designated critical habitat BLM - S (Gila and PHX)	Inhabits slow moving low gradient streams, springs, and backwaters at elevations below 4,500 ft, primarily in shallow areas with aquatic vegetation and debris for cover.	Reintroduced and natural locations within historic distribution in the Gila River drainage and one locality in the Bill Williams River drainage (AGFD 2016). Remaining natural occurrences in upper Santa Cruz River (Minckley and Marsh 2009).	None Parcel lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Arizona Game and Fish Department 2017).	None The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present. Creek contains potential aquatic habitat, but this species is currently extant at very few sites; considered extirpated from Salt R. drainage (Minckley and Marsh 2009).	None Parcel does not contain perennial water and this species is considered extirpated from Salt River drainage (Minckley and Marsh 2009). HDMS records within 5 miles are likely historic records.	Unlikely The Parcel may contain suitable aquatic habitat and reintroductions of the species have occurred within Cave Creek. Topminnow were stocked in Cave Creek prior to 1990 and did not persist (U.S. Fish and Wildlife Service 1999); these are likely the source for HDMS records within 5 miles.	None Parcel contains perennial aquatic habitat, but this species never occurred in the Little Colorado River drainage.	None Parcel lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Mark Taylor, USFS pers. comm., AGFD 2016).	Unlikely San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an unappreciated artesian well (C. Andresen, TNC, pers. comm.), but species is currently extant at very few sites and is considered extirpated from Lower San Pedro River (Minckley and Marsh 2009).	None Parcel lacks appropriate habitat.	None Although there are HDMS records of this species within 5 miles, likely from O'Donnell Canyon where the species is known to occur (AGFD 2016) near, but not on the parcel, there are no perennial stream environments for this species on these parcels.	None Parcel lacks appropriate habitat. HDMS has records of this species within 5 miles of this site that represent an introduced population at Ayer Lake at the Boyce Thompson Arboretum (Arizona Game and Fish Department 2017).
<i>Gila trout</i> (<i>Oncorhynchus gilae</i>)	Threatened; no designated critical habitat	Occurs in small mountain headwater streams or pools during droughts at elevations between 5,450 to 9,220 ft (Arizona Game and Fish Department 2002).	Historically found in the Verde and Agua Fria drainages and may have been found in tributaries of the San Francisco River drainage. Currently considered to be extirpated from Arizona (Arizona Game and Fish Department 2002).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel may be within historic range, but species is currently considered extirpated.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Headwater chub (<i>Gila nigra</i>)	Proposed Threatened It should be noted that USFWS (U.S. Fish and Wildlife Service 2016a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex which includes Headwater chub.	Inhabits the middle to upper reaches of moderately-sized streams that are considered cool to warm water streams at elevations of 4,350 to 6,560 ft. (U.S. Fish and Wildlife Service 2015b).	Endemic to the Gila River Basin. Populations are found in the upper Gila River in New Mexico and the Salt, San Carlos, and Verde Rivers in Arizona. As of 2015, the fish are found in 22 streams with 268 miles of available and appropriate habitat (U.S. Fish and Wildlife Service 2015b).	None Parcel lacks appropriate habitat.	Present The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present. Parcel is within known geographic range [REDACTED] (U.S. Fish and Wildlife Service 2015b; Minckley and Marsh 2009). It should be noted that USFWS (U.S. Fish and Wildlife Service 2016a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex. USFWS currently considers chub in Turkey Creek to be headwater chub (U.S. Fish and Wildlife Service 2015b). HDMS records within 5 miles.	None Parcel lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
Humpback chub (<i>Gila cypha</i>)	Endangered, designated critical habitat	Humpback chub have been associated with a variety of habitats including turbulent pools to pools with little or no current; substrates of silt, sand, boulder, or bedrock; and depths ranging from 1 meter to as deep as 15 meters. Found in elevations between 1,330 to 4,400 ft. (Arizona Game and Fish Department 2001k).	Presently in Arizona this species is only found only in the Little Colorado River and adjacent portions of the Colorado River, Coconino County (Arizona Game and Fish Department 2001k).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Little Colorado spinedace <i>(Lepidomeda vittata)</i>	Threatened; designated critical habitat BLM - S (Gila)	Montane tributaries, many of which are seasonally intermittent in regards to flow, at which times this species persists in perennial pools and spring areas (Minckley and Marsh 2009).	Its current known geographic range includes disjoint locations within the East Clear Creek, Chevelon Creek, Little Colorado River, and Silver Creek Watersheds (Arizona Game and Fish Department 2017). Designated critical habitat along approximately 31 stream miles in East Clear, Chevelon, and Nutrioso Creeks (U.S. Fish and Wildlife Service 1987).	None Parcel is outside of known geographic range and lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present, but parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles. Parcel includes Designated Critical Habitat for the species.	None Parcel is outside of known geographic range and lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range and lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range and lacks appropriate habitat.
Little Colorado sucker <i>(Catostomus sp.3)</i>	COC - S BLM - S (Gila)	Occupies pools and riffles within creeks and small to medium-sized rivers, generally with abundant cover. Also occurs in impoundments with (Arizona Game and Fish Department 2017; Minckley and Marsh 2009).	Endemic to the upper portion of the Little Colorado River and many of its north flowing tributaries (Cocoino, Navajo, and Apache Counties). Also introduced into the Salt River (Arizona Game and Fish Department 2017).	None Parcel is outside of known geographic range and lacks appropriate habitat.	None Parcel is outside of known, native geographic range.	None Parcel is outside of known, native geographic range and lacks appropriate habitat.	None Parcel is outside of known, native geographic range.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	None Parcel is outside of known geographic range and lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.
Loach minnow <i>(Tiaroga cobitis)</i>	Endangered; designated critical habitat BLM - S (Gila)	Inhabits small to large perennial creeks and rivers; a bottom dweller typically in shallow turbulent riffles with cobble substrate, swift currents, and filamentous algae (USFWS 2012b).	Endemic to the Gila River Basin. Found below 8,000 ft elevation in Navajo, Apache, Graham, Pinal, and Greenlee counties, Arizona and Catron, Grant, and Hidalgo counties, New Mexico. In total, approximately 610 miles are designated critical habitat in Apache, Cochise, Gila, Graham, Greenlee, Pinal, and Yavapai Counties, Arizona, and Catron, Grant, and Hidalgo Counties in New Mexico (USFWS 2012b).	None Parcel lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present, but parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat.	Unlikely San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an uncapped artesian well (C. Andresen, TNC, pers. comm.). Parcel is below confluence of Aravaipa Creek, a currently occupied site (Minckley and Marsh 2009), but does not contain appropriate habitat. Potential exists that individuals could wash into this reach following flood events, but species would be unlikely to persist.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
Mexican Stoneroller <i>(Camptostoma ornatum)</i>	COR - S	Species is found in shallow riffles and runs over gravel/cobble substrates (Arizona Game and Fish Department 2003d).	Widespread in Mexico. In Arizona, now known only from Rucker Canyon and San Bernardino Creek from 2,625 to 6,560 ft (Arizona Game and Fish Department 2003d).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Razorback sucker <i>Xyrauchen texanus</i>	Endangered; designated critical habitat BLM - S (Gila)	Inhabits primarily large riverine systems, generally in backwaters and eddies of fast moving waters (i.e. slack water habitats) and man-made lakes (Minkley and Marsh 2009).	Endemic to the Colorado River Basin; presently only located in Lake Mohave and is believed to be extirpated downstream of Lake Havasu, Lake Mead, and Lake Havasu (Minkley and Marsh 2009; Arizona Game and Fish Department 2017). Critical habitat includes the 100-year floodplain of the Colorado River through the Grand Canyon from confluence with Para River to Hoover Dam; Hoover Dam to Davis Dam, Parker Dam to Imperial Dam. Also Gila River from Arizona-New Mexico border to Coolidge Dam; and Salt River from Hwy 60 State Route 77 Bridge to Roosevelt Dam; and Verde River from FS boundary to Horseshoe Lake (U.S. Fish and Wildlife Service 1994).	None Parcel lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present, but parcel is outside known geographic range.	None Parcel lacks appropriate habitat and is outside known geographic range. Designated Critical Habitat within 5 miles of this site.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Roundtail chub (<i>Gila robusta</i>)	Proposed Threatened: Lower Colorado River Basin Distinct Population Segment (DPS) It should be noted that USFWS (U.S. Fish and Wildlife Service 2016a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex which includes the Lower Colorado River basin DPS of roundtail chub. BLM - S (Gila)	This species typically inhabits the largest and deepest pools of middle to large streams and is considered to be less associated with dense cover than other chub species (Minckley and Marsh 2009; AGFD 2015g). Occurs from 1,210 to 7,220 ft; most common between 2,000 and 5,000 ft elevation throughout the Gila and Bill Williams drainage in Arizona and New Mexico (Minckley and Marsh 2009; AGFD 2015g).	Because of USFWS' determination that roundtail and headwater chub are the same species (USFWS 2017a), the distribution of <i>Gila robusta</i> in Arizona now includes tributaries and portions of the mainstem of the Gila, San Carlos, Salt, Bill Williams, Colorado, and Verde rivers (AGFD 2015g).	None Parcel lacks appropriate habitat.	None The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present, but parcel is outside known geographic range. Species is not known from Tonto Creek Basin (Minckley and Marsh 2009; U.S. Fish and Wildlife Service 2015b). It should be noted that USFWS (U.S. Fish and Wildlife Service 2016a) is currently undergoing a review of the taxonomic validity of species in the <i>Gila robusta</i> complex. USFWS currently considers chub in Turkey Creek to be headwater chub (U.S. Fish and Wildlife Service 2015b).	None Parcel lacks appropriate habitat; no historical records from this drainage (Minckley and Marsh 2009; U.S. Fish and Wildlife Service 2015b).	None Parcel may contain perennial water habitat but the extent to which it does is unknown. No historical records from this drainage; creek was historically occupied by Gila chub but this population is considered extirpated (U.S. Fish and Wildlife Service 2005; Minckley and Marsh 2009; U.S. Fish and Wildlife Service 2015b).	Possible Parcel contains suitable perennial stream environments and species known to occur in drainage (U.S. Fish and Wildlife Service 2015b).	None Parcel lacks appropriate habitat.	Unlikely San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an unappreciated artesian well (C. Andresen, TNC, pers. comm.). Parcel is below confluence of Aravaipa Creek, a currently occupied site (Minckley and Marsh 2009), but does not contain appropriate habitat. Potential exists that individuals could wash into this reach following flood events, but species would be unlikely to persist.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.
Sonora sucker (<i>Catostomus insignis</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHN)	Associated with perennial, flowing streams with deep pools and cover (e.g., log and debris piles (Minckley and Marsh 2009; AGFD 2002k).	Relatively widespread in Gila and Bill Williams systems (Colorado River drainage) in Arizona (AGFD 2005k)	None Parcel lacks appropriate habitat.	Unlikely The degree to which perennial water is present within parcel is currently unknown but for the purposes of this report we consider at least some perennial water to be present. Although there are HDMS records within 5 miles, the species has not been recorded from Rock and Spring creeks (Desert Fishes Team 2004) downstream of parcel.	Unlikely Parcel does not support perennial surface flows; spp. could occur during wet periods when stream is connected with perennial reaches but spp. would not persist. Not recorded by Desert Fishes Team (Desert Fishes Team 2004).	Possible Parcel contains appropriate habitat of intermittent water with some perennial pools. Not recorded by Desert Fishes Team (2004).	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Reach on parcel is ephemeral and green sunfish and crayfish are extant at perennial water sites upstream (R. Cogan, pers. comm.); these species may wash down and are documented to preclude occupancy by native fish species (Robinson, Grubert, and Crowder 2010). Although there are HDMS records within 5 miles, there is not suitable habitat on the parcel. Recorded by Desert Fishes Team (Desert Fishes Team 2004) from O'Donnell Cr.	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Spikedace <i>(Meda fulgida)</i>	Endangered; designated critical habitat BLM - S (Gila and PHX)	Inhabits shallow riffles with sand, gravel, and rubble substrates of moderate to large perennial streams (USFWS 2012b).	Endemic to the Gila River Basin. In Arizona, the only known natural population occurs in Aravaipa Creek in Graham, and Pinal counties. The species is stocked at 5 other locations, including Fossil Creek, Redfield Canyon, Hot Springs Canyon, Bonita Creek and the Blue River. (AGFD 2013k; USFWS 2012b). In total, approximately 630 miles of linear distance of rivers are designated critical habitat for this species. These areas include portions of the Verde River Complex, Black River Complex, Middle Gila-Lower San Pedro/Aravaipa Creek Complex, and San Francisco and Blue River Complex in Arizona, and portions of the San Francisco and Blue Rivers Complex and Upper Gila River Complex in New Mexico.	None Parcel lacks appropriate habitat and is outside of the current, known range of the species.	None We consider at least some perennial water to be present, though parcel is outside currently known geographic range. Designated Critical Habitat within 5 miles of this site.	None Parcel is near an introduced population in Fossil Creek, but lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat.	Unlikely San Pedro River along this reach is considered to support intermittent flows (The Nature Conservancy, n.d.); perennial surface water is supported by an unapped artesian well (C. Andresen, TNC, pers. comm.). Parcel is below confluence of Aravaipa Creek, a currently occupied site (Minckley and Marsh 2009), but lacks appropriate habitat. Potential exists that individuals could wash into this reach following flood events, but species would be unlikely to persist.	None Parcel lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel lacks appropriate habitat.
Speckled dace <i>(Ethmicthys osculus)</i>	BLM - S (Gila and PHX)	Found in rocky riffles, runs, and pools of headwaters and small to medium rivers. Elevations range from 1,500 to 8,920 ft (Arizona Game and Fish Department 2017).	In Arizona the species is known from Bill Williams, Colorado, Salt, Verde, and Upper Gila River drainages in Arizona. (Arizona Game and Fish Department 2017).	None Parcel lacks appropriate habitat.	Present We consider at least some perennial water to be present within the parcel. WestLand (WestLand Resources 2004e) reports an AGFD pers. comm. that this species has been recorded from or very near parcel and species is known from [REDACTED] of parcel (Desert Fishes Team 2004). There are HDMS records within 5 miles of the parcel.	Unlikely Parcel does not support perennial surface flows; species could occur during wet periods when stream is connected with perennial reaches but spp. would not persist. There are HDMS records within 5 miles; nonetheless, the species is unlikely to occur due to lack of perennial water on the parcel.	Unlikely Parcel contains intermittent water with some perennial pools. Not recorded by Desert Fishes Team (Desert Fishes Team 2004).	Possible Parcel is within known geographic range and there are HDMS records within 5 miles. Species is not reported from this creek (Desert Fishes Team 2004). Site contains perennial stream environments.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Reach on parcel is ephemeral and green sunfish and crayfish are extant at perennial water sites upstream (R. Cogan, pers. comm.); these species may wash down and are documented to preclude occupancy by native fish species (Robinson, Orabutt, and Crowder 2010).	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Virgin River chub (<i>Gila seminuda</i> (= <i>robusta</i>))	Endangered; no designated critical habitat	Occurs most often in deeper areas where waters are swift, but not turbulent, and most often is associated with boulders or other types of cover between 1,540 to 2,350 ft (Arizona Game and Fish Department 2001).	<i>Gila seminuda</i> is restricted to the Virgin River in Arizona, Nevada, and Utah (Arizona Game and Fish Department 2001).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Woundfin (<i>Plagopterus argenteus</i>)	Endangered and EPNE; designated critical habitat	Occurs in silty streams with high turbidity or constantly shifting sandy bottoms. Found in elevations from 1,900 to 3,000 ft (Arizona Game and Fish Department 2000c).	Historic range includes the lower Colorado River basin including the Virgin, Moapa, Salt and Gila River systems. At present, the woundfin are restricted to approximately 50 miles of perennial reaches of the Virgin River in the states of Utah, Arizona, and Nevada (Arizona Game and Fish Department 2000c).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
AMPHIBIANS													
Arizona toad (<i>Anaxyrus microscaphus</i>)	BLM - S (Gila and PHX)	Found along rocky, shallow perennial streams in a range of elevations and habitats from low desert to mountains (Brennan and Holycross 2006).	In Arizona the species occurs in southern Apache and Navajo counties, northern Graham and Greenlee counties, Gila, Yavapai and Mohave counties (Brennan and Holycross 2006).	Unlikely Parcel is adjacent to known geographic range, but lacks suitable breeding habitat.	Possible Parcel is within known geographic range and contains appropriate aquatic habitat and vegetation.	Possible Parcel is within known geographic range and contains appropriate aquatic habitat and vegetation.	Possible Parcel is within known geographic range and contains appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat.	Unlikely Parcel is within known geographic range, but lacks suitable breeding habitat.	Unlikely Parcel is adjacent to known geographic range, and contains suitable habitat.	None Parcel is within known geographic range but lacks suitable aquatic habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Arizona treefrog <i>(Hyla wrightorum)</i>	COR - S	Found on the ground or in shrubs and trees near water, usually in coniferous forests (Arizona Game and Fish Department 2013b).	Occurs in the mountains of central Arizona and Southeastward into west-central New Mexico, south into Mexico at elevations from 3,000 to 9,500 ft (Arizona Game and Fish Department 2013b).	None Parcel is outside known geographic range.	Possible Parcel contains appropriate habitat and is within known geographic range.	Unlikely Parcel is adjacent to known geographic range and contains suitable habitat.	None Parcel is adjacent to known geographic range, but lacks suitable vegetation associations.	Possible Parcel is within known geographic range and contains suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range, but does not contain the usual habitat of coniferous forests.	None Parcel is outside known geographic range.
Chiricahua leopard frog <i>(Lithobates [Rana] chiricahuensis)</i>	Threatened; designated critical habitat BLM - S (Gila)	Inhabits perennial to near-perennial aquatic environments including springs, creeks, cienegues and rivers; currently most often associated with man-made earthen ponds (Brennan and Holycross 2006). Occurs at elevations of 3,200 to 8,890 ft (USFWS 2012c)	At the time of listing (USFWS 2002), the frog was likely extant at an estimated 87 localities in Arizona and 31 to 41 localities in New Mexico. Current distribution in Arizona is limited to two areas, one within montane areas across the Mogollon Rim and the second in the mountains and valleys south of the Gila River (AGFD 2015b). Critical habitat includes a total of 10,346 acres in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai Counties, Arizona; and Catron, Grant, Hidalgo, Sierra, and Socorro Counties, New Mexico (USFWS 2012c).	Unlikely Area is outside current areas where species is known to occur in Arizona, but appropriate habitat does occur and lowland leopard frogs are known to occur (WestLand Resources 2017c). However, these surveys have not detected Chiricahua leopard frogs (Crowder and Robinson 2011; Robinson, Orabutt, and Crowder 2010; WestLand Resources 2004c, 2004d, 2012c, 2009a, 2017c). As such, it is unlikely for the species to occur in the area.	Unlikely Parcel occurs within historic range and aquatic habitat may be present but species is known from very few sites in central Arizona (U.S. Fish and Wildlife Service 2002, 2012c)	None Perennial to near perennial habitat may be present but Parcel occurs within historic range, but aquatic habitat is not present; species is known from very few sites in central Arizona.	None Parcel is outside of elevational and geographic range.	None Parcel occurs within historical geographic range but the species is considered extirpated from the Little Colorado River Basin (U.S. Fish and Wildlife Service 2007b, 2002). HDMS occurrence records within 5 miles but these likely represent historical records (U.S. Fish and Wildlife Service 2002, 2007b).	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is within the geographic range, but there are no records from the lower San Pedro River for this species.	None Parcel is outside known geographic range and lacks appropriate habitat.	Possible Historically occurred on the Research Ranch (Rosen, Wallace, and Schwalbe 2001) but was subsequently extirpated (Cogan 2015). Species was reimported to Antelope and Bald Hill tanks on the RR (not on Resolution Copper parcels) in May 2015 and are currently persisting (Cogan pers. comm.). If established, frogs could potentially disperse to Finley tank that occurs on the parcel, but Finley Tank is not currently holding perennial water. HDMS records within 5 miles.	None Parcel is outside known geographic range and lacks appropriate habitat.
Great Plains narrow-mouthed toad <i>(Gastrophryne olivacea)</i>	BLM - S (Gila and PHX)	Occurs within wash bottoms and areas near water in Sonoran desertscrub, Semidesert grasslands, and Madrean Evergreen Woodland. Elevations range from 1,400 to 4,700 ft (Arizona Game and Fish Department 2017; Brennan and Holycross 2006).	Found in south-central Arizona, extending to southeastern portion of Tucson area (Arizona Game and Fish Department 2017; Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Parcel is outside of (but near) known geographic range and appropriate habitat may occur; however it has not been reported by Cogan (Cogan 2015).	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Lowland burrowing treefrog <i>(Smilisca foliagei)</i>	BLM - S (PHX)	Inhabits xeric environments usually associated with washes and arroyos, in Sonoran desert scrub and mesquite grasslands (Nigro and Rorabaugh 2008). Elevations range from 1,980 to 2,480 ft. (Arizona Game and Fish Department 2017).	Occurrences mainly associated with washes that flow towards Mexico in south-central Arizona (Nigro and Rorabaugh 2008).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.
Lowland leopard frog <i>(Lithobates [Rana] yavapaiensis)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	Occurs in a variety of perennial to near-perennial waters in desert grasslands to piñon juniper biotic communities (AGFD 2006c). Inhabit natural and man-made aquatic systems.	Found in central and southeastern Arizona with the majority found below the Mogollon Rim (AGFD 2006c).	Possible Within geographic range, there are observations from the vicinity, and stock tanks in the area could provide appropriate habitat. Surveys for leopard frogs did not detect either species at EPS (WestLand Resources 2004g, 2004d, 2012c). One lowland leopard frog was observed in the ephemeral to intermittent reach of Devils Canyon ≤ 3 miles northeast of the EPS (WestLand unpublished data; photograph). Therefore, although this species was not found during surveys, it is known to disperse, especially during rain events, and may occur on this parcel. HDMS records within 5 miles.	Possible The degree to which perennial water is present within parcel is currently unknown but for the purposes of this report we consider at least some perennial water to be present. Within geographic range and contains potential aquatic habitats for this species. HDMS records within 5 miles.	Unlikely Parcel is within geographic range, supports ephemeral surface water, and there are HDMS records within 5 miles. However, the parcel does not contain perennial or near perennial waters and therefore does not represent appropriate leopard frog habitat. Individuals could use as a movement corridor during wet seasons.	Possible Parcel contains intermittent water with some potential for perennial pools. Within geographic range and may contain appropriate habitat. WestLand (WestLand Resources 2004f) reports an unconfirmed observation of this species. HDMS records within 5 miles.	Unlikely Parcel is adjacent to known geographic range and contains suitable habitat.	None Parcel lacks appropriate habitat although there are HDMS records within 5 miles.	Present Parcel contains appropriate habitat; currently known to be extant (C. Andresen, TNC, pers. comm., March 2016). HDMS records within 5 miles.	None Parcel lacks appropriate habitat.	Possible Reach on parcel is ephemeral and green sunfish and crayfish are extant at perennial water sites upstream (R. Cogan, pers. comm.); species that generally preclude occupancy by native leopard frogs (U.S. Fish and Wildlife Service 2007b). Considered extirpated from area (Cogan 2015). HDMS records within 5 miles.	None Although there are HDMS records within 5 miles, this parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Northern leopard frog <i>(Lithobates [Rana] pipiens)</i>	TNF - S COC - S BLM - S (Gila and PHX)	Usually in permanent water with rooted vegetation including ponds, canals, marshes, springs, and streams. Elevations range from 2,640 to 9,155 ft (AGFD 2002).	Found in northern and central Arizona above the Mogollon Rim (AGFD 2002). Few extant localities remaining in Arizona (Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Historically occurred in this basin; extirpated from a majority of historic range. Parcel may contain appropriate habitat. There are HDMS records within 5 miles of the parcel that are likely historic records.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.
Sonora tiger salamander <i>(Ambystoma mavortium stebbinsi; previously known as A. tigrinum stebbinsi)</i>	Endangered; no designated critical habitat	Aquatic life stages (larvae and neotenic adults) are found in stock ponds, lakes, and reservoirs in semi-desert grasslands with standing water from January through June. Adult terrestrial forms are rarely encountered and likely use rodent burrows among other subterranean cover (AGFD 2016).	Restricted to San Rafael Valley and adjacent headwaters of the Santa Cruz River leading into nearby foothills within the Huachuca and Patagonia mountains in Arizona (AGFD 2016; Rorabaugh 2008b)	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Parcel is near but outside of recognized geographic range and aquatic habitat does exist in the form of stock ponds. <i>A. mavortium</i> has been observed on the parcel (Cogan 2015) but this likely represents <i>A. m. mavortium</i> , a widely introduced subspecies not native to southeastern Arizona (Brennan and Holycross 2006).	None Parcel is outside of known geographic range.
Sonoran green toad <i>(Anaxyrus reitiformis)</i>	BLM - S (Gila and PHX)	Occurs in wash bottoms and areas near water in grasslands and Sonoran desert scrub. Elevations range from 500 to 3,225 ft. (Arizona Game and Fish Department 2017).	Found in south-central Arizona; limited to Pima and southern Pinal and Maricopa counties (Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Tarahumara Frog <i>(Lithobates tarahumarae)</i>	COR - S	Throughout its range, <i>R. tarahumarae</i> is typically associated with canyons and deep drought resistant "plunge pools" formed amidst boulders or in bedrock. Stream flows average less than 370 gallons per second. Plunge pools in canyons with low mean flows and relatively steep gradients (>60 m per km of stream) provide the best breeding sites. Permanent water is probably necessary for metamorphosis. Habitats are located within oak, pine-oak woodlands, or the Pacific coast tropical area (Smaloun thornscrub and tropical deciduous forest). (NatureServe 2006, USFWS 2005). Large streams may be avoided because of their propensity to flood and their variable flow rates (Hay and May 1983).	Before its extirpation from the state in the early 1980s, <i>R. tarahumarae</i> was found in three drainages in the Santa Rita Mountains and three drainages in the Pajarito-Atascosa-Tamamescort mountains complex in Santa Cruz County. From June to October 2004, an experimental population of 56 adults, 229 juveniles, and 327 larval frogs was reestablished into one of three historic canyons in the Santa Rita Mountains; source of frogs from northern Sonora, Mexico. Additional sites including a drainage in the Pajarito Mountains are being considered for additional reestablishments. Localities in Arizona range from 3,500 to 6,200 ft. (USFWS 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Western barking frog <i>(Craugastor augusti cactorum)</i>	COR - S TNF - S	Occurs in areas with limestone, rhyolite, and other rock outcrops in Madrean evergreen woodlands of mountain ranges at elevations between 4,199 and 6,200 ft (Brennan and Holycross 2006).	Known from several sky islands in southeast Arizona (AGFD 2009; Brennan and Holycross 2006). A single historic record from the Sierra Anchas is considered by AGFD to probably be misidentified (AGFD 2009).	None Parcel outside of known geographic range.	None Parcel is outside of currently recognized geographic range; there is a single historic but unconfirmed record from the Sierra Anchas.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Parcel is within geographic range but lacks or has limited suitable habitat.	None Parcel is outside of known geographic range.
REPTILES													
Arizona ridge-nosed rattlesnake <i>(Crotalus willardi willardi)</i>	COR - S	Occurs in oak woodland to pine-fir forests, near rock crevices on forest and woodland floors, also especially mesic canyon bottoms with canopies of alder, box elder, maple, oak, and other broadleaf deciduous trees; it is infrequently found in high grasslands bordering woodlands (Brennan and Holycross 2006).	Found in southcentral Arizona and southwestern New Mexico to central Mexico from 4,800 to 9,000 ft (Brennan and Holycross 2006).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within geographic range and appropriate habitat may occur; however it has not been reported by Cogan (Cogan 2015).	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Arizona striped whiptail <i>(Aspidoscelis arizonae)</i>	BLM - S (Gila)	Found in Semidesert grasslands. Elevations range from 4,080 to 4,640 ft (Arizona Game and Fish Department 2017).	Known from a small, restricted range in northern Cochise County and Southern Graham County. (Arizona Game and Fish Department 2017).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Cogan (Cogan 2015) reports from site but spp. has a highly restricted range that is not close to parcel (Brennan and Holycross 2006); we consider observation to possibly be in error.	None Parcel is outside of known geographic range.
Bezy's night lizard <i>(Xantusia bezyi)</i>	COR - S TNF - S	Primarily associated with crevices found in rock outcrops, cliff faces, and boulder fields in Arizona Upland Sonoran desert scrub, semi-desert Grassland, Interior Chaparral, and oak woodland communities. Elevations range from ~2,400 to 5,800 ft (Leavitt et al. 2007).	Found from the Mazatzal to the Galiuro mountains in central Arizona (Bezy 2005; Brennan and Holycross 2006). Little is known of its current distribution patterns and they are known from only a few disjunct areas (Brennan and Holycross 2006).	Possible Parcel is within known geographic range of species and contains appropriate habitat. HDMS records within 5 miles.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	Unlikely Parcel is near the known geographic range and may contain appropriate habitat of exposed cliffs in Arizona Upland Sonoran desertscrub.	None Parcel is outside known geographic range and lacks appropriate habitat.	Possible Parcel is within known geographic range of species with HDMS occurrence records within 5 miles and contains appropriate habitat.	Unlikely Parcel is adjacent to the known geographic range and contains marginal habitat for the species.	Possible Parcel is within known geographic range of species and contains appropriate habitat.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range of species with HDMS occurrence records within 5 miles and contains appropriate habitat.
Brown vinesnake <i>(Oxybelis aeneus)</i>	COR - S	Found in brush-covered hillsides, canyons, and stream bottoms with sycamore, oak, walnut, and wild grape (Arizona Game and Fish Department 2003q; Brennan and Holycross 2006).	Primarily found at Arivaca Lake and the Tumacacori, Pajarito, and Patagonia Mountains in Santa Cruz County. Only isolated records of occurrence from the Santa Rita Mountains. Found at elevations from 3,000 to 5,800 ft (Arizona Game and Fish Department 2003q; Brennan and Holycross 2006).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is adjacent to known geographic range, and contains potentially suitable habitat.	None Parcel is outside known geographic range.
Chihuahuan black-headed snake <i>(Tanilla wilcoxi)</i>	COR - S	Lives mainly on cactus-covered rocky hills, in grasslands and in pine-oak forests. Found under rocks, logs, and dead plants (agaves, yucca, and sotol), in shaded rocky canyons and on relatively open, sunny, and rocky slopes (Arizona Game and Fish Department 2013l).	Located in the extreme southeast corner of Arizona. Huachuca (Ramsey Canyon), Santa Rita, and Patagonia Mountains (Arizona Game and Fish Department 2013l).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range, but contains marginal habitat for the species.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Desert box turtle <i>(Terrapene ornata luteola)</i>	BLM - S (Gila)	Typically occurs in Semidesert Grassland, but has also been found in Madrean Evergreen Woodland, and in Chihuahuan desertscrub vegetation (Brennan and Holycross 2006; Arizona Game and Fish Department 2017).	Its known Arizona distribution includes the southeastern portion of the state, confined to Cochise, Pima, Pinal, and Santa Cruz counties (Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Possible Parcel is within known geographic and elevation ranges and may contain appropriate habitat. Reported from near parcel at confluence of San Pedro River and Gila River. HDMS records within 5 miles.	Unlikely Parcel is adjacent to known geographic range and contains suitable habitat. Northernmost record is an isolated locality at/near confluence of San Pedro River and Gila River, which may be the source of the HDMS records within 5 miles.	Present Documented on this parcel (Cogan 2015). HDMS records within 5 miles.	None Parcel is outside of known geographic range.
Desert massasauga <i>(Sistrurus catenatus edwardsii)</i>	BLM - S (Gila)	Tobosa grasslands along sloping bajadas at elevations between 4,400 and 4,700 ft (1342 to 1434 m) (Arizona Game and Fish Department 2017).	Disjunct populations in extreme southeast Arizona, southern New Mexico, and southeast Colorado, into northern Mexico (Arizona Game and Fish Department 2017).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely The parcel is adjacent to the known geographic range, and contains suitable habitat.	None Parcel is outside of known geographic range.
Giant spotted whiptail <i>(Aspidocelis stictogrammus)</i>	COR - S	Found in semidesert grassland and Madrean Evergreen Woodland. Canyon bottoms in mountainous terrain, washes, riparian corridors, low valley bottoms, usually near streams or temporary water (Arizona Game and Fish Department 2013c; Brennan and Holycross 2006).	Found from Southeastern Arizona, extreme southwestern New Mexico, and northern Sonora from sea level to 4,500 ft (Arizona Game and Fish Department 2013c; Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside of known geographic range.
Green ratsnake <i>(Senticolis triaspis)</i>	COR - S	Found in rocky slopes at an ecotone between Madrean Evergreen Woodland and more open areas or riparian corridors (Stebbins 2003; Brennan and Holycross 2006; NatureServe 2017).	Found in southern Arizona and western Mexico from sea level to about 7,000 ft. (Brennan and Holycross 2006; NatureServe 2017; Stebbins 2003).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Possible Parcel is within known geographic range and appropriate habitat may occur; however it has not been reported by Cogan (Cogan 2015).	None Parcel is outside of known geographic range.
Mountain skink <i>(Plestiodon callicephalus)</i>	COR - S	Found in Madrean Evergreen Woodland to upper parts of semidesert grassland, usually in moist areas in cover of rocks, fallen logs, leaf litter, and dense grass (Brennan and Holycross 2006).	Found in mountain ranges of southern Arizona (Brennan and Holycross 2006).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Present Species has been documented within parcel.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Narrow-headed gartersnake (<i>Thamnophis rufipunctatus</i>)	Threatened; proposed critical habitat BLM - S (Gila)	Occurs in perennial aquatic habitat. Suitable habitat includes pool and riffle habitat that includes cobbles and boulders in Petran Montane Conifer Forest, Great Basin Conifer Woodland, Interior Chaparral, and the Arizona Upland subdivision of Sonoran desertscrub communities (Arizona Game and Fish Department 2017).	Occurs at elevations from 2,300 to 8,000 ft in four types of biotic communities: Petran Montane Conifer Forest, Great Basin Conifer Woodland, Interior Chaparral, and the Arizona Upland subdivision of Sonoran desertscrub. The species may still persist in the Lipper Gila River subbasin, the Middle Gila River subbasin, the San Francisco River subbasin, the Salt River subbasin, the Tonto Creek subbasin; and the Verde River subbasin (U.S. Fish and Wildlife Service 2014). In total, approximately 210,189 acres, including 1,503 stream miles are being proposed as critical habitat in seven counties in Arizona (Greenlee, Graham, Apache, Yavapai, Navajo, Gila, and Coconino) and four counties in New Mexico (Catron, Grant, Hidalgo, and Sierra) (U.S. Fish and Wildlife Service 2013c).	None Parcel is outside of known geographic range and lacks appropriate habitat.	Unlikely Parcel is in or near known geographic range; species is considered to be extant in Tonto Creek (but at low population densities) downstream of parcel (USFWS 2014). The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present. Despite this, we consider it unlikely that there would be appropriate stream habitat in this small headwater creek.	None There is no appropriate stream habitat for this species.	None Parcel is far outside of elevational and geographic range.	Unlikely Parcel is outside of but near known geographic range and may contain appropriate habitat.	None Parcel is outside of known geographic range and lacks appropriate habitat.	None Parcel is outside of known geographic range.	None Parcel is far outside of elevational and geographic range.	None Parcel is far outside of elevational and geographic range.	None Parcel is far outside of elevational and geographic range and lacks appropriate habitat.
New Mexico ridge-nosed rattlesnake (<i>Crotalus willardi obscurus</i>)	BLM-S (Gila)	Inhabits Madrean evergreen woodland and Petran montane forest habitat above 5,000 ft (Arizona Game and Fish Department 2013).	Localized to only the Animas and Peloncillo mountains of New Mexico and Arizona and the Sierra de San Luis of extreme northeastern Sonoran and western Chihuahua, Mexico (Arizona Game and Fish Department 2013).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	Threatened; proposed critical habitat COC - R COR - S TNF - R BLM - S (Gila and PHX)	Strongly associated with perennial aquatic environments that support a stable native prey base of fish and amphibians. Three general types of habitat are considered to be associated with the species: 1) cienegas, 2) lowland riparian gallery forests, and 3) upland stream gallery forests (Arizona Game and Fish Department 2012c). Avoids steep mountain canyons (Arizona Game and Fish Department 2012c).	Occurs at elevations from 130 to 8,497 ft. Extant population are disjunct and consist of the San Rafael Valley, Bill Williams River, Verde River, Tomto Creek, and Cienega Creek (Arizona Game and Fish Department 2012c; U.S. Fish and Wildlife Service 2014). In total, approximately 421,423 acres, including 912 stream miles are being proposed as critical habitat (USFWS 2013c).	None Area is outside of areas known to support disjunct populations of the species and the aquatic environments present are not similar to those described as habitat for the species.	Unlikely Parcel is in or near known geographic range; species considered to be extant in Tomto Creek downstream of parcel (USFWS 2014). We consider it unlikely that there would be appropriate stream or cienega habitat in this small headwater creek.	None Parcel is within historic range but is considered extirpated from the Verde Basin; parcel does not support appropriate aquatic and riparian habitats.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range and lacks appropriate habitat.	Possible Parcel occurs within historical range; populations on the lower San Pedro are considered to be extant but likely as small, low density (U.S. Fish and Wildlife Service 2014) populations. Proposed Critical Habitat is present within the parcel.	None Parcel is outside of known geographic range and lacks appropriate habitat.	Present This species has been documented at this site (Cogan 2015). HDMS records within 5 miles. Proposed Critical Habitat on parcel	None Parcel is outside of known geographic range and lacks appropriate habitat.
Red-backed whiptail (<i>Aspidoscelis santhomata</i>)	COR - S	In Arizona, they inhabit canyons and hills in juniper-oak woodlands, down to sonoran upland desert habitats, among dense shrubby vegetation near and on the banks of semi-arid permanent streams and arroyos. In the Saucedo Mountains, they have been observed on volcanic/rocky slopes. They follow drainages out onto bajadas. Often encountered near springs, and other water sources (Arizona Game and Fish Department 2013d).	Found in the following areas: Pima County: Quitobaquito Hills, Ajo Range, and Ajo, Puerto Blanco and Agua Dulce mountains. Maricopa County: Sand Tank and Saucedo mountains. Found in elevations from 2,000 to 4,300 ft (Arizona Game and Fish Department 2013d).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.
Slevin's bunchgrass lizard (<i>Sceloporus slevini</i>)	COR - S BLM - S (Gila)	Inhabits open grassy areas in higher elevation (mountain populations) conifer forests and woodlands. In south-central Arizona (Pima, Santa Cruz County.) spp. found in rolling hills of Plains Grassland (Brennan and Holycross 2006; Arizona Game and Fish Department 2017). Elevation range from 4,300 to 9,480 ft (AGFD 2016).	In Arizona occur as relatively small, isolated populations in southeastern Arizona in Pima, Cochise, and Santa Cruz counties. (Arizona Game and Fish Department 2017).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Present Documented on this parcel (Cogan 2015). HDMS records within 5 miles.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Sonoran desert tortoise <i>(Gopherus morafkai)</i>	COR - S TNF - S BLM - S (Gila and PHX) (Previously a USFWS Candidate species; Determined to be not warranted for listing on October 6, 2015)	Primarily occurs in rocky foothills and slopes of Arizona Upland subdivision of Sonoran desert scrub; occasionally lower bajadas of the Sonoran Desert (AGFD 2015b).	Occurs throughout southern Arizona in areas that support primarily Arizona Upland subdivision of Sonoran desert scrub (AGFD 2015b).	Unlikely Area occurs just outside of geographical range and while tortoise populations are occasionally associated with interior chaparral and Madroño oak woodland, they are usually transitional with Sonoran desertscrub (Van Devender 2002). Sonoran desert scrub does occur to the south of East Plant and there are HDMS records within 5 miles.	None Parcel is outside known geographic and elevation ranges.	Unlikely Parcel is adjacent to known geographic range, and contains suitable desert scrub habitat.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.	None Parcel is outside known geographic and elevation ranges.	Possible Parcel is within known range of species and contains appropriate habitat. HDMS records within 5 miles.	Present Observed on site by C. Andresen (pers. comm.) and sign (scat) observed during WestLand 2016 site visit. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate habitat. Observed just off-parcel during WestLand 2015 site visit. HDMS records within 5 miles.	Unlikely Parcel is adjacent to known geographic range, but does not contain suitable Sonoran desert scrub habitat.	Possible Parcel is within known geographic range and contains appropriate habitat. HDMS records within 5 miles.
Sonora mud turtle <i>(Kinosternon sonoriense)</i>	BLM - S (Gila and PHX)	Occupies springs, creeks, ponds, and waterholes of intermittent streams occurring in upland biotic communities ranging from Sonoran desertscrub to montane pine forests. May be found away from water during movements among aquatic features (Brennan and Holycross 2006).	Found in Gila River drainage of central and southeast Arizona and tributaries of the Colorado River in west-central Arizona (Brennan and Holycross 2006).	Possible Parcel is within known geographic range and contains stock ponds that may represent appropriate habitat.	Possible Parcel is within or at edge of known geographic range and contains some perennial water (pools) as appropriate habitat. The degree to which perennial water is present within parcel is currently unknown, but for the purposes of this report, we consider at least some perennial water to be present.	Possible Parcel is within known geographic range but supports only ephemeral flows as appropriate habitat. Stock tanks of unknown water holding capacity occur in the vicinity; turtles could use the parcel during seasonal movements or dispersal events, but parcel would not support a breeding population.	Possible Parcel is within known geographic range and contains appropriate habitat in the form of intermittent water with some potential for perennial pools.	None Parcel is outside of known geographic range.	None Parcel lacks appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate habitat in the form of intermittent to perennial flows.	None Parcel is within known geographic range but lacks appropriate habitat.	Possible Documented in vicinity of this parcel (Cogan 2015); generally associated with perennial to near-perennial water (e.g., pools and stock ponds) but may be found far from water. Could use the parcel during seasonal movements or during dispersal events or occur in stock ponds supported by wells.	None Parcel lacks appropriate habitat.
Thornscrub hook-nosed snake <i>(Gyalopion quadrangulare)</i>	COR - S	Found in canyon bottoms, outwash plains, creosotebush desert, mesquite grassland foothills, thorn woodland, and dry tropical and subtropical forest (NatureServe 2017; Stebbins 2003).	In Arizona, found in Patagonia and the Pajarito Mountains from 0 to 4,400 ft (NatureServe 2017; Stebbins 2003).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range and appropriate habitat may occur; however it has not been reported by Cogan (Cogan 2015).	None Parcel is outside known geographic range.
Twin spotted rattlesnake <i>(Crotalus pricei)</i>	COR - S	Primarily in or near large rock slides in Montane Coniferous Forest or Subalpine Coniferous Forest, but also in adjacent forest and canyon bottoms. Occasionally found in Madroño Evergreen Woodland (Brennan and Holycross 2006; Stebbins 2003).	Southeastern Arizona and mountains of western Mexico from 4,000 to 10,500 ft (Brennan and Holycross 2006; Stebbins 2003).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Species has not been reported on this parcel by Cogan (Cogan 2015). Parcel is within the known geographic range and contains limited habitat in the form of Madroño evergreen woodland.	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Yaqui black-headed snake (<i>Tantilla yaquia</i>)	COR - S	Found in most conditions under rocks or logs in Madran Evergreen Woodland, semidesert grasslands, and streamside woodlands from sea level to 5,500 ft (Brennan and Holycross 2006; NatureServe 2017; Stebbins 2003).	Found in southeastern Arizona and western Mexico (Brennan and Holycross 2006; NatureServe 2017; Stebbins 2003).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Possible Parcel is within the known geographic range and contains suitable habitat.	None Parcel is outside of known geographic range.
BIRDS													
Abert's towhee (<i>Melospiza aberti</i>)	COR - S	Most common in lowland riparian thickets with Fremont cottonwood, Goodding willow, sycamore, and mesquite, and in dry desert washes that are tributary to riparian areas (Corman and Wise-Gervais 2005; NatureServe 2017).	Primarily found throughout central and southern Arizona below the Mogollon Rim (Corman and Wise-Gervais 2005; NatureServe 2017).	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Unlikely Parcel is adjacent to the known geographic range and contains appropriate habitat.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	None Parcel is within known geographic range but does not contain riparian vegetation typical of appropriate habitat.	Present Species has been documented on the parcel.	Possible Parcel contains appropriate habitat and is within known range.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHX)	Occur in steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance. In Arizona, it is most often found in forested regions from pinyon pine-jumper and evergreen oaks to ponderosa pine and mixed conifer, to cold-temperate desert scrub and Sonoran desert scrub. (Corman and Wise-Gervais 2005)	Found in all areas throughout the state wherever there is suitable habitat. Some individuals remain near breeding territories year-round, while others move to lowlands or migrate south to spend the winter (Arizona Game and Fish Department 2002b; Corman and Wise-Gervais 2005).	Present Documented within the area (eBird 2017; WestLand Resources 2012b). Observed consistently from 2003 to 2011, including observed breeding activities, from Apache Leap (WestLand Resources 2012b). HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate habitat for nesting and foraging.	Possible Parcel is within the documented geographic range, and contains appropriate foraging habitat.	Present Documented in this parcel (Tucson Audubon Society 2016). HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate nesting and foraging habitat. HDMS records within 5 miles.	Possible Documented in this parcel (eBird 2017). HDMS records within 5 miles.	Present Documented in this parcel (eBird 2017).	Possible Parcel is within the known geographic range, and contains appropriate foraging habitat for the species.	Present Documented in this parcel (National Audubon Society 2014; eBird 2017).	Present Documented in this area (eBird 2017). HDMS records within 5 miles.
Arizona Botteri's sparrow (<i>Peucaea botterii arizonae</i>)	BLM - S (Gila)	Grassland specialists at elevations of 3,550 to 5,200 ft. Taller grasses, grassy swales, floodplain bottoms, and lower canyon drainages with periodic flooding are especially suitable. Breed and forage in sacaton bottoms with grassy hillsides and gentle upland slopes. Nest in thick clumps of upland grasslands with low shrubs (mesquite, acacia, ocotillo), and in rolling grasslands with evergreen oaks (Corman and Wise-Gervais 2005).	In Arizona, populations range from Buenos Aires National Wildlife Refuge, Pima County, to Pinery Creek se. of Dos Cabezas, Cochise County, to and Hay Hollow Wash north of MacDonald Peak. Local populations are common in the Sonora Plains, east Santa Cruz and southwest Cochise Counties, and between the Santa Rita and Huachuca Mountains.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	Unlikely Parcel is adjacent to known habitat, and contains marginal habitat for the species.	None Parcel is outside of known geographic range.	Present Species documented in this area (Tucson Audubon Society 2011a; National Audubon Society 2014). <i>P. b. arizonae</i> population centered at the [redacted] in southeastern Arizona (Webb and Bock 2012).	None Parcel is outside of known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Arizona grasshopper sparrow <i>(Ammodramus savanarum ammolegus)</i>	COR - S BLM - S (Gila)	Highly grassland-dependent; grasses of intermediate height for nesting are most suitable. In Arizona, found primarily in semi-arid, ungrazed grassland habitats that may include woody shrubs (mesquite, mimosa). Large, continuous grasslands over fragmented habitat are especially suitable (Corman and Wise-Gervais 2005). Other habitat types include Sonoran desertscrub, Chihuahuan Desertscrub, desert riparian deciduous woodland, and marsh-woodlands (Arizona Game and Fish Department 2017).	A small isolated year-round population in southeastern Arizona; including San Bernardino, Babocomari, and San Rafael valleys, the Sonora Plains north to the upper Cienega Creek drainage, the Sulphur Springs Valley, the Buenos Aires National Wildlife Refuge, and the extreme upper San Pedro River drainage near Mexico border. The <i>ammolegus</i> subspecies nests only in the southeastern portion of the state, and irregularly winters there as well (Corman and Wise-Gervais 2005).	Present Documented in this location (Avian Sites 2015; eBird 2016).	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Present Documented in this location (Avian Sites 2015).	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate foraging habitat.	Present Documented in this location (National Audubon Society 2014; Tucson Audubon Society 2011a). HDMS records within 5 miles.	Present Documented in this location (Avian Sites 2015).
Arizona woodpecker <i>(Picoides arizonae)</i>	COR - S	Occurs in several forested habitats in southeastern Arizona (at elevations of 3,900 to 8,005 ft), with Madresan Evergreen Oaks as common component. Most frequently found in extensive oak woodlands covering the lower and middle slopes of sky island ranges, consisting primarily of evergreen oaks. This includes the stringers of oaks that follow dry foothill drainages into semi-arid grasslands. Also encountered in adjacent mountain canyons and drainages dominated with oaks and Arizona sycamore. Also at slightly higher elevations in Madresan Pine-Oak woodlands where Chihuahuan, Apache, and ponderosa pine have an open understory of evergreen oaks, and juniper (Corman and Wise-Gervais 2005).	Although found in the Chiricahua, Huachuca, and Patagonia mountains in Arizona, this species primarily resides in Mexico. Year-round range extends from southeastern Arizona in the Baboquivari, Santa Catalina and Pinalero mountains, extreme southwestern New Mexico, and the southern Pacific Slope of Mexico, to Jalisco and Michoacan in Mexico (Johnson, Haight, and Ligon 1999; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Baird's sparrow (<i>Ammodramus bairdii</i>)	COR - S	Found in dense stands of grass, usually in extensive expanses of grasslands; also taller, denser grass and on south-facing slopes of mixed-oak grassland where the oaks are on the north-facing slope (Arizona Game and Fish Department 2013e).	Occurs from southeastern Arizona to Texas and south into Mexico from 4,140 to 4,900 ft (Arizona Game and Fish Department 2013e).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	COC - S BLM - S (Gila and PHN) Bald and Golden Eagle Protection Act	Nests in large riparian trees (cottonwoods, willows, sycamores) and pines, as well as on ledges and cliff faces. Nest locations are typically in areas of low human disturbance with unimpeded views, and are located near foraging areas with abundant prey. Wintering habitat has an adequate food supply, and open water (AGFD 2011a). In Arizona, bald eagles feed primarily on fish, but waterfowl, small mammals, and carrion also constitute a portion of the diet (USFWS 2011).	A small, primarily year-round resident population occupies areas in Central Arizona, while a wintering population occupies areas in both Central and Northern Arizona (AGFD 2011a). Current breeding territories in Arizona are associated with rivers and lakes throughout the state, but none are known from the vicinity of the Project (AGFD 2011a).	None Area is within the known geographic range but lacks appropriate habitat. Though the species has been documented nearby at the Boyce Thompson Arboretum; it is considered a rare and infrequent visitor present only during migration (Tomoff 1989), and was likely in habitat that is not present in this area.	Possible Parcel is within the known geographic range of the species and has been documented by Forest Service within 5 miles of Turkey Creek parcel, which contains Montane Riparian Wetland along creek and appropriate habitat. HDMS records within 5 miles.	Unlikely Parcel is within the known geographic range and there are HDMS records within 5 miles. Although the parcel is not primarily composed of appropriate habitat, it contains portions of Sonoran Riparian Deciduous Forest along defined corridor. This habitat, however, is sparse, and therefore not likely of the type and density appropriate for this species.	Possible Parcel is within the geographic range and contains a substantial perennial tributary with some areas appropriate foraging and nesting habitat. HDMS records within 5 miles.	Possible Parcel is within the geographic range and contains a substantial perennial tributary with some areas appropriate foraging and nesting habitat. HDMS records within 5 miles.	None Parcel is within the known geographic range but lacks appropriate habitat.	None Parcel is within the known geographic range but lacks appropriate habitat.	None Parcel is within the known geographic range but lacks appropriate habitat. HDMS records within 5 miles.	Present Documented in this parcel (National Audubon Society 2014).	None Parcel is within the known geographic range but lacks appropriate habitat.
Broad-billed hummingbird (<i>Cyanthus latirostris</i>)	COR - S	In Arizona, usually in broadleaf riparian forest with sycamores or cottonwoods. In lowland areas, found in cottonwood, willow, or mesquite woodlands along drainages, lakes, ponds, and springs (Corman and Wise-Gervais 2005; NatureServe 2017).	Southeastern Arizona, southwestern New Mexico, and south to central Mexico. Breeding confirmed in several mountain ranges in southeastern Arizona from 1,700 to 5,800 ft (Corman and Wise-Gervais 2005; NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.
Buff-breasted flycatcher (<i>Empidonax fulvifrons</i>)	COR - S	Found in Madrean pine-oak woodlands, in areas with relatively wide, open drainages with open canopy forest of Chihuahuas, Apache, or ponderosa pine (Arizona Game and Fish Department 2013f; Corman and Wise-Gervais 2005).	Located in southeastern Arizona to southwestern Chihuahuas from 5,380 to 8,450 ft. Populations declining, possibly fewer than 75 individuals in Arizona (Arizona Game and Fish Department 2013f; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range but does not contain appropriate riparian vegetation.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Buff-collared nighthawk <i>(Caprimulgus ridgwayi)</i>	COR - S	Found in open, arid canyons with steep to moderate slopes in Sonoran Desertscrub and Semidesert Grassland. Canyon bottoms dominated by thorny, short-statured trees and shrubs (Corman and Wise-Gervais 2005; NatureServe 2017).	Southeastern Arizona is at the northern limit of this species' range, extending to southern Mexico and Guatemala from 3,000 to 4,600 ft. Rare reports from the Santa Rita Mountains (Corman and Wise-Gervais 2005; NatureServe 2017).	Unlikely Parcel is adjacent to known geographic range and contains marginal habitat for the species.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is adjacent to known geographic range and contains suitable habitat for the species.	Possible Parcel is within known geographic range and contains suitable habitat for the species.	None Parcel is outside known geographic range.	None Parcel is within known geographic range, but lacks habitat for the species.	None Parcel is outside known geographic range.
Burrowing owl (western) <i>(Athene cunicularia hypogaea)</i>	COC - S BLM - S (Gila and PHX)	Occurs in areas with burrowing mammals are suitable for this species; particularly in open, treeless, flat to gently-sloping areas characterized by low, sparse vegetation within grassland, steppe, and desert biomes (Poulin et al. 2011). Also use human-influenced landscapes such as fallow fields, bladed areas for future development, irrigation and canal embankments, agricultural lands, airports, golf courses, and other open disturbed areas. (Corman and Wise-Gervais 2005).	Generally, found nesting throughout the state where favorable habitat is present; though there are some concentration areas such as near Yuma, in the Peritall and Hualapai valleys north of Kingman. Concentrations also in the northeast from Winslow northeast to Polacca and in the Chinle Valley, and in the southeast in Cochise County, east of the San Pedro River, and from Phoenix down the I-10 corridor to Marana (Corman and Wise-Gervais 2005).	None Parcel is within the known geographic range of but lacks appropriate habitat.	None Parcel is within the known geographic range of but lacks appropriate habitat.	None Parcel is within the known geographic range of but lacks appropriate habitat.	None Parcel is within the known geographic range of but lacks appropriate habitat.	None Parcel is within the known geographic range of but lacks appropriate habitat.	None Parcel is within the known geographic range of the species but lacks appropriate habitat.	Possible Parcel is within the known geographic range of the species and contains limited portions of appropriate habitat potentially.	None Parcel is within the known geographic range but lacks appropriate habitat.	Present Documented in this location. It was deemed "rare, vagrant, or accidental" (National Audubon Society 2014).	None Parcel is within the known geographic range but lacks appropriate habitat.
Cactus ferruginous pygmy-owl <i>(Glaucidium brasilianum cactorum)</i>	COR - S BLM - S (Gila and PHX)	Occurs in Sonoran riparian deciduous woodland within Arizona Upland Subdivision of Sonoran desert scrub (Arizona Game and Fish Department 2017). Well-vegetated Sonoran desert scrub and mesquite bosques (Corman and Wise-Gervais 2005).	Found in south-central Arizona. Most occurrences in Pima County. Few scattered records as far north as northern Pinal County (Arizona Game and Fish Department 2017).	None Parcel is outside of the known geographic range.	None Parcel is outside of the known geographic range.	None Parcel is outside of the known geographic range.	None Parcel is outside of the known geographic range.	None Parcel is outside of the known geographic range.	None Parcel is outside of the known geographic range.	Possible Parcel is within the known geographic range and contains appropriate Sonoran desertscrub habitat.	None Parcel is outside of the known geographic range.	None Parcel lacks appropriate habitat.	None Parcel is at northern extent of the known geographic range and does not contain appropriate habitat (Sonoran desertscrub habitat with dry xeric washes).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
California black rail <i>(Laterallus jamaicensis coturniculus)</i>	BLM - S (Gila)	Found in a variety of wetlands across their range, including salt and freshwater marshes, wet meadows, and flooded grassy vegetation. In Arizona, they are found in wetlands with shallow, stable water less than 3 cm deep with gently sloping shorelines. Vegetation communities in this habitat are dominated by threesquare bulrush, with cottonwood, tamarisk, saltgrass, and arrowweed also present (Eddleman, Flores, and Legare 1994; Corman and Wise-Gervais 2005).	This subspecies is found in isolated locations within California, Arizona, and Baja California both year-round and during the breeding season. Colorado River population in Arizona found southwest of Imperial Dam. Also found on Mittry Lake and the Bill Williams River National Wildlife Refuge, Martinez Lake, Imperial and Havasu National Wildlife Refuges, on Colorado River Indian tribal lands, and one record from within the Grand Canyon near Spencer Canyon (Eddleman, Flores, and Legare 1994; Corman and Wise-Gervais 2005).	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.	None Parcel is outside the known geographic range, and lacks appropriate habitat.
California condor <i>(Gymnogyps californianus)</i>	Endangered/EPNE; designated critical habitat BLM - S (Gila and PHX)	This bird occupies nesting sites in various rock formations, including caves, crevices, and potholes in isolated regions of the southwestern U.S. (Arizona Ecological Services Field Office 2009a).	Reintroduction of a nonessential experimental population of condors was initiated in the Vermillion Cliffs area in northern Arizona in December 1996. Condors from the Arizona reintroduction are generally found in the vicinity of Grand Canyon National Park and the Kaibab Plateau in Arizona and Zion National Park in Utah. The designated experimental population area in Arizona includes portions of Apache, Coconino, Mohave, Navajo, and Yavapai counties (Arizona Ecological Services Field Office 2009a).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.
California least tern <i>(Sternula antillarum browni)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	Occur along coasts, nesting in sparsely vegetated open areas associated with permanent waters. Typical nesting colonies occur on open beaches, mud or sand flats, or gravel pits along shorelines of rivers, lakes, and reservoirs (U.S. Fish and Wildlife Service 1985, 2009a).	Typically, the pacific coast of California from San Francisco to Baja. May occur in Arizona where suitable nesting habitat occurs. Breeding documented in Maricopa County. Transient migrants have been observed in Mohave and Pima counties (U.S. Fish and Wildlife Service 2009a).	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.	None Parcel is within the known range, but lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Desert purple martin <i>(Progne subis hesperia)</i>	BLM - S (Gila and PHX)	In Arizona, this large swallow is found in Sonoran desert scrub where large saguaros with many cavities are in abundance or in higher elevation woodlands including pure stands of ponderosa pine, as well as those with a Gambel's oak, Madraen evergreen oak, or pinyon pine-juniper component, and less frequently in mixed conifer forests. Forages over rivers, lakes, ponds, and earthen stock tanks, often at considerable distances from nest sites (Corman and Wise-Gervais 2005).	In Arizona, the species breeds in saguaro associations throughout south-central Arizona and in open forested areas above and below the Mogollon Rim (Corman and Wise-Gervais 2005). Species has also been documented at the nearby Upper Queen Creek and Boyce Thompson Arboretum, likely in similar habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. Species has also been documented at the nearby Boyce Thompson Arboretum, likely in similar habitat.	Present Documented in this location.	Possible Parcel is within the known geographic range and contains appropriate habitat.	Present Documented in this location. It was deemed "rare, vagrant, or accidental" (National Audubon Society 2014).	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. Species has also been documented at the nearby Boyce Thompson Arboretum, likely in similar habitat.
Eared quetzal <i>(Euphonia neovenus)</i>	COR - S	Found in pine and pine-oak forests, Madraen Evergreen Woodland (Arizona Game and Fish Department 2002g; Corman and Wise-Gervais 2005; NatureServe 2017).	Rarely observed in Arizona and no successful breeding confirmed for Arizona (Arizona Game and Fish Department 2002g; Corman and Wise-Gervais 2005; NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range but does not contain preferred pine oak forests.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Elegant trogon <i>(Trogon elegans)</i>	COR - S	Sycamores, pines, and oaks are used by elegant trogon in Arizona (Kunzmann, Hall, and Johnson 1998). Nest most abundantly in canyons with perennial or intermittent water flow, though not a requirement. In Arizona, nesting occurs locally and uncommonly in natural cavities between 3,652 to 6,299 ft in elevation, but have been observed foraging above 7,001 ft. Most nesting pairs inhabit forested mountain canyons where large sycamores merge with Madrean Pine-Oak woodlands; typically, with Arizona sycamore, evergreen oaks, Apache pine, Chihuahuan pine, Douglas fir, alligator juniper, Arizona cypress Arizona madrone, and bigtooth maple. A few occupied canyons at lower elevations contain only sycamores, with slopes and side drainages dominated by scattered stands of evergreen oaks, pinyon pine, and juniper (Corman and Wise-Gervais 2005).	Primarily a year-round resident of Mexico and Central America, this species will also migrate to breed in southeastern Arizona and southwestern New Mexico. Breeding is fairly common in canyons within the Atascosas, Chiricahuas, Huachuacas, and Santa Rita mountain ranges (Kunzmann, Hall, and Johnson 1998). Also confirmed breeding in Sycamore Canyon, Pajarito Mountains, and the nearby Pena Blanca Canyon. Occasionally found in adjacent mountain ranges during migration and post-breeding dispersal, including the Baboquivari, Rincon, and Santa Catalina mountains. Northern extralimital records include Aravaipa Canyon northeast of Mammoth, Pinal County, and north of Carefree, Maricopa County (Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range, but does not contain appropriate riparian and/or forested canyon vegetation.	None Parcel is outside known geographic range.
Ferruginous hawk <i>(Buteo regalis)</i>	BLM - S (Gila and PHX)	Found in open, flat grassland associations with nearby knolls with scattered junipers. Sometimes found in sagebrush-shrouded deserts and pine-juniper woodlands in breeding range (Corman and Wise-Gervais 2005).	Breeds in northern Arizona (Corman and Wise-Gervais 2005). Found year-round in any part of Arizona with native grasslands or agricultural fields (Arizona Game and Fish Department 2017).	Unlikely Parcel is outside known breeding range and lacks appropriate year-round habitat.	Possible Parcel is within the known geographic range and may contain limited appropriate year-round habitat of open grasslands.	Possible Parcel is within the known geographic range and contains appropriate year-round habitat of grasslands scattered with junipers.	Unlikely Parcel is outside known breeding range and lacks appropriate year-round habitat.	Unlikely Parcel is outside known breeding range and lacks appropriate year-round habitat.	Unlikely Parcel is outside known breeding range and lacks appropriate year-round habitat.	Unlikely Parcel is outside known breeding range and lacks appropriate year-round habitat.	Possible Parcel is within the known geographic range and contains appropriate year-round habitat of grasslands scattered with junipers.	Possible Parcel is within the known geographic range and contains appropriate year-round habitat of grasslands scattered with junipers.	None Parcel is outside known breeding range and lacks appropriate year-round habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Gilded flicker (<i>Colaptes chrysoides</i>)	BLM - S (Gila and PHX)	Occurs primarily in Sonoran Desert uplands, in areas containing numerous saguaro cacti. Fewer are found in more arid and sparsely vegetated areas. It is also known to use adjacent areas of wooded desert dry washes and Sonoran riparian woodlands containing cottonwood and willow, but mostly for foraging (Corman and Wise-Gervais 2005).	Considered a common resident in suitable habitat throughout Arizona (Moore 1995), especially in the south central portion of the state, west to the Colorado River valley, east to the lower San Pedro River, and north to the Big Sandy and Santa Maria River drainages (Corman and Wise-Gervais 2005).	Present Documented in this location (Avian Sites 2015).	Unlikely Parcel is within the known geographic range, but lacks appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting, foraging, and wintering habitat.	Present Documented in this area (Tucson Audubon Society 2011a, 2016).	Unlikely Parcel is within the known geographic range, but lacks suitable habitat.	Present Documented in this area (Avian Sites 2015).	Present Documented in this area (Wilbor 2010; eBird 2017).	Present Documented in this area (WestLand Resources 2016).	Possible Documented in this area (eBird 2017).	Present Documented in this area (Avian Sites 2015).
Golden eagle (<i>Aquila chrysaetos</i>)	BLM - S (Gila and PHX) Bald and Golden Eagle Protection Act	Breeds in piñon juniper woodlands, Sonoran desertscrub, Madrean evergreen oak woodlands, semi-arid grasslands, chaparral, and landscapes dominated by big sagebrush. It is known to construct its nest in areas with little to no human activity, in tall trees, cliffs, canyons, or rock ledges, near large open areas where they forage for prey (Corman and Wise-Gervais 2005). Golden eagles are known to forage within 4.4 miles of the nest (Tesky 1994), generally in open habitats where prey is available (Kochert et al. 2002).	In Arizona, the species is described as a fairly common resident in suitable habitat throughout the state (Corman and Wise-Gervais 2005).	Possible Reported by citizen scientists to occur in this area (eBird 2017). HDMS records within 5 miles.	Possible Parcel is within the known geographic range and contains appropriate roosting and foraging habitat. HDMS records within 5 miles.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. HDMS records within 5 miles.	Possible Documented in this location (eBird 2017). HDMS records within 5 miles.	Possible Parcel is within the known geographic range and contains appropriate nesting habitat.	Possible Documented in this location (eBird 2017). HDMS records within 5 miles.	Possible Documented in this location (eBird 2017). HDMS records within 5 miles.	Possible Parcel is within the known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Documented in this location (National Audubon Society 2014).	Possible Documented in this location (eBird 2017). HDMS records within 5 miles.
Gould's wild turkey (<i>Meleagris gallopavo mexicana</i>)	COR - S	Found in evergreen oak woodlands, Madrean pine-oak forests, and sycamore-dominated drainages (Corman and Wise-Gervais 2005).	Merriam's race is widespread in Arizona, but Gould's race has had successful reintroductions in the Huachuca and Galiuro Mountains. No recent records from Santa Rita Mountains. Found from 3,800 to 9,300 ft (Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Gray vireo (<i>Vireo vicinior</i>)	COR - S	This vireo is most often found in relatively arid, open areas containing juniper, often on sloping terrain. Prefers areas dominated by pinyon and juniper with a scattered low woody shrub-dominant understory. Associated to a lesser extent with Madrean Evergreen Woodland and chaparral-covered slopes with scattered juniper and pinyon pine. Typically nest in elevations ranging from 3,500 to 6,800 ft (Corman and Wise-Gervais 2005). Winter habitat in Arizona consists of lowland desert scrub with little or no rainfall or other fresh water source, rocky canyons, and desert mountains. Habitat used during migration likely consists of same habitat used during breeding and wintering (Barlow, Leckie, and Baril 1999).	In the United States, this species breeds from southern Utah and western Colorado, south to southern Nevada, Arizona, and New Mexico. Isolated populations also breed in southern California and western Texas. It is described as a fairly common nesting species in suitable habitat across northern Arizona, though it has also been documented breeding along the southern edge of the Mogollon Rim, and south in the Superstition, Pinal, Santa Teresa, Galinato, Winchester, Santa Catalina, Pinalero, Dos Cabezas, and Chiricahua mountains (Corman and Wise-Gervais 2005). In Arizona, the species winters locally in the southwestern portion of the state, as well as in the Kofa Mountains (Yuma County), and occasionally in Tucson (Pima County) (Barlow, Leckie, and Baril 1999).	Present Species has been documented on the parcel.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Present Species has been documented on the parcel.	Possible Parcel contains appropriate habitat and is within known range.	Possible Parcel contains appropriate habitat and is within known range.	Present Species has been documented on the parcel.	Present Species has been documented on the parcel.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Le Conte's thrasher <i>Toxostoma lecontei</i>	BLM - S (Gila and PHX)	In Arizona, primarily resides in some of the most arid and inhospitable regions of the Sonoran Desert. Records mostly from the more sparsely vegetated lower Sonoran Desert region. Typical habitat consists of open, flat to gently rolling hills and shallow braided washes with very sparse vegetation. Trees and larger shrubs are usually very sparingly distributed and saguaros and cholla are typically absent. Undisturbed habitat away from urban or agricultural areas is most suitable (Corman and Wise-Gervais 2005). Requires vegetation litter for arthropod forage, though will also forage on desert substrate (Sheppard 1996).	Within Arizona, primarily found from extreme west and southwest, through Gila River valley to Florence and Picacho Peak regions. Largest populations in Arizona located in Cabeza Prieta National Wildlife Refuge and Marry M Goldwater Range. Isolated populations in the middle Gila River valley, Mohave Desert along the Sacramento Valley west of Kingman, and within the lower Detrital Valley south of Lake Mead. Found at lower elevations (150 to 1,500 ft) within Sonoran Desert compared to Mojave Desert locations (Corman and Wise-Gervais 2005).	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.	None Parcel is within known geographic range but lacks appropriate habitat.
Lucifer hummingbird <i>Calothorax lucifer</i>	COR - S	Found in dry brushy to sparsely vegetated rocky canyon slopes, foothill washes, and dry woodland edges; open arid landscapes with scattered agaves, yucca, and ocotillo (Corman and Wise-Gervais 2005; NatureServe 2017).	Southeastern Arizona is at the northern limit of the range extending to southern Mexico from 3,900 to 5,300 ft. Breeding has been reported in the Santa Rita Mountains (Corman and Wise-Gervais 2005; NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	Threatened, designated critical habitat BLM - S (Gila and PHX)	Largely occurs in mature montane forests and woodlands of mixed conifer dominated by Douglas fir, pine, or true fir, or in ponderosa pine/Gambel oak at elevations of 4,000 to 9,000 ft (Gutiérrez, Franklin, and Lahaye 1995). AGFD (2005) reports elevational range from 2,720 to 10,000 ft. Also, found in narrow canyons dominated by vertical-walled rocky cliffs within complex watersheds. Nesting typically occurs near a water source (USFWS 2004). Wintering habitat can include lower elevation habitats such as piñon-juniper woodlands and dense riparian areas (Gutiérrez, Franklin, and Lahaye 1995; AGFD 2005).	Patchy distribution, reflecting the availability of appropriate habitats. Has the same range for breeding and wintering, although some individuals periodically move to lower elevations during the winter, or even migrate relatively short distances in search of prey (Corman and Wise-Gervais 2005). In total, 8.6 million acres are designated critical habitat for the species in Arizona, Colorado, New Mexico, and Utah on Federal lands (USFWS 2004).	None Area lacks appropriate habitat for nesting or wintering). Was not detected during raptor surveys in 2004 (West and Resources 2004c). Critical Habitat occurs approximately 5 miles to the east at the higher elevation in the Pinal Mountains.	Possible Parcel is within the geographic range for the species, and contains portions of appropriate habitat for this species. Designated Critical Habitat in this area. HDMS records within 5 miles.	None Parcel is below the lower limits of known elevation range and lacks appropriate habitat.	None Parcel is below the lower limits of known elevation range and lacks appropriate habitat.	Possible Parcel is within the geographic range for the species, is located within a Protected Activity Center, and contains portions of appropriate habitat for this species. Designated Critical Habitat in this area. HDMS records within 5 miles.	None Parcel is at lower limits of known elevation range and lacks appropriate habitat.	None Parcel is below the lower limits of known elevation range and lacks appropriate habitat.	None Parcel is at lower limits of known elevation range and lacks appropriate habitat.	None Although there is Designated Critical Habitat within 5 miles of this area, it is below the lower limits of known elevation range and lacks appropriate habitat.	None Parcel is at lower limits of known elevation range and lacks appropriate habitat.
Northern aplomado falcon (<i>Falco femoralis septentrionalis</i>)	BLM - S (Gila)	Species has historically occurred in coastal prairie, savanna, and grassland habitats (Arizona Game and Fish Department 2001p; U.S. Fish and Wildlife Service 2006).	Species has historically occurred from southern Gulf coast of Texas through southwestern Arizona, as well as through Mexico and in portions of Guatemala and El Salvador (Arizona Game and Fish Department 2001p; U.S. Fish and Wildlife Service 2006). Species has not been recorded in Arizona since before the 1940s (U.S. Fish and Wildlife Service 2006).	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.	None Parcel is outside known geographic range since the 1940s.
Northern beardless-tyrannulet (<i>Camptostoma imberbe</i>)	COR - S	Found in open riparian woodlands and heavily wooded dry washes. Surface water often present, but not required. Intermittent foothill drainages with netleaf hackberry and mesquite (Corman and Wise-Gervais 2005).	Found in southeastern Arizona, southwestern New Mexico, and south through Mexico to Costa Rica from 1,920 to 4,600 ft. Breeding confirmed in several river drainages in southeastern Arizona (Corman and Wise-Gervais 2005).	Possible Parcel is within known geographic range and contains suitable habitat.	Unlikely Parcel is adjacent to the known geographic range, but contains suitable habitat.	Unlikely Parcel is adjacent to the known geographic range, but contains suitable habitat.	Unlikely Parcel is adjacent to the known geographic range, but contains suitable habitat.	None Parcel is outside known geographic range.	Unlikely Parcel is within known geographic range, but contains marginal habitat for the species.	Possible Parcel is within known geographic range and contains suitable habitat.	None Parcel is within known geographic range, but lacks suitable habitat.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Northern goshawk <i>(Accipiter gentilis atricapillus)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	Favors cool, mature to old-growth forests of tall pine, fir, and/or spruce, including riparian drainages. Breeding records mostly from pure ponderosa pine forests. Also known from mixed conifer forests, ponderosa pine-Gambel's oak associations, and Madrean pine-oak woodlands between 6,000 and 9,500 ft (Corman and Wise-Gervais 2005). AGFD (2013) reports the elevational range of the species between 4,750 to 9,120 ft. High canopy closure and open understories are most suitable (Squires and Reynolds 1997).	In Arizona found in most of the high-elevation, heavily forested regions of the state (Corman and Wise-Gervais 2005). In southeast Arizona, found in Madrean evergreen oak woodlands in lower elevations (Snyder 1995).	Possible Area is within the known geographic range and contains appropriate habitat for the species.	Possible Parcel is within the known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Parcel is within the known geographic range; but below the known elevational range of the species; but contains appropriate foraging habitat.	Possible Parcel is within the known geographic range; but below the known elevational range of the species; but contains appropriate foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Possible Parcel is within the known geographic range and contains appropriate habitat. HDMS records within 5 miles.	Present Documented in this parcel (Tucson Audubon Society 2016).	None Parcel is within the known geographic range but lacks appropriate habitat.	Present Documented in this parcel (National Audubon Society 2014).	Possible Parcel is within the known geographic range, outside the known elevational range; but contains appropriate foraging habitat for. Parcel also contains portions of habitat similar to the nearby Boyce Thompson Arboretum, where the species has been documented.
Pinon jay <i>(Gymophis cyanocephalus)</i>	BLM - S (Gila and PHX)	Inhabits piñon-juniper woodland is used most extensively but flocks also breed in sagebrush, scrub oak, and chaparral communities (Balda 2002). Species is closely associated with piñon pines and adjacent conifers or grasslands with scattered stands of juniper. It is often found in bordering habitats as it wanders widely to forage (Corman and Wise-Gervais 2005). Foraging locations vary seasonally. In Arizona, foraging has been documented in meadows, grasslands, woodlands, ponderosa-pine forests, and mixed conifer forests (including burned areas) (Balda 2002).	Arizona breeding range includes central and northern Arizona, where it closely parallels the distribution of Colorado piñon pine. Generally, considered non-migratory, but when food sources are lacking in the north, the species has been known to disperse irregularly to forage; sometimes traveling to southeastern Arizona sky islands and beyond. (Corman and Wise-Gervais 2005).	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. Species has been known to wander widely to forage, and is often found in adjacent habitats such as these. It has also been documented at the nearby Boyce Thompson Arboretum, which contains portions of habitat similar to that of which is present in portions of the area.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. Species has been known to wander widely to forage, and is often found in adjacent habitats such as these. It has also been documented at the nearby Boyce Thompson Arboretum, which contains portions of habitat similar to that of which is present in portions of the area.	None Parcel is within the known geographic range but lacks appropriate habitat.	None Parcel is within the known geographic range but lacks appropriate habitat.	Unlikely Parcel is outside the known geographic range but is in close proximity. While it contains appropriate habitat for breeding and foraging the likelihood of dispersal of the species is low.	Possible Parcel is within the known geographic range and contains appropriate nesting and foraging habitat. Species has been known to wander widely to forage, and is often found in adjacent habitats such as these. It has also been documented at the nearby Boyce Thompson Arboretum, which contains portions of habitat similar to that of which is present in portions of the area.
Rose-throated becard <i>(Pachyrhamphus aglaiae)</i>	COR - S	Found in shady riparian woodlands along small perennial or intermittent foothill drainages and canyons, with sycamores, cottonwoods, and velvet ash (Arizona Game and Fish Department 2001r; Corman and Wise-Gervais 2005).	The range for the species consists of southeastern Arizona south to Costa Rica. (Arizona Game and Fish Department 2001r; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is adjacent to known geographic range, but lacks suitable habitat.	None Parcel is outside known geographic range.	None Parcel is within the known geographic range, but lacks suitable habitat.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Endangered; designated critical habitat BLM - S (Gila and PHX)	Dependent on cottonwood/willow and/or tamarisk riparian communities along rivers and streams. Suitable habitat includes riparian areas with complex habitats, dense under- and mid-story vegetation that is ≥ 10 ft in height, with or without canopy cover, and in close proximity to surface water (AGFD 2002m).	A neotropical migrant that winters in Mexico and Central America and breeds throughout the greater southwestern U.S. In Arizona, this species breeds very locally along dynamic riparian systems, including the middle Gila, Salt, Verde rivers; middle to lower San Pedro River; and upper San Francisco River (USFWS 2013b). In total, approximately 1,227 stream miles are designated as critical habitat for the species in California, Nevada, Utah, Colorado, Arizona and New Mexico.	Unlikely Area is within the geographic range but lacks appropriate habitat. However, willow flycatchers have been detected in this parcel. Willow flycatcher detections on the parcel were not distinguished by subspecies and eBird reports detections occurred during the non-breeding season for this subspecies (eBird 2017). As such, it is likely that these detections could be individuals of non-listed subspecies. Based on this information, Southwestern willow flycatcher is unlikely to occur in the area. HDMS records within 5 miles, and are likely individuals detected nearby at Boyce Thompson Arboretum and along Lower Queen Creek (Mark Taylor, USFS pers. comm.).	Possible Parcel is within the geographic range and contains appropriate habitat, including Montane Riparian Wetlands that occur along the intermittent to perennial creek.	Possible Parcel is within the geographic range and contains appropriate habitat. Designated Critical Habitat within 5 miles of this parcel.	Possible Parcel is within the geographic range and contains appropriate habitat (Sonoran Riparian Deciduous Forest).	Possible Parcel is within the geographic range and contains appropriate habitat including large riparian trees including cottonwood and willow along the perennial creek.	Unlikely Parcel is within the geographic range but does not contain appropriate habitat. However, species occurs nearby (Oak Flat) and southwestern willow flycatchers were detected nearby at Boyce Thompson Arboretum (Tucson Audubon Society 2011b) and along Lower Queen Creek (Mark Taylor, USFS pers. comm.).	Present Southwestern willow flycatcher detected at Lower San Pedro River (Tucson Audubon Society 2011b). HDMS records within 5 miles. Designated Critical Habitat is located on the parcel.	None Parcel is within the geographic range but does not contain appropriate habitat. The HDMS records within 5 miles and Designated Critical Habitat within 5 miles of this parcel are in appropriate habitat, which is not present on the parcel.	Possible Willow flycatchers have been observed at Appleton Ranch (National Audubon Society 2014; Tucson Audubon Society 2011b; eBird 2017). Willow flycatcher detections on the parcel were not distinguished by subspecies. The parcel contains limited appropriate habitat.	Unlikely Parcel is within the geographic range but does not contain appropriate habitat. However, species occurs nearby (Oak Flat) and southwestern willow flycatchers were detected nearby at Boyce Thompson Arboretum (Tucson Audubon Society 2011b) and along Lower Queen Creek (Mark Taylor, USFS pers. comm.).
Sprague's pipit (<i>Anthus spragueii</i>)	Candidate	Nests in short-grass plains, mixed-grass prairie, and wet meadows around alkali and freshwater lakes (Arizona Game and Fish Department 2010a). In Arizona, found in areas of extensive, well-developed desert grasslands lacking scrub height vegetation, and are associated with <i>Andropogon</i> spp. grasses (Jones 2010).	Winters rare and sparse in south-central and southeastern Arizona; primarily in San Rafael, Sonoita, and Sulphur Springs Grasslands in the southeast, and infrequently in grassy fields along the lower Colorado River from north of Yuma to Parker, and grass and alfalfa fields near Phoenix and Sierra Vista (Arizona Game and Fish Department 2010a).	None Parcel lacks grassland habitats.	None Parcel lacks grassland habitats.	None Parcel lacks grassland habitats.	None Although there are HDMS records within 5 miles, the parcel is outside the known range and lacks grassland habitats.	None Parcel lacks grassland habitats.	None Parcel lacks grassland habitats.	None Parcel lacks grassland habitats.	None Parcel lacks grassland habitats.	Present Species has been documented in this location (Tucson Audubon Society 2011b; eBird 2017). At Appleton Ranch it was deemed "rare, vagrant, or accidental" (National Audubon Society 2014) HDMS records within 5 miles.	None Parcel lacks grassland habitats.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Sulphur-bellied flycatcher <i>(Myiodynastes luteiventris)</i>	COR - S TNF - S	Primarily associated with tall riparian woodlands and forests although they are known to forage in pine and oak woodlands adjacent to riparian deciduous forests in the form of individual, discontinuous patches, or narrow bands of Fremont cottonwood and Goodding's willow. Elevations range between 4,500 and 7,500 ft (Corman and Wise-Gervais 2005).	Breeds and migrates from central to, primarily, southeastern Arizona. Found from southeastern Arizona to the Mogollon Rim, although more common in southeastern portions of the state (Corman and Wise-Gervais 2005).	Unlikely Parcel is within the known geographic range and contains limited appropriate foraging habitat. Was not detected in summer surveys in 2009 (WestLand Resources 2009), or breeding a bird census in 2009 (WestLand Resources 2010).	Possible Parcel is within the known geographic range and contains appropriate habitat.	Unlikely Parcel is within the known geographic range and contains limited appropriate habitat.	Unlikely Parcel is within the known geographic range and contains limited appropriate habitat (Possible Parcel is within the known geographic range and contains appropriate habitat.	None Parcel is within the known geographic range, but lacks appropriate habitat riparian.	Possible Parcel is within the known geographic range and riparian woodlands are present within the parcel.	None Parcel is within the known geographic range, but lacks appropriate habitat.	Possible Parcel is within the known geographic range and contains appropriate habitat.	None Parcel is within the known geographic range, but lacks appropriate habitat.
Thick-billed kingbird <i>(Tyrannus crassirostris)</i>	COR - S	Found in riparian gallery woodlands in broad floodplains of perennial or intermittent creeks and rivers (Arizona Game and Fish Department 2010d; Corman and Wise-Gervais 2005).	Found in southeastern Arizona, southwestern New Mexico, south to southern Mexico and Guatemala from 3,500 to 4,200 ft. Breeding confirmed in several canyons and rivers in southeastern Arizona (Arizona Game and Fish Department 2010d; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is within the known geographic range and contains appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is within the known geographic range but does not contain appropriate riparian habitat.	None Parcel is outside known geographic range.
Varied bunting <i>(Passerina versicolor)</i>	COR - S	Found in brushy arid slopes, canyons, and dry washes, particularly along drainages with mesquite and netleaf hackberry with dense thickets on adjacent slopes (Corman and Wise-Gervais 2005; NatureServe 2017).	Found from southeastern Arizona and southern Texas to southern Mexico from 1,350 to 5,100 ft. Known to breed on northwestern side of the Santa Rita Mountains (Corman and Wise-Gervais 2005; NatureServe 2017).	Possible Parcel is within the known geographic range and contains suitable habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within the known geographic range, but does not contain sufficient suitable habitat.	Possible Parcel is within the known geographic range and contains mesquite habitat along the San Pedro River and adjacent tributary canyons.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel	None Parcel is outside known geographic range.
Violet-crowned hummingbird <i>(Amazilia violiceps)</i>	COR - S	Found in sycamore and some cottonwood-willow riparian habitats along several canyons and creeks; scrub, open woodland, forest edge, riparian groves and plantations, generally in arid or semi-arid situations (Arizona Game and Fish Department 2002a; Corman and Wise-Gervais 2005).	Found in southeastern Arizona and southwestern New Mexico south to central Mexico. Present in several mountain ranges in southeastern Arizona from 2,800 to 5,800 ft (Arizona Game and Fish Department 2002a; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Unlikely Parcel is within the known geographic range but lacks extensive amounts of appropriate riparian habitat.	None Parcel is outside known geographic range.
Whiskered screech owl <i>(Megascops trichopsis)</i>	COR - S	Found in dense oak and oak-pine woodlands (Corman and Wise-Gervais 2005; NatureServe 2017).	Found in southeastern Arizona and adjacent New Mexico south to northern Nicaragua from 3,800 to 7,600 ft (Corman and Wise-Gervais 2005; NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Present Species has been documented on the parcel.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
White-eared hummingbird <i>(Hylocharis leucotis)</i>	COR - S	Found in shrubby undergrowth of pine-oak and Madroan evergreen oak forests in highlands (Corman and Wise-Gervais 2005; NatureServe 2017).	Found primarily in Mexico and Central America. Rare and irregular in Arizona. Found at elevations from 5,500 to 8,400 ft. Breeding confirmed only in the Huachuca and Chiricahua Mountains (Corman and Wise-Gervais 2005; NatureServe 2017).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range, however records for the area indicate that occurrences are limited to the Huachuca and Santa Rita mountains (eBird 2017; Corman and Wise-Gervais 2005).	None Parcel is outside known geographic range.
Yellow-billed cuckoo <i>(Coccyzus americanus occidentalis)</i>	Threatened; proposed critical habitat COC - S COC - S TON - S BLM - S (Gila and PHM)	Typically associated with dense riparian forest and woodland environments including cottonwood-willow galleries and mesquite bosques. In southeastern Arizona, they are known to nest along intermittent streams supporting dense stands of mesquite and netleaf hackberry (Corman and Wise-Gervais 2005). Dense understory foliage is an important factor in nest site selection (AGFD, 2016). This species has also been found in areas of upland-associated vegetation and in drainages dominated by oaks and junipers (WestLand Resources 2013b, 2015a)	Found west of the Rocky Mountains in North America south to southern Baja California. In Arizona, species is generally found in southern, central, and extreme northeast portions of state, but has been documented in all counties (Arizona Game and Fish Department 2011g).	Unlikely Area is within the geographic range and there are HDMS records within 5 miles. There are limited areas of dense oaks within drainages, however, the species has never been detected in the area. Species-specific surveys in 2017 did not detect the species (Westland 2017). Based on the limited amount of habitat and available survey data, it is unlikely that the species occurs in the area.	Possible Parcel is within the geographic range and contains perennial surface water with Montane Riparian Wetland.	Unlikely Parcel is within the geographic range and contains an ephemeral stream with limited Sonoran Riparian Deciduous Forest. HDMS records within 5 miles.	Possible Parcel is within the geographic range and contains some appropriate riparian vegetation and intermittent and perennial surface water. HDMS records within 5 miles.	Possible Parcel is within the geographic range and contains a substantial perennial tributary that supports appropriate habitat.	None Although there are HDMS records within 5 miles and the parcel is within the geographic range, the parcel lacks habitat. HDMS records within 5 miles.	Present Species has been documented at this parcel (Wilbur 2010; eBird 2017). HDMS records within 5 miles. Proposed Critical Habitat on parcel.	None Although there are HDMS records and designated critical habitat within 5 miles of the site, the parcel lacks appropriate habitat.	Present Species has been documented at this parcel (Tucson Audubon Society 2011b; National Audubon Society 2014). HDMS records within 5 miles.	None Although there are HDMS records within 5 miles, the parcel lacks appropriate habitat. HDMS records within 5 miles.
Yellow-eyed junco <i>(Junco phaeonotus)</i>	TNF - S COR - S	Associated with moist, conifer forests and canyons and are absent from more arid mountain ranges. Elevations range between 5,900 and 10,000 ft (Corman and Wise-Gervais 2005).	Found in the higher southeastern mountain ranges of Arizona (Corman and Wise-Gervais 2005).	None Parcel is below the known elevation range and lacks appropriate habitat. Was not detected during winter surveys in 2008 (WestLand Resources 2008), summer surveys in 2009 (WestLand Resources 2009), or breeding bird census in 2009 (WestLand Resources 2010).)	None Parcel is outside of the known geographic range.	None Parcel is below the known elevation range and lacks appropriate habitat.	None Parcel is below the known elevation range and lacks appropriate habitat.	None Parcel is outside of the known geographic range.	None Parcel is below the known elevation range and lacks appropriate habitat.	None Parcel is below the known elevation range and lacks appropriate habitat.	None Parcel is below the known elevation range and lacks appropriate habitat.	Present Species has been documented on the parcel	None Parcel is below the known elevation range and lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Yuma clapper rail ¹ (<i>Rallus longirostris yumanensis</i>)	Endangered; no designated critical habitat BLM - S (Gila and PHX)	Found in freshwater marshes with emergent cover (often cattails, bulrushes, and sedges, although the presence of emergent cover is the relevant habitat indicator, not specific species) (Corman and Wise-Gervais 2005). Nests in shallower waters and forages in moderate water depths during breeding season (Corman and Wise-Gervais 2005). Generally, in Arizona occur at elevations of 100 to 1,000 ft, and very locally at 1,500 ft (Corman and Wise-Gervais 2005). Winter habitat similar, but contracted.	Found along the lower Colorado River from Yuma to Havasu National Wildlife Refuge, from Cibola National Wildlife Refuge to the Mexican border and the Gila River in Tacna, and on the Gila River from Gillespie Dam to the Salt River confluence (Corman and Wise-Gervais 2005). There are inconsistent reports of migratory behavior within this subspecies; populations on the Gila River likely do winter elsewhere (Rush et al. 2012; Corman and Wise-Gervais 2005).	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.	None Parcel lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
M A M M A L S													
Allen's big-eared bat aka. Allen's lappet-browed bat (<i>Idionycteris phyllotis</i>)	TNF - S COC - S COR - S BLM - S (Gila and PHN)	Occurs in woodlands and riparian areas in proximity to cliffs, rocky outcrops, or lava flows, often above water. Typically, roosts in caves and abandoned underground mines, but trees are also used. Elevations range from 1,320 and 9,800 ft. Associated with Mohave desertscrub, ponderosa pine, piñon juniper, and riparian areas with sycamore, cottonwoods and willows (AGFD 2001c).	Found across most of Arizona, except the southwestern deserts. Generally, found along Mogollon Rim (AGFD 2001c).	Unlikely Area is within known geographic range and elevation range but does not contain the types of habitat most commonly associated with the species. The area does contain appropriate roosting habitat of abandoned mines, but this species has not been detected during multiple surveys of Oak Flat, Apache Canyon, Queen Creek or Boyce Thompson Arboretum (WestLand Resources 2004b, 2012a).	Possible Parcel is within known geographic range and contains appropriate foraging habitat but lacks water sources. It is unknown whether appropriate roosting habitat is present.	Unlikely Parcel is within known geographic range and contains appropriate foraging habitat but lacks water sources. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	None Parcel is within known geographic range but does not contain appropriate roosting or foraging habitat. Abandoned mines, which represent appropriate roosting habitat, are present within the immediate vicinity, however, this species has not been detected during multiple surveys within Apache Leap, Oak Flat, Devils Canyon, Queen Creek and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	Possible Parcel is within known geographic range, and contains appropriate foraging habitat.	None Parcel is within known geographic range, but lacks appropriate foraging habitat.	None Parcel is outside of known geographic range.	None Parcel is within known geographic range and elevation range, but lacks appropriate foraging habitat. Abandoned mines are present within the vicinity; however, this species has not been detected during multiple surveys within Apache Leap, Oak Flat, Devils Canyon, Queen Creek and Boyce Thompson Arboretum (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).
Arizona myotis (<i>Myotis occultus</i>)	BLM - S (Gila and PHN)	Forages over or near water in ponderosa pine and oak-pine woodlands in higher elevations of 3,200 to 8,620 ft. Typical roosts found under exfoliating bark of snags (Arizona Game and Fish Department 2017).	Found throughout central and eastern portions of Arizona (Arizona Game and Fish Department 2017).	Possible Parcel is located near known geographic range and contains appropriate roosting and foraging habitat, however, this species was not detected during multiple surveys of the area (Taylor and Ducummon 1996; WestLand Resources 2004b, 2012a).	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat.	None Parcel is within known geographic range, but lacks appropriate roosting and foraging habitat.	None Parcel is within dispersal distance of known geographic range, but lacks appropriate roosting and foraging habitat.	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat.	None Parcel is located near known geographic range, but lacks appropriate roosting and foraging habitat.	None Parcel is not located near known geographic range, but lacks appropriate roosting and foraging habitat.	None Parcel is located near known geographic range, but lacks appropriate roosting and foraging habitat.	None Parcel is not located near known geographic range, but lacks appropriate roosting and foraging habitat.	None Parcel is located near known geographic range, but lacks appropriate roosting and foraging habitat.
Arizona shrew (<i>Sorex arizonae</i>)	COR - S	Primarily found in riparian edges in pine-oak forests (BISON-M 2017a).	Known only from the Chiricahua, Huachuca, and Santa Rita Mountains from 5,168 to 9,187 ft (Hoffmeister 1986; Arizona Game and Fish Department 1999a).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is within known geographic range, but the species is only known from adjacent mountain ranges and not the interlying areas. The parcel does not contain appropriate habitat.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Banner-tailed kangaroo rat <i>(Dipodomys spectabilis)</i>	BLM - S (Gila)	In southern Arizona, occurs in short and relatively open desert grasslands and Chihuahuan Desertscrub. In the north, they have been found in Great Basin Desertscrub (Hoffmeister 1986).	Disjunct distribution. In Southern Arizona, distributed south of Gila River and west to Ajo. In northern Arizona, found near Chinle and Navajo Mountain (Hoffmeister 1986).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible Parcel is near the northern extent of southern distribution and although it is mapped as Sonoran desert scrub, this site is located between grasslands and therefore may provide appropriate habitat.	Unlikely Parcel is near the northern extent of southern distribution and may contain some appropriate grassland habitat, but this species has not been observed north of the Gila River.	Possible Parcel is within known geographic range contains appropriate grassland habitat.	None Parcel is outside known geographic range.
Black-footed ferret <i>(Mustela nigripes)</i>	Endangered and EPNE; no designated critical habitat	Found in prairie and grassland habitat. This species is highly dependent on prairie dog colonies for food and shelter (Arizona Game and Fish Department 2016).	Current populations in Arizona are limited to those reintroduced into Aubrey Valley, Coconino County. There are no known wild populations of black-footed ferrets in Arizona (Arizona Game and Fish Department 2010, 2016).	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.	None Parcel is outside the known geographic.
Black-tailed prairie dog <i>(Cynomys ludovicianus)</i>	BLM - S (Gila)	Associated with open desert grasslands lacking tall grasses usually associated with cattle grazing in elevations of 2,300 ft to 7,200 ft (Arizona Game and Fish Department 2017).	Isolated occurrences near Santa Cruz, Cochise, and Pima County boundary west of the Whetstone mountains (Arizona Game and Fish Department 2017).	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	None Parcel is outside restricted geographic range in Arizona.	Unlikely Parcel is outside of known range but may be within dispersal distance of known isolated occurrences near Fort Huachuca. The parcel contains appropriate habitat for the species.	None Parcel is outside restricted geographic range in Arizona.
California leaf-nosed bat <i>(Macrotus californicus)</i>	BLM - S (Gila and PHX)	Primarily found in Sonoran desert scrub vegetation. Roost sites with large areas of ceiling and flying space including abandoned underground mines, caves, and rock shelters are most suitable. All AGFD records below 4,000 ft (Arizona Game and Fish Department 2017).	Occur throughout the southern part of Arizona, usually south of the Mogollon Rim. Occurrence records heavily distributed along western portion of state (Arizona Game and Fish Department 2017).	Present Area is within known geographic range and contains appropriate roosting habitat. [REDACTED] and [REDACTED] its immediate vicinity in 2001 (WestLand Resources 2012a).	None Parcel is outside known geographic range.	Possible Parcel is within close proximity to known geographic range and contains appropriate habitat. It is unknown whether appropriate roosting is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	None Parcel is outside known geographic range.	Possible Parcel is within known geographic range, species has been detected within the vicinity of this site (WestLand Resources 2012a), and contains appropriate roosting and foraging habitat.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Unlikely Parcel within geographic range, but does not contain appropriate habitat.	Possible Parcel is within known geographic range, species has been detected within the vicinity of this site (WestLand Resources 2012a), and contains appropriate roosting and foraging habitat.
Cave myotis <i>(Myotis velifer)</i>	BLM - S (Gila and PHX)	Roosts in caves, tunnels, mines, and under bridges within a few miles of water. Forages in desert scrub vegetation (Arizona Game and Fish Department 2017).	Found primarily south of Mogollon Rim (Arizona Game and Fish Department 2017).	Present Parcel is within known geographic range and contains appropriate roosting and foraging habitat. Was detected in [REDACTED] and [REDACTED] its immediate vicinity in 2011 (WestLand Resources 2012a) and netted at [REDACTED] by [REDACTED] AGFD in 2001/2002 (WestLand Resources 2004b).	None Parcel is within known geographic range, but lacks appropriate roosting and foraging habitat.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	None Parcel is outside of known geographic range and lacks appropriate habitat.	Possible Parcel is within known geographic range, species has been detected within the vicinity of this site (WestLand Resources 2012a), and contains appropriate roosting and foraging habitat.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging and roosting habitat.	Unlikely Parcel is within known geographic range, but does not contain appropriate roosting habitat. It is unknown whether appropriate roosting habitat is present, but there are HDMS records within 5 miles.	Possible Parcel is within known geographic range, has been detected within the vicinity of this site (WestLand Resources 2012a), and contains appropriate roosting and foraging habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Chiricahua fox squirrel <i>(Sciurus nayaritensis chiricahuae)</i>	COR - S	Found in partially open Apache pine-oak forest with mixed broadleaf deciduous trees, mainly in the thick growth of canyon bottoms (Arizona Game and Fish Department 2011e).	Restricted to the Chiricahua Mountains from 5,280 to 8,400 ft (Arizona Game and Fish Department 2011c).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Greater western mastiff bat <i>(Eumops perotis californicus)</i>	BLM - S (Gila and PHX)	Forages in lower and upper Sonoran desert scrub near cliffs. Rocky canyons with abundant roosting crevices are most suitable (Arizona Game and Fish Department 2017).	Considered a year-round resident in Arizona. They are observed in all Arizona counties except Yavapai, Navajo, Apache, and Santa Cruz.	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat. HDMS records within 5 miles.	Unlikely Parcel is within known geographic range but lacks appropriate foraging habitat.	Unlikely Parcel is located in one of four counties with no AGFD occurrence records, but contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat.	Unlikely Parcel is within known geographic range, but lacks appropriate foraging habitat.	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	None Area is located in one of four counties with no AGFD occurrence records. Parcel lacks appropriate habitat.	Possible Parcel is within known geographic range and contains appropriate roosting and foraging habitat. HDMS records within 5 miles.
Gunnison's prairie dog <i>(Cynomys gunnisoni)</i>	BLM - S (Gila and PHX)	Occupies gently sloping grasslands, shrub-steppe intermountain valleys, and Semidesert and montane shrublands at elevations of 4,600 to 12,000 ft (U.S. Fish and Wildlife Service 2013c).	Occurs in northern Arizona (U.S. Fish and Wildlife Service 2013c).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range and does not.
Hooded skunk <i>(Mephitis macroura milleri)</i>	COR - S	Found in rocky slopes, bases of cliffs, and rocky arroyos at intermediate elevations (Hoffmeister 1986).	Occurs in southeastern Arizona south into Mexico. (Hoffmeister 1986).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible <i>Mephitis macroura</i> (unknown spp.) has been observed within the parcel.	None Parcel is outside known geographic range.
Jaguar <i>(Panthera onca)</i>	Endangered; designated critical habitat BLM - S (Gila)	Recent sightings in Arizona were recorded at 5,200 and 5,700 ft. In Arizona, this species is found in arid habitat types, including oak-pine woodland (Arizona Game and Fish Department 2004k).	Occurs in southeastern Arizona. Sightings in the Baboquivari Mountains, Pima County, and the Peloncillo Mountains, Cochise County (Arizona Game and Fish Department 2017)(Arizona Game and Fish Department 2017). Sightings in the Santa Rita Mountains, Pima County (Center for Biological Diversity 2016).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range and the species has not been recorded north of the I-10.	None Parcel is outside known geographic range and lacks appropriate habitat.	Possible Parcel is within known geographic range and may contain appropriate habitat. Parcel includes Designated Critical Habitat for the species.	None Parcel is outside known geographic range and lacks appropriate habitat.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Lesser long-nosed bat <i>(Leptonycteris curasoae yerbabuense)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	Sonoran desertscrub through semi-desert grasslands and into oak woodlands where columnar cacti and agaves occur. Roosts in caves, abandoned mines and occasionally old buildings (Arizona Game and Fish Department 2011c).	In Arizona, the species occurs in the southern portion of the state from the Piachio Mountains southwest to the Agua Dulce Mountains and southeast to the Galiuro and Chiricahua mountains and then southerly into Mexico (Arizona Game and Fish Department 2011c).	None Parcel is outside known geographic range and lacks appropriate foraging habitat.	None Parcel is outside known geographic range and lacks appropriate foraging habitat.	None Parcel is outside known geographic range and lacks appropriate foraging habitat.	None Parcel is outside known geographic range and lacks appropriate foraging habitat.	None Parcel is outside known geographic range and lacks appropriate foraging habitat.	None Parcel is outside known geographic range. Although inactive mine features may provide limited roosting habitat, this species has not been detected during multiple surveys conducted in and along Apache Leap, Oak Flat, and Boyce Thompson Arboretum (WestLand Resources 2012a, 2004b; Taylor and Duccumnon 1996)	None Parcel is just within the known generalized geographic range as delineated by observations from late summer and early fall; nearest records are ~ 30 and 50 miles to the southeast in Cochise and Graham counties, respectively (Cockrum 1991). No known foraging or roosting habitat occurs in the parcel in the summer and fall.	None Parcel is outside known geographic range and no known roosting habitat occurs in the parcel.	Possible Parcel is within known geographic range and may occur on the parcel. HDMs records within 5 miles.	None Parcel is outside known geographic range.
Mesquite (Merriam's) mouse <i>(Peromyscus merriami)</i>	COR - S	Found in riparian or low desert habitats in dense brush, mesquite bosque (Arizona Game and Fish Department 2011d).	This species occurs in south-central Arizona through western Sonora to central Sinaloa, Mexico from 1,600 to 3,850 ft (Wilson and Reeder 2005). In Arizona, found only in Oragan Pipe (AGFD 2011b).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Mexican gray wolf <i>(Canis lupus ssp. baileyi)</i>	Endangered and EPNE; no designated critical habitat	In Arizona, this mammal is known to inhabit evergreen pine-oak woodlands (i.e., Madrean woodlands), piñon-juniper woodlands (i.e., Great Basin conifer forests), and mixed-conifer montane forests (i.e., Rocky Mountain, or Pefran forests), but are unlikely to occur in desert habitats (BISON-M 2017c; U.S. Fish and Wildlife Service 2016c). Habitat selection is associated with availability of sufficient prey populations, such as elk and deer.	The Mexican Wolf Experimental Population Area extends from eastern New Mexico to western Arizona, and from 1-40 south to the US-Mexican border (U.S. Fish and Wildlife Service 2015a). The Dispersal and Recovery Zone is located east of State Highway 87, and extends from 1-40 to the US-Arizona Border (U.S. Fish and Wildlife Service 2015a).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).	None The Mexican gray wolf, while a wide-ranging species, is not expected to occur in the vicinity of the parcel. The nearest occurrence record is in the Blue Range Wolf Recovery Area in Apache National Forest on the border with New Mexico (U.S. Fish and Wildlife Service 2008b) and the nearest and most recent occupied range was in the Black Mountains of southwestern New Mexico (U.S. Fish and Wildlife Service 2017b).

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Mexican long-tongued bat (<i>Choeronycteris mexicana</i>)	COR - S BLM - S (Gila)	Occupies mesic areas in canyons of mixed oak-conifer forests or in Semidesert grasslands; Roosts during the day in caves and abandoned mines (Arizona Game and Fish Department 2006d).	In Arizona the species can be found in the Chiricahua Mountains, Santa Catalina Mountains, and the Baboquivari Mountains (Arizona Game and Fish Department 2006d).	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is outside of known geographic range.	None Parcel is within known geographic range, but lacks appropriate habitat.	Unlikely Parcel located just north of the known geographic range and contains appropriate habitat. It is unknown whether appropriate roosting habitat is present. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate habitat. It is unknown whether appropriate roosting habitat is present. HDMS records within 5 miles.	None Parcel is outside of known geographic range.
Navajo Merganser (<i>Microtus mogollonensis navajo</i>) [synonyms include <i>M. mexicanus navajo</i> and <i>M. mexicanus mogollonensis</i>]	COC - S	Occupies dry grassy habitat with shrubs and dense cover available near pine, juniper, spruce, fir, or sagebrush vegetation. (Arizona Game and Fish Department 2003o).	Currently recognized, is known from isolated mountain ranges and plateaus across northern Arizona above the Mogollon rim and south of the Colorado R., including populations from Navajo Mountain (Navajo Co.), Defiance Plateau (Apache Co.), the south rim of the Grand Canyon, and the San Francisco Peaks (Coconino Co.). (Hoffmeister 1986; Frey and LaRue 1993; Arizona Game and Fish Department 2003o).	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.	Unlikely Parcel is just outside of known isolated distribution occurrences, within the elevation range for this species and contains suitable habitat of Great Basin Conifer Woodlands and Petran Montane Conifer Forests.	None Parcel is outside the known the isolated distribution occurrence.).	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.	None Parcel is outside the known the isolated distribution occurrences.
Northern pygmy mouse (<i>Baiomys taylori ater</i>)	COR - S	Found in plains and semidesert grassland, including areas with grama, sacaton, mesquite, and yucca (Hoffmeister 1986).	The range for the species includes southeastern Arizona, southern Oklahoma, Texas, and Mexico (Hoffmeister 1986).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	Possible <i>Baiomys taylori</i> has been observed within the Appleton-Whittell Research Ranch (Bock and Bock 1996).	None Parcel is outside known geographic range.
Ocelot (<i>Leopardus pardalis</i>)	Endangered; no designated critical habitat BLM - S (Gila)	Occurs in densely vegetated habitats throughout its range including tropical rainforest, pine forest, gallery forest, riparian forest, semi-deciduous forest, and dry tropical forest, savanna, shrublands, thornscrub, chaparral, and marshlands (Arizona Game and Fish Department 2010c).	In Arizona, known from very few localities. Mostly observed in southern Arizona (Cochise County). Observations from Arizona and Texas; represents extreme northern edge of its range (Arizona Game and Fish Department 2010c). In April of 2010, a dead ocelot was found along highway 60 between Superior and Globe. A young male ocelot was reported in the Huachuca Mountains in 2011 (Arizona Game and Fish Department 2010c).	None Parcel is outside of geographic range and suitable densely vegetated habitat is not common on this parcel. Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range and lacks appropriate habitat.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range. Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF.	None Parcel is outside of the known geographic range. The species is considered to be extirpated in TNF.	None Parcel is outside known geographic range and lacks appropriate habitat. The species is considered to be extirpated in TNF.	None Parcel is just north of the known geographic range and lacks appropriate habitat. The species is considered to be extirpated in TNF.	None Parcel is outside known geographic range and lacks appropriate habitat. Although HDMS has a roadkill record of this species within 5 miles, it is considered an extreme occurrence and well outside this species usual range in northern Sonora, Mexico, and southern U.S. The species is considered to be extirpated in TNF.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Pale Townsend's big-eared bat <i>(Corynorhinus townsendii pallascens)</i>	TNF - S COC - S COR - S BLM - S (Gila and PHX)	Occurs in a variety of xeric habitats including sagebrush, desert scrub, chaparral, deciduous forests, and coniferous forests. Roosts in caves and abandoned mines. Maturity colonies form from May through July and disperse in August. Species occurs on TNF from 1,200 to 5,600 ft elevation (Tonto National Forest 2000).	Widespread throughout Arizona (Arizona Game and Fish Department 2003e)	Possible Area is within known geographic range and elevation range and has been detected in vicinity. Species was observed in an abandoned mine on Apache Leap by Bat Conservation International (BCI) in 1996 (Taylor and Duemmon 1996; WestLand Resources 2004b). Additionally, WestLand visually observed this species in an abandoned mine in Apache Leap area and acoustically recorded in Oak Flat/East Plant and vicinity in 2011 (WestLand Resources 2012a).	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. It is unknown whether appropriate roosting habitat is present.	Possible Parcel is within known geographic range and contains suitable foraging habitat and water. It is unknown whether suitable roosting habitat is present.	Possible Parcel is within known geographic range and elevation range; contains appropriate foraging habitat, and species has been detected in vicinity (WestLand Resources 2004b, 2012a).	Possible Parcel is within known geographic range, contains appropriate foraging habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate foraging habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and elevation range; contains appropriate foraging habitat, and has been detected in vicinity (WestLand Resources 2004b, 2012a).
Sonoran pronghorn <i>(Antilocapra americana sonoriensis)</i>	Endangered; no designated critical habitat BLM - S (Gila and PHX)	Uses habitat consisting of broad alluvial valleys separated by block-faulted mountain and surface volcanics. The species ranges in elevation from 400 to 1,600 ft (AGFD 2002).	Extreme southwestern Arizona, particularly within the Cabeza Prieta National Wildlife Refuge, Organ Pipe Cactus National Monument, and the Luke Air Force Barry M. Goldwater Guntery Range (Arizona Game and Fish Department 2002).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.
Spotted bat <i>(Euderma maculatum)</i>	TNF - S COC - S BLM - S (Gila and PHX)	Associated with low to high elevation desert scrub where they apparently roost singly in cracks and crevices on rocky cliffs near surface water (TNF 2000). Also, occupy riparian, pinyon-juniper woodlands, and coniferous forests in northwestern Arizona. It is considered an elevational migrant and occurs at elevations between 110-8,670 ft (Arizona Game and Fish Department 2003).	Northwestern Arizona with isolated records near Yuma and Seligman (Arizona Game and Fish Department 2003).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
Western Red Bat <i>(Lasiurus blossevillii)</i>	TNF - S COC - S COR - S	Associated with broad leaf deciduous riparian forests and woodlands and upland areas, roosting in foliage of trees and occasionally shrubs. Roost primarily in cottonwood galleries, 1,900 to 7,200 ft elevation (Arizona Game and Fish Department 2011d).	Found in south central to southern and southeastern Arizona, with a few observations along the Colorado River near Bill Williams, and occasionally in the Grand Canyon. Historic records include observations from the Grand Canyon, Sierra Ancha, Queen Creek, San Pedro Valley, Santa Rita Mountains, Canelo Hills, Huachuca and Peloncillo mountains, and San Bernardino Ranch (Arizona Game and Fish Department 2011f).	Present Acoustically detected in 2011 (WestLand Resources 2012a)	Possible Parcel is within known geographic range and contains appropriate foraging and roosting habitat.	Possible Parcel is within known geographic range and contains appropriate foraging and roosting habitat.	Possible Parcel is within known geographic range and contains appropriate foraging and roosting habitat. HDMS records within 5 miles.	Possible Parcel is within known geographic range and contains appropriate foraging and roosting habitat.	None Although this parcel is within known geographic and elevation range and species is present within close proximity, it does not contain appropriate habitat (cottonwood galleries) required for roosting. Riparian habitat is limited to xeric washes with larger densities of velvet mesquite and catclaw mimosa.	Unlikely Parcel is within known geographic range and contains limited riparian habitat of cottonwoods and willows, but lacks cottonwood galleries appropriate for roosting.	None Parcel is within known geographic range, but lacks appropriate foraging or roosting habitat. Riparian habitat limited to xeric washes with larger densities of velvet mesquite and catclaw mimosa.	Unlikely Although this parcel is within known geographic and elevation range and HDMS has records of this species within 5 miles, it contains limited appropriate habitat, restricted to individual cottonwoods and willows scattered across the parcel.	None Although this parcel is within known geographic and elevation range and species is present within close proximity, lacks appropriate roosting habitat. Riparian habitat limited to xeric washes with larger densities of velvet mesquite and catclaw mimosa.
Western yellow bat <i>(Lasiurus xanthinus)</i>	COR - S	Their preferred habitat not clearly understood. They may be associated with Washington fan palm trees, other palms or other leafy vegetation such as sycamores, hackberries and cottonwoods, which provide roost sites. Individuals observed roosting about 15 ft above the ground in a hackberry (<i>Celtis reticulata</i>) and sycamores (<i>Platanus wrightii</i>). They were netted over a water hole in Guadalupe Canyon, New Mexico, and over a swimming pool in oak woodland habitat in the Chiricahua Mountains (Arizona Game and Fish Department 2011b).	Current range includes lower reach of Cave Creek in the Chiricahua Mountains; Sabino Canyon in the Santa Catalina Mountains; Glendale in Maricopa County; Palm Lake along Hassayampa River; Burro Canyon in the Kofa Mountains; Oak Grove Canyon in the Galiluro Mountains; and along the Lower Colorado River including Cibola and Parker Valleys and Mitty Lake. Unknown if still extant along the Bill Williams River; Lake Alex N of Red Bluff (Castle Dome Plain); along Silver Creek in the Chiricahua Mountains; and in Guadalupe Canyon in the Peloncillo Mountains. Historically found in Cass Grande, Tempe, Tucson, east of Sasabe, near the SW Research Station & Herb Martyr Dam along Cave Creek in Chiricahua Mountains; and along Hay Hollow Creek in Peloncillo Mountains. Found at elevations from 550 to 6,000 ft (Arizona Game and Fish Department 2011b).	Unlikely Parcel is within known geographic range and contains riparian habitat that is potentially suitable. This species was not detected during surveys conducted in 2004 and 2011 did not detect this species ()	None Parcel is outside known geographic range.	Unlikely Parcel is adjacent known geographic range and contains potentially suitable riparian habitat.	Unlikely Parcel is adjacent known geographic range and contains potentially suitable riparian habitat.	None Parcel is outside known geographic range.	Unlikely Parcel is outside known geographic range and lacks suitable riparian habitat or palm trees. Surveys for conducted in 2004 and 2011 did not detect this species ()	Possible Parcel is within known geographic range and contains potentially suitable riparian habitat.	Unlikely Parcel is adjacent known geographic range.	Unlikely Parcel is within known geographic range, but lacks suitable riparian habitat or palm trees.	None Parcel is outside known geographic range.

Species	Status	Known Suitable Habitat	Distribution & Occurrence Records	Oak Flat Area	Turkey Creek	Tangle Creek	Cave Creek	East Clear Creek	Apache Leap South End	Lower San Pedro River	Dripping Springs	Appleton Ranch	Apache Leap Withdrawal Area
White-bellied long-tailed vole (<i>Microtus longicaudus leucophaeus</i>)	COR - S	Found in grassy meadows and flats, along boggy stream bottoms, cienegas, openings in coniferous forests, and along roadsides from 6,000 to 10,700 ft (Arizona Game and Fish Department 2014a; Hoffmeister 1986).	Restricted to the Pinaleno Mountains in Graham County, Arizona (Arizona Game and Fish Department 2014a; Hoffmeister 1986).	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.	None Parcel is outside known geographic range.

TNF – S = Tonto National Forest – Sensitive
 COC – S = Coconino National Forest – Sensitive
 COR – S = Coronado National Forest – Sensitive
 BLM – S (Gila) = Bureau of Land Management, Gila District – Sensitive
 BLM – S (PHX) = Bureau of Land Management, Phoenix District – Sensitive
 EPNE = Experimental Population, Non-Essential

APPENDIX B – REFERENCES

- Anderson, L.C., and B. Hevron. 1993. “New Records and Data for the Rare *Chrysothamnus Molestus* in Arizona.” *Journal of the Arizona-Nevada Academy of Science* 27 (1): 1–4.
- Arizona Ecological Services Field Office. 2001. “General Species Information, Sentry Milk-Vetch.”
- _____. 2002. “General Species Information, Navajo Sedge (*Carex Specuicola*).” *U.S. Fish and Wildlife Services*. [https://www.fws.gov/southwest/es/arizona/Documents/Redbook/Navajo Sedge RB.pdf](https://www.fws.gov/southwest/es/arizona/Documents/Redbook/Navajo%20Sedge%20RB.pdf).
- _____. 2009a. “General Species Information: California Condor (*Gymnogyps Californianus*).” Phoenix, Arizona: U.S. Fish and Wildlife Service.
- _____. 2009b. “General Species Information, San Francisco Peaks Ragwort.”
- Arizona Game and Fish Department. 1999a. “Arizona Shrew (*Sorex Arizonae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Soreariz.di.pdf.
- _____. 1999b. “Huachuca Milk-Vetch (*Astragalus Hypoxylus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Astrhypo.fo_001.pdf.
- _____. 1999c. “Maguire’s (Coppermine) Milkvetch (*Astragalus Cobrensis* Var. *Maguirei*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Astrcoma.fo.pdf.
- _____. 2000a. “Arizona Giant Sedge, Cochise Sedge (*Carex Ultra*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Careultr.fo_001.pdf.
- _____. 2000b. “Huachuca Mountains Lupine (*Lupinus Huachucanus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Lupihuac.fo.pdf.
- _____. 2000c. “Woundfin (*Plagopterus Argentissimus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona.
- _____. 2001a. “*Adopaeoides Prittwitzi*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Invertebrates/Adopprit.fo.pdf.
- _____. 2001b. “*Agathymus Evansi*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Invertebrates/Agatevan.fo.pdf.

- _____. 2001c. "Allen's Lappet-Browed Bat (*Idionycteris Phyllotis*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Idiophyl.fi_004.pdf.
- _____. 2001d. "Argia Sabino." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Invertebrates/Argisabi.pdf.
- _____. 2001e. "Bartram Stonecrop (*Graptopetalum Bartramii*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Grapbart.fo_001.pdf.
- _____. 2001f. "Chihuahua Scurf-Pea (*Pediomelum Pentaphyllum*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pedipent.fo_000.pdf.
- _____. 2001g. "Erigeron Arisolius." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Erigaris.fo.pdf.
- _____. 2001h. "Eumorsea Pinaleno." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Invertebrates/Eumopina.fo.pdf.
- _____. 2001i. "Fish Creek Fleabane (*Erigeron Piscaticus*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Erigpisc.fo_001.pdf.
- _____. 2001j. "Gentry Indigo Bush (*Dalea Tentaculoides*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Daletent.fo_001.pdf.
- _____. 2001k. "Gila Cypha."
- _____. 2001l. "Gila Seminuda."
- _____. 2001m. "Lemon Lily (*Lilium Parryi*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Liliparr.fo.pdf.
- _____. 2001n. "Mexican Hemlock Parsley (*Conioselinum Mexicanum*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Conimexi.fo.pdf.
- _____. 2001o. "Mustela Nigripes." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.

- _____. 2001p. “Northern Aplomado Falcon (*Falco Femoralis Septentrionalis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department, 6.
- _____. 2001q. “Oncorhynchus Apache.”
- _____. 2001r. “Pachyramphus Aglaiae.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pachagla.d_001.pdf.
- _____. 2002a. “Amazilia Violiceps.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Amazviol.d_001.pdf.
- _____. 2002b. “American Peregrine Falcon (*Falco Peregrinus Anatum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Falcpean.fi_006.pdf.
- _____. 2002c. “Aravaipa Sage Aka Galiuro Sage (*Salvia Amissa*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Salvamis.fo_001.pdf.
- _____. 2002d. “Atrytonopsis Cestus.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Atrycest.pdf.
- _____. 2002e. “Blumer’s Dock (*Rumex Orthoneurus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/pdfs/w_c/hdms/Plants/Rumeorth.fo.pdf.
- _____. 2002f. “Desert Sucker (*Catostomus Clarkii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish. https://www.azgfd.gov/w_c/edits/documents/Catoclar.fo_000.pdf.
- _____. 2002g. “Euptilotis Neoxenus.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Euptneox.D_001.pdf.
- _____. 2002h. “Heterelmis Stephani.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Hetestep.fo.pdf.
- _____. 2002i. “Northern Leopard Frog (*Lithobates [Rana] Pipiens*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithpipi.fi.pdf.
- _____. 2002j. “Oncorhynchus Gilae.”

- _____. 2002k. “Sonora Sucker (*Catostomus Insignis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Catoinsi.fo_000.pdf.
- _____. 2002l. “Sonoran Pronghorn Antelope (*Antilocapra Americana Sonoriensis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Antiamso.d_001.pdf.
- _____. 2002m. “Southwestern Willow Flycatcher (*Empidonax Traillii Extimus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Empitrex.d_004.pdf.
- _____. 2003a. “Arizona Hedgehog Cactus (<i>Echinocereus Triglochidiatus</i> Var. <i>Arizonica</i>).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003b. “Arizona Hedgehog Cactus (*Echinocereus Triglochidiatus* Var. *Arizonicus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Echitrar.fo.pdf.
- _____. 2003c. “Bush Violet (*Browallia Eludens*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Browelud.fo.pdf.
- _____. 2003d. “*Campostoma Ornatum*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Camporna.fo_001.pdf.
- _____. 2003e. “Chiltepin (*Capsicum Annuum* Var. *Glabriusculum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Capsangl.fo.pdf.
- _____. 2003f. “*Cymbiodyta Arizonica*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Cymbariz.d_001.pdf.
- _____. 2003g. “Flagstaff Beardtongue (*Penstemon Nudiflorus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pensnudi.d.pdf.
- _____. 2003h. “Flagstaff Pennyroyal (*Hedeoma Diffusum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Hedediff.fo.pdf.
- _____. 2003i. “Fossil Springsnail (*Pyrgulopsis Simplex*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pyrgsimp.d_003.pdf.

- _____. 2003j. “Heliograph Peak Fleabane (*Erigeron Heliographis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Erigheli.fo_001.pdf.
- _____. 2003k. “Hohokam Agave Aka. Murphey Agave (*Agave Murpheyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Agavmurp.fo_002.pdf.
- _____. 2003l. “Huachuca Water Umbel (*Lilaeopsis Schaffneriana* Ssp. *Recurva*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003m. “Hualapai Milkwort (*Polygala Rusbyi*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003n. “Large-Flowered Bluestar (*Amsonia Grandiflora*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Amsogran.fo.pdf.
- _____. 2003o. “*Microtus Mexicanus Navaho*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003p. “Net-Winged Midge (*Agathon Arizonicus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Agatariz.fo.pdf.
- _____. 2003q. “*Oxybelis Aeneus*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Oxybaene.d_002.pdf.
- _____. 2003r. “Pale Townsend’s Big-Eared Bat (*Corynorhinus Townsendii Pallescens*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Corytopa.fi_003.pdf.
- _____. 2003s. “*Pyrgulopsis Thompsoni*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2003t. “Spotted Bat (*Euderma Maculatum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Eudemacu.fi_003.pdf.
- _____. 2004a. “Aravaipa Woodfern (*Thelypteris Puberula* Var. *Sonorensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Thelpuso.d_002.pdf.
- _____. 2004b. “Arizona Alum Root (*Heuchera Glomerulata*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Heucglom.d_000.pdf.

- _____. 2004c. “Broadleaf Groundcherry (*Physalis Latiphysa*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Physlati.d.pdf.
- _____. 2004d. “Chihuahuan Sedge (*Carex Chihuahuensis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Carechih.d.pdf.
- _____. 2004e. “Dalhouse Spleenwort (*Asplenium Dalhousiae*)” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Asplldalh.d_002.pdf.
- _____. 2004f. “Fish Creek Rock Daisy (*Perityle Saxicola*)” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Perisaxi.fo.pdf.
- _____. 2004g. “Huachuca Groundsel (*Senecio Huachucanus*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Senhuac.d.pdf.
- _____. 2004h. “Lemmon’s Stevia (*Stevia Lemmonii*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Stevlemm.d.pdf.
- _____. 2004i. “Mexican Tansy Aster (*Psilactis Gentryi*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Psilgent.d.pdf.
- _____. 2004j. “Mt. Dellenbaugh Sandwort (*Arenaria Aberrans*)” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2004k. “Panther (*Panthera Onca*)” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pantonca.fi_000.pdf.
- _____. 2004l. “Platanthera Zothecina.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2005a. “Arizona Phlox (*Phlox Amabilis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Phloamab.d.pdf.
- _____. 2005b. “Arizona Sneezeweed (*Helenium Arizonicum*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Heleariz.d.pdf.

- _____. 2005c. “Arizona Sonoran Rosewood (*Vauquelinia Californica* Ssp. *Sonorensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Vauqcaso.d_002.pdf.
- _____. 2005d. “California Flannelbush (*Fremontodendron Californica*) Draft.” Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Fremcali.d_002.pdf.
- _____. 2005e. “Crenulate Moonwort (*Botrychium Crenulatum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Botrcren.d.pdf.
- _____. 2005f. “Eastwood Alum Root (*Heuchera Eastwoodiae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Heuceast.d.pdf.
- _____. 2005g. “Heathleaf Wild Buckwheat (*Eriogonum Ericifolium* Var. *Ericifolium*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Erioerer.d.pdf.
- _____. 2005h. “Mapleleaf False Snapdragon (*Mabrya [Maurandya] Acerifolia*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Mabracer.d.pdf.
- _____. 2005i. “Mexican Spotted Owl (*Strix Occidentalis Lucida*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2005j. “Mogollon Thistle (*Cirsium Parryi* Ssp. *Mogollonicum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Cirspamo.d_000.pdf.
- _____. 2005k. “Sonoyta Mud Turtle (*Kinosternon Sonoriense Longifemorale*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2006a. “Chiricahua Rockcress (*Arabis Tricornuta*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. http://www.azgfd.gov/w_c/edits/documents/Arabtric.d.pdf.
- _____. 2006b. “Lemmon Milkweed (*Asclepias Lemmonii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Ascllemm.d_000.pdf.
- _____. 2006c. “Lowland Leopard Frog (*Lithobates Yavapaiensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithyava.fi.pdf.

- _____. 2006d. “Mexican Long-Tongued Bat (*Choeronycteris Mexicana*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Choemexi.fi_004.pdf.
- _____. 2006e. “Passiflora Arizonica.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Passariz.d.pdf.
- _____. 2008. “Nichol’s Turk’s Head Cactus (*Echinocactus Horizontalonius* Var. *Nicholii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Echihoni.fo_002.pdf.
- _____. 2009. “Western Barking Frog (*Craugastor [Eleutherodactylus] Augusti Cactorum*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Crauca.fi_001.pdf.
- _____. 2010a. “Anthus Spragueii (Sprague’s Pipet).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Anthspra.d_003.pdf.
- _____. 2010b. “Ayenia (*Ayenia Jaliscana*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Ayenjali.d.pdf.
- _____. 2010c. “Ocelot (*Leopardus Pardalis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Leopard.d_001.pdf.
- _____. 2010d. “Tyrannus Crassirostris.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Tyracras.d_003.pdf.
- _____. 2011a. “Bald Eagle (*Haliaeetus Leucocephalus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Halileuc.fi_000.pdf.
- _____. 2011b. “Lasiurus Xanthinus.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lasixant.fi_002.pdf.
- _____. 2011c. “Lesser Long-Nosed Bat (*Leptonycteris Curasoae Yerbabuenae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Leptcuye.fi_001.pdf.
- _____. 2011d. “Peromyscus Merriami.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.

- _____. 2011e. “Sciurus Nayaritensis Chiricahuae.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Sciunach.di_001.pdf.
- _____. 2011f. “Western Red Bat (*Lasiurus Blosserillii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lasiblos.fi_002.pdf.
- _____. 2011g. “Yellow-Billed Cuckoo (*Coccyzus Americanus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Coccamer.fi_000.pdf.
- _____. 2012a. “Arizona Bugbane (*Actaea Arizonica*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Actaariz.fo.pdf.
- _____. 2012b. “Beardless Chinchweed (*Pectis Imberbis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Pectimbe.fo_001.pdf.
- _____. 2012c. “Northern Mexican Gartersnake (*Thamnophis Eques Megalops*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Thameqme.fi_004.pdf.
- _____. 2013a. “Acuña Cactus (*Echinomastus Erectocentrus* Var. *Acuñensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Echierac.d_004.pdf.
- _____. 2013b. “Arizona Sunflower (*Helianthus Arizonensis*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Heliariz.d.pdf.
- _____. 2013c. “Aspidoscelis Stictogrammus.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Aspistic.fi.pdf.
- _____. 2013d. “Aspidoscelis Xanthonota.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Aspixant.d.pdf.
- _____. 2013e. “Baird’s Sparrow (*Ammodramus Bairdii*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, AZ: Arizona Game and Fish Department.
- _____. 2013f. “Empidonax Fulvifrons Pygmaeus.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Empifupy.d_002.pdf.

- _____. 2013g. “Fickeisen Plains Cactus (*Pediocactus Peeblesianus Fickeiseniae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona. https://www.azgfd.gov/w_c/edits/documents/Pedipefi.fi_004.pdf.
- _____. 2013h. “*Hyla Wrightorium*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2013i. “New Mexico Ridge-Nosed Rattlesnake (*Crotalus Willardi Obscurus*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2013j. “Northern Goshawk (*Accipiter Gentilis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Accigent.d_009.pdf.
- _____. 2013k. “Spikedace (*Meda Fulgida*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2013l. “*Tantilla Wilcoxi*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Tantwilc.d_000.pdf.
- _____. 2014a. “*Microtus Longicaudus Leucophaeus*.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Micrlole.fi_001.pdf.
- _____. 2014b. “Page Springs Agave (*Agave Yavapaiensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2015a. “Bylas Springsnail (*Pyrgulopsis Arizonae*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*, 5 pp.
- _____. 2015b. “Chiricahua Leopard Frog (*Lithobates Chiricahuensis*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Lithchir.fi_002.pdf.
- _____. 2015c. “Chiricahua Mountain Brookweed (*Samolus Vagans*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Samovaga.pdf.
- _____. 2015d. “Ertter’s Rose (*Rosa Woodsii* Var. *Ertterae*) Draft.” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Rosawoer.pdf.
- _____. 2015e. “Navajo Sedge (*Carex Specuicola*).” *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Carespec.fo.pdf.

- _____. 2015f. "Oreohelix Grahamensis." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Oreograh.fo_001.pdf.
- _____. 2015g. "Roundtail Chub (Gila Robusta)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department.
- _____. 2015h. "Sonoran Desert Tortoise (*Gopherus Morafkai*)." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Gophmora.pdf.
- _____. 2015i. "Sonorella Grahamensis." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Sonograh.d_001.pdf.
- _____. 2015j. "Sonorella Imitator." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Sonoimit.d_001.pdf.
- _____. 2015k. "Sonorella Macrophallus." *Unpublished Abstract Compiled and Edited by the Heritage Data Management System*. Phoenix, Arizona: Arizona Game and Fish Department. https://www.azgfd.gov/w_c/edits/documents/Sonomacr.fo_000.pdf.
- _____. 2016. "The Black-Footed Ferret Project." http://azgfd.gov/w_c/blackfooted_ferret.shtml.
- _____. 2017. "Unpublished Abstracts and Maps Compiled and Edited by the Heritage Data Management System (HDMS)." *Arizona Game and Fish Department, Phoenix, Arizona*.
- Arizona Rare Plant Committee. 2001. *Arizona Rare Plant Field Guide: A Collaboration of Agencies and Organizations*. Edited by Lynn Richards. Washington, D.C.: U.S. Government Printing Office.
- Avian Sites. 2015. "Oak Flat Campground."
- Balda, Russell P. 2002. "Pinyon Jay (*Gymnorhinus Cyanocephalus*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. doi:10.2173/bna.605.
- Barlow, Jon C., Sheridan N. Leckie, and Colette T. Baril. 1999. "Gray Vireo (*Vireo Vicinior*)." Edited by P.G. Rodewald. *The Birds of North America Online*. Ithaca, New York: Cornell Lab of Ornithology. doi:10.2173/bna.447.
- Bequaert, J.C., and W.B. Miller. 1973. "The Mollusks of the Arid Southwest." Tucson, Arizona: The University of Arizona Press.
- Bezy, R.L. 2005. "The Night Lizards (*Xantusia*) of Arizona." *Sonoran Herpetologist* 18 (2).
- BISON-M. 2017a. "Arizona Shrew (*Sorex Arizonae*)." *Biotic Information System of New Mexico (BISON-M)*.
- _____. 2017b. "Bearded Mountainsnail." *Biotic Information System of New Mexico (BISON-M)*.

- _____. 2017c. “New Mexico Game and Fish Department and the Fish & Wildlife Information Exchange.” *Biotic Information System of New Mexico (BISON-M)*. Blacksburg, Virginia: Conservation Management Institute, Virginia Tech.
- Blinn, Dean W., and David E. Ruiter. 2009. “Caddisfly (Trichoptera) Assemblages along Major River Drainages in Arizona.” *Western North American Naturalist* 69 (3): 299–308.
- Bock, C.E., and J.H. Bock. 1996. “Factors Controlling the Structure and Function of Desert Grasslands: A Case Study from Southeastern Arizona.” In *The Future of Arid Grasslands: Identifying Issues, Seeking Solutions.*, edited by Barbara Tellman, Deborah M. Finch, Carl Edminster, and Robert Hamre. Tucson, Arizona: U.S. Forest Service, Rocky Mountain Research Station.
- Brennan, T.C., and A.T. Holycross. 2006. *A Field Guide to Amphibians and Reptiles in Arizona*. Phoenix, Arizona: Arizona Game and Fish Department.
- Center for Biological Diversity. 2016. “New Video Shows America’s Only Known Wild Jaguar.” *Press Release*, February.
- Cockrum, E.L. 1991. “Seasonal Distribution of Northwestern Populations of the Long-Nosed Bats, *Leptonycteris Sanborni* Family Phyllostomidae.” *Series Zoologica* 62 (181–202). Anales del Instituto de Biología Universidad Nacional Autónoma de México.
- Cogan, Roger C. 2015. “Herpetofauna of the Appleton-Whittell Research Ranch.” National Audubon Society.
- Corman, Troy, and Cathryn Wise-Gervais. 2005. *Arizona Breeding Bird Atlas*. Albuquerque: University of New Mexico Press.
- Culver, M., R. Fitak, and T. Myers. 2012. “California Floater Genetics.” *Final Report to Arizona Game and Fish Department, Heritage Grant [I09010]*.
- Desert Fishes Team. 2004. “Status of Unlisted Native Fishes of the Gila River Basin, with Recommendations for Management.” *Desert Fishes Team Report Number 2, October*.
- Devender, T.R. Van. 2002. “Natural History of the Sonoran Desert Tortoise: Life in a Rock Pile.” In *The Sonoran Desert Tortoise: Natural History, Biology, and Conservation*, edited by T.R. Van Devender, 3–28. Tucson, Arizona: University of Arizona Press.
- eBird. 2017. *eBird: An Online Database of Bird Distribution and Abundance [Web Application]*. eBird. Ithaca, New York: Cornell Lab of Ornithology. www.ebird.org.
- Eddleman, W R, R E Flores, and M Legare. 1994. “Black Rail (*Laterallus Jamaicensis*).” Edited by P. G. Rodewald. *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. doi:10.2173/bna.123.
- eFloras. 2016a. “*Eriogonum Ericifolium*.” *Flora of North America Vol. 5*. www.eFloras.org.
- _____. 2016b. “*Perityle Gilensis*.” *Flora of North America Vol. 21*. www.eFloras.org.

- Fehlberg, S.D., and C.J. Ferguson. 2012. "Intraspecific Cytotypic Variation and Complicated Genetic Structure in the Phlox *Amabilis* – *P. Woodhousei* (Polemoniaceae) Complex." *American Journal of Botany* 99: 865–74.
- Frey, Jennifer K., and Charles T. LaRue. 1993. "Notes on the Distribution of the Mogollon Vole (*Microtus Mogollonensis*) in New Mexico and Arizona." *The Southwestern Naturalist* 38 (2): 176–78.
- Glassberg, J. 2001. *Butterflies through Binoculars: The West, A Field Guide to the Butterflies of Western North America*. New York, New York: Oxford University Press.
- Gutiérrez, R J, A B Franklin, and W S Lahaye. 1995. "Spotted Owl (*Strix Occidentalis*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Hershler, Robert. 1994. "A Review of the North American Freshwater Snail Genus *Pyrgulopsis* (Hydrobiidae)." *Smithsonian Contributions to Zoology* 554: 1–69.
- Hershler, Robert, and J. Jerry Landye. 1988. "Arizona Hydrobiidae." *Smithsonian Contributions to Zoology* 459: 43–49.
- Hodgson, W. C. 2001. "Taxonomic Novelties in American Agave (Agavaceae)." *Novon* 11 (4): 410–16.
- Hodgson, W.C., and A.M. Salywon. 2013. "Two New Agave Species (Agavaceae) from Central Arizona and Their Putative Pre-Columbian Domesticated Origins." *Brittonia* 65: 5–15.
- Hoffmeister, D.F. 1986. *Mammals of Arizona*. University of Arizona Press.
- Jackson, R. C. 1963. "Cytotaxonomy of *Helianthus Ciliaris* and Related Species of the Southwestern U.S. and Mexico." *Brittonia* 15 (260–271).
- Johnson, R Roy, Lois T Haight, and J David Ligon. 1999. "Arizona Woodpecker (*Picoides Arizonae*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Jones, Stephanie. 2010. "Sprague's Pipit (*Anthus Spragueii*) Conservation Plan." Washington, D.C.: U.S. Fish and Wildlife Service, Region 6.
- Kochert, M. N., K. Steenhof, C. L. McIntyre, and E. H. Craig. 2002. "Golden Eagle (*Aquila Chrysaetos*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Kunzmann, M. R., L. S. Hall, and R. Roy Johnson. 1998. "Elegant Trogon (*Trogon Elegans*)." *The Birds of North America*. Ithaca, New York: Cornell Lab of Ornithology. doi:10.2173/bna.357.
- Lang, Brian K., and Lance H. Gilbertson. 2010. "A New Species of *Sonorella* (Gastropoda: Pulmonata: Helminthoglyptidae) from Southwestern New Mexico, with a Revision of the Subspecies of *Sonorella Hachitana* (Dall)." *Proceedings of the Biological Society of Washington* 123 (1). Biological Society of Washington Smithsonian Institution, P.O. Box 37012, MRC-111, 10th & Constitution Ave. NW, Washington, DC 20013-7012 USA : 62–71. doi:10.2988/09-08.1.

- Leavitt, D.H., R.L. Bezy, K.A. Crandall, and J.W. Sites, Jr. 2007. "Multi-Locus DNA Sequence Data Reveal a History of Deep Cryptic Vicariance and Habitat-Driven Convergence in the Desert Night Lizard *Xantusia Vigilis* Species Complex (Squamata: Xantusiidae)." *Molecular Ecology* 16: 4455–81.
- Lewis, W.H., and B. Ertter. 2010. "Rosa Woodsii Subsp. Puberulenta and Variety Ertterae (Rosaceae), New in Western North America." *Novon* 20: 47–52.
- McCafferty, W.P. 2006. "Rediscovery of Fallceon Eatonii (Kimmins) (Ephemeroptera: Baetidae)." *Proceedings of the Entomological Society of Washington* 108: 248.
- _____. 2007. "Moribaetis Mimbresaurus, New Species (Ephemeroptera: Baetidae): First Representative of the Genus North of Mexico." *Proceedings of the Entomological Society of Washington* 109 (3): 696–99.
- McLaughlin, S.P., E. Geiger, and J.E. Bowers. 2001. "Flora of the Appleton-Whittell Research Ranch, Northeastern Santa Cruz County, Arizona." *Arizona Journal of the Arizona-Nevada Academy of Science* 33 (2): 113–31.
- Minckley, W.L., and P.C. Marsh. 2009. *Inland Fishes of the Greater Southwest. Chronicle of a Vanishing Biota*. Tucson, Arizona: The University of Arizona Press.
- Moore, W.S. 1995. "Gilded Flicker (*Colaptes Chrysoides*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. <https://birdsna.org/Species-Account/bna/species/gilfli>.
- Morris, G., C. Kline, and S. Morris. 2015. "Status of Danaus Plexippus Population in Arizona." *Journal of the Lepidopterists' Society* 69 (2): 91–97.
- Morse, J.C., and R.W. Holzenthal. 2008a. *An Introduction to the Aquatic Insects of North America*. 4th ed. Dubuque, Iowa: Kendall/Hunt Publishing Company.
- _____. 2008b. "Trichoptera Genera." In *An Introduction to the Aquatic Insects of North America*, edited by R.W. Merritt, K.W. Cummins, and M.B. Berg, Fourth, 1158. Dubuque, Iowa: Kendall/Hunt Publishing Company.
- Moulton, S.R., K.W. Stewart, and K.L. Young. 1994. "New Records, Distribution and Taxonomic Status of Some Northern Arizona Caddisflies (Trichoptera)." *Entomological News* 105 (3): 164–74.
- Muchmore, William B. 1997. "Tuberochernes (Pseudoscorpionida, Chernetidae), a New Genus with Species in Caves in California and Arizona." *The Journal of Arachnology* 25: 206–12.
- Muñoz-Quesada, F.J., and R.W. Holzenthal. 2008. "Revision of the Nearctic Species of the Caddisfly Genus *Wormaldia* McLachlan (Trichoptera: Philopotamidae)." *Zootaxa* 1838 (1): 1–75.
- National Audubon Society. 2014. "Bird Checklist at Appleton-Whittell Research Ranch." National Audubon Society.
- Natureserve. 2015. "NatureServe Explorer: An Online Encyclopedia of Life [Web Application]." *Version 7.0*. *NatureServe*.

- NatureServe. 2017. "NatureServe Explorer: An Online Encyclopedia of Life [Web Application]." *Version 7.1*. NatureServe. Arlington, Virginia.
- New Mexico Rare Plant Technical Council. 1999. "New Mexico Rare Plants Home Page." *New Mexico Rare Plants*. (Latest update: 21 July 2016). http://nmrareplants.unm.edu/rarelist_single.php?SpeciesID=67.
- Nigro, Ernest, and Jim Rorabaugh. 2008. "Lowland Burrowing Treefrog *Smilisca Fodiens*." *Online Field Guide to The Reptiles and Amphibians of Arizona*.
- Poulin, Ray L, Danielle Todd, E A Haug, B A Millsap, and M S Martell. 2011. "Burrowing Owl (*Athene Cunicularia*)." Edited by P.G. Rodewald. *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. doi:10.2173/bna.61.
- Resolution Copper Mining. 2015. "Land Exchange Proposal." Resolution Copper Mining, LLC: August 2015.
- Robinson, A., D. Orabutt, and C. Crowder. 2010. "Devils Canyon and Mineral Creek Fish Surveys during 2009."
- Rorabaugh, Jim. 2008. "Barred Tiger Salamander *Ambystoma Mavortium*." *Online Field Guide to The Reptiles and Amphibians of Arizona*.
- Rosen, Philip C., J Eric Wallace, and Cecil R Schwalbe. 2001. "Resurvey of the Mexican Garter Snake (*Thamnophis Eques*) in Southeastern Arizona."
- Ross, Herbert. 1946. "A Review of the Nearctic Lepidostomatidae (Trichoptera)." *Annals of the Entomological Society of America* 39 (2): 265–91. doi:10.1093/aesa/39.2.265.
- Rush, Scott A., Karen F. Gaines, William R. Eddleman, and Courtney J. Conway. 2012. "Yuma Clapper Rail (*Rallus Longirostris*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Sheppard, Jay M. 1996. "Le Conte's Thrasher (*Toxostoma Lecontei*)." *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology.
- Snyder, Helen. 1995. "Apache Goshawk Conservation Biology in Southeast Arizona."
- Southwest Environmental Information Network. 2016. "Database of Herbarium Collections." *SEINet*.
- _____. 2017. "SEINet - Arizona Chapter." *SEINet*. <http://swbiodiversity.org/seinet/index.php>.
- Squires, John R., and Richard T. Reynolds. 1997. "Northern Goshawk (*Accipiter Gentilis*)." Edited by P.G. Rodewald. *The Birds of North America Online*. Ithaca: Cornell Lab of Ornithology. doi:10.2173/bna.298.
- Stebbins, R.C. 2003. *Field Guide to Western Reptiles and Amphibians (Peterson Field Guides)*. Edited by Roger T. Peterson. 3rd ed. New York, NY: Houghton Mifflin Co.
- Taylor, Dan, and Sheryl Ducummon. 1996. "A Report on a Bat Survey of Abandoned Underground Mine Working at BHP Copper-Superior Operations, With Recommendations for Bat Conservation." *North American Bats and Mines Project Survey*. Bat Conservation International.

- Tesky, Julie L. 1994. "Aquila Chrysaetos." *In: Fire Effects Information System, [Online]*. Rocky Mountain Research Station, Fire Sciences Laboratory: U.S. Department of Agriculture, Forest Service.
- The Nature Conservancy. n.d. "San Pedro River Wet-Dry Maps."
- Titus, J.H., and P.J. Titus. 2008. "Assessing the Reintroduction Potential of the Endangered Huachuca Water Umbel in Southeastern Arizona." *Ecological Restoration* 26: 311–20.
- Tomoff, C.S. 1989. "Boyce Thompson Arboretum, Bird Checklist. Fieldwork Conducted between 1986 and 1989." Prescott College, August 1989.
- Tonto National Forest. 2000. "Tonto National Forest Threatened, Endangered, and Sensitive (TES) Species 2000 Draft Abstracts." U.S. Forest Service. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_018579.pdf.
- Tucson Audubon Society. 2011a. "Arizona's Important Bird Areas." Arizona Important Bird Area Program.
- _____. 2011b. "Map of All 45 Arizona IBAs."
- _____. 2016. "IBA and Species Summary Query." *Arizona IBA Bird Survey Database*. Tucson Audubon Society.
- U.S. Fish and Wildlife Service. 1985. "Recovery Plan for the California Least Tern." Portland, Oregon: U.S. Fish and Wildlife Service.
- _____. 1986. "Endangered and Threatened Wildlife and Plants; Determination of Endangered Status and Critical Habitat for the Desert Pupfish." *Federal Register* 51 (61): 10.
- _____. 1987. "Endangered and Threatened Wildlife and Plants; Final Rule To Determine Lepidomeda Vittata (Little Colorado Spinedace) To Be a Threatened Species With Critical Habitat." *Federal Register* 52 (179): 35034–41.
- _____. 1994. "Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub." *Federal Register* 59 (54): 13374–400.
- _____. 1995. "Kanab Ambersnail Recovery Plan."
- _____. 1999. "Draft Revised Recovery Plan for the Gila Topminnow. U.S. Fish and Wildlife Service." Albuquerque, New Mexico: U.S. Fish and Wildlife Service.
- _____. 2002. "Endangered and Threatened Wildlife and Plants; Listing of the Chiricahua Leopard Frog (*Rana Chiricahuensis*); Final Rule." *Federal Register* 67 (114). U.S. Fish and Wildlife Service: 23.
- _____. 2004. "Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl; Final Rule." *Federal Register*. U.S. Fish and Wildlife Service.
- _____. 2005. "Endangered and Threatened Wildlife and Plants; Listing Gila Chub as Endangered with Critical Habitat." *Federal Register* 70 (211). U.S. Fish and Wildlife Service: 66664–723.

- _____. 2006. “Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona.” U.S. Fish and Wildlife Service.
- _____. 2007a. “5-Year Review for Pima Pineapple Cactus (*Coryphantha Scheeri* Var. *Robustispina*).” Phoenix, Arizona: Arizona Ecological Services Office.
- _____. 2007b. “Chiricahua Leopard Frog (*Rana Chiricahuensis*) Recovery Plan.” Albuquerque, New Mexico: U.S. Fish and Wildlife Service, Region 2.
- _____. 2008a. “5-Year Review: Summary and Evaluation - Peebles Navajo Cactus (*Pediocactus Peeblesianus* Var. *Peeblesianus*).” *Federal Register Notice 71 FR 20714*. Arizona Ecological Services Office.
- _____. 2008b. “Mexican Gray Wolf (*Canis Lupus Baileyi*) Species Information.” U.S. Fish and Wildlife Service.
- _____. 2008c. “Siler Pincushion Cactus, 5-Year Review: Summary and Evaluation.”
- _____. 2009a. “General Species Information: California Least Tern.” Phoenix.
- _____. 2009b. “Nichol Turk’s Head Cactus (*Echinocactus Horizontalonius* Var. *Nicholii*), 5 Year Review: Summary and Evaluation.” Phoenix, Arizona. <https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/NicholsTurksHead/NicholTurksHeadCactus5-YearReview.pdf>.
- _____. 2010. “San Francisco Peaks Ragwort, 5 Year Review: Summary and Evaluation.”
- _____. 2011. “Bald Eagle (*Haliaeetus Leucocephalus*).” *General Species Information*. Arizona Ecological Services Field Office.
- _____. 2012a. “Brady Pincushion Cactus (*Pediocactus Bradyi*), 5 Year Review: Summary and Evaluation.” *Arizona Ecological Service Field Office*. Phoenix, Arizona: U.S. Fish and Wildlife Service. https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/BradyPincushion/BradyPincushionCactus_5-Year_Review_2012.pdf.
- _____. 2012b. “Endangered and Threatened Wildlife and Plants; Endangered Status and Designations of Critical Habitat for Spikedace and Loach Minnow.” *Federal Register 77* (36). U.S. Fish and Wildlife Service: 10810–934.
- _____. 2012c. “Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog; Final Rule.” *Federal Register 77* (54): 16324–424.
- _____. 2013a. “5-Year Review: Summary and Evaluation - Kearney Blue-Star (*Amsonia Kearneyana*).” *Federal Register Notice 73 FR 14995*. Arizona Ecological Services Tucson Sub-Office.
- _____. 2013b. “Endangered and Threatened Wildlife and Plants, Designation of Critical Habitat for Southwestern Willow Flycatcher, Final Rule.” *Federal Register 78* (2): 344–534.

- _____. 2013c. “Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Gunnison’s Prairie Dog as an Endangered or Threatened Species.” *Federal Register* 78 (220): 68660–85.
- _____. 2013d. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Acuña Cactus and the Fickeisen Plains Cactus; Proposed Rule.” *Federal Register* 78 (130): 40673–86.
- _____. 2013e. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake; Proposed Rule.” *Federal Register* 78 (132): 41550–608.
- _____. 2013f. “Endangered and Threatened Wildlife and Plants; Endangered Species Status for *Echinomastus Erectocentrus* Var. *Acunensis* (Acuña Cactus) and *Pediocactus Peeblesianus* Var. *Fickeiseniae* (Fickeisen Plains Cactus) Throughout Their Ranges; Final Rule.” *Federal Register* 78 (190): 60608–52.
- _____. 2014. “Endangered and Threatened Wildlife and Plants; Threatened Status for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake; Final Rule.” *Federal Register* 79 (130): 38678–746.
- _____. 2015a. “Endangered and Threatened Wildlife and Plants; Endangered Status for the Mexican Wolf and Regulations for the Nonessential Experimental Population of the Mexican Wolf; Final Rules.” *Federal Register* 80 (11): 2488–2512.
- _____. 2015b. “Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Headwater Chub and a Distinct Population Segment of the Roundtail Chub; Proposed Rule.” *Federal Register* 80 (194). U.S. Fish and Wildlife Service: 60754–83.
- _____. 2015c. “Gila Chub (*Gila Intermedia*) Draft Recovery Plan.” Albuquerque, New Mexico: U.S. Fish and Wildlife Service, Southwest Region. https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/GilaChub/GilaChub_DraftRecoveryPlan_Final_October2014.pdf.
- _____. 2016a. “Endangered and Threatened Wildlife and Plants; 6-Month Extension of Final Determination for the Proposed Listing of the Headwater Chub and Distinct Population Segment of the Roundtail Chub as Threatened Species.” *Federal Register* 81 (157): 54018–19.
- _____. 2016b. “General Species Information: Welsh’s Milkweed.”
- _____. 2016c. “Gray Wolf (*Canis Lupus*).” *Environmental Conservation Online System*.
- _____. 2017a. “Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Headwater Chub and Roundtail Chub Distinct Population Segment.” *Federal Register* 82 (66). U.S. Fish and Wildlife Service: 16981–88. <https://www.gpo.gov/fdsys/pkg/FR-2017-04-07/pdf/2017-06995.pdf>.
- _____. 2017b. “Mexican Wolf Occupied Range.” *Geoportal*. U.S. Fish and Wildlife Service, Mexican Wolf Recovery Program.
- U.S. Forest Service. 2011. “Botany Specialists Report: Travel Management Rule Environmental Impact Statement Coconino National Forest.”

- Webb, Elizabeth A., and Carl E. Bock. 2012. "Botteri's Sparrow (*Peucaea Botterii*).” Edited by P.G. Rodewald. *The Birds of North America Online*. Ithaca, New York: Cornell Lab of Ornithology. doi:10.2173/bna.216.
- Wells, S.A., and C. Allen. 2014. "Growing Mussels in the Desert: Ex Situ Propagation of California Floater Mussels (*Anodonta Californiensis*).” Phoenix Zoo Conservation and Science Department.
- Welsh, S.L., and M. Licher. 2010. "Pediomelum Rrydberg (*Leguminosae*) in Arizona and Two Previously Undescribed Species.” *Western North American Naturalist* 70: 9–18.
- WestLand Resources. 2004a. "2004 Arizona Hedgehog Cactus Survey. Federal Parcel, Pinal County, Arizona.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004b. "2004 Bat Survey, Federal Parcel, Pinal County, Arizona.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004c. "2004 Raptor Survey Federal Parcel, Pinal County, Arizona.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004d. "Baseline Biology and Land Use Report.” *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004e. "Ecological Overview: JX Ranch Parcel, Gila County, Arizona.” *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004f. "Ecological Overview 6L Ranch Parcel, Yavapai County, Arizona.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2004g. "2004 Reptile and Amphibian Survey Federal Parcel, Pinal County, Arizona.” *Prepared for Resolution Copper Company*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2008. "Draft Baseline Biological Winter Bird Surveys.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2009. "Raptor Survey and 2008 Bird Census.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2010. "2009 Bird Census.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012a. "2011 Bat Species Survey of the Resolution Copper Mine Study Area.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012b. "2011 Raptor Surveys of Mine and Vicinity.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.
- _____. 2012c. "Amphibian and Reptile Surveys.” *Prepared for Resolution Copper Mining*. Tucson, Arizona: WestLand Resources, Inc.

- _____. 2013a. "2012 Prefeasibility Activities Arizona Hedgehog Cactus Action Area Survey (Conservation Measure 5)." Tucson.
- _____. 2013b. "2013 Survey for Yellow-Billed Cuckoo (*Coccyzus Americanus*) in the Patagonia Mountains, near Harshaw, Arizona." *Prepared for Arizona Minerals, Inc.* Tucson, Arizona: WestLand Resources, Inc.
- _____. 2014. "2014 Arizona Hedgehog Cactus Survey Report." *Prepared for Resolution Copper Mining.* Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015a. "2014 Yellow-Billed Cuckoo (*Coccyzus Americanus*) Survey: Rosemont Copper Project." *Prepared for Hudbay.* Tucson, Arizona: WestLand Resources, Inc.
- _____. 2015b. "Arizona Hedgehog Cactus Survey Report East and West Plant Sites." Tucson, Arizona: Prepared for Resolution Copper Mining.
- _____. 2016. "Ecological Overview Dripping Springs Parcel Gila and Pinal Counties, Arizona." *Prepared for Resolution Copper.* Tucson, Arizona: WestLand Resources, Inc.
- _____. 2017. "Fish and Aquatics Survey for the Resolution Project Area." *Prepared for Resolution Copper.* Tucson, Arizona: WestLand Resources Inc.
- Wilbor, Scott. 2010. "Avian Surveys Conducted by Audubon Arizona IBA Program at 7B Ranch, Lower San Pedro River, Mammoth, Arizona, 2006-2010." *Unpublished Data from Audubon's Important Bird Areas Program, Avian Science Initiative.* Tucson Audubon Society.
- Wilken, D.H., and J.M. Porter. 2005. "Vascular Plants of Arizona: Polemoniaceae." *Canotia* 1: 1-37.
- Wilson, D.E., and D.M. Reeder. 2005. *Mammal Species of the World. A Taxonomic and Geographic Reference.* Edited by D.E. Wilson and D.M. Reeder. 3rd ed. Johns Hopkins University Press.

APPENDIX C

**Tonto National
Forest Federal
Threatened,
Endangered,
and Candidate
Species List,
USFS Region 3
Sensitive Species
List; and BLM
Sensitive
Species List**

**Tonto National Forest
Federal Threatened, Endangered, and Candidate Species
(2015)**

Common Name	Scientific Name	Status
Mammals		
Birds		
Cuckoo, yellow-billed	<i>Coccyzus americanus</i>	T
Cuckoo, yellow-billed critical habitat	N/A	P
Flycatcher, southwestern willow	<i>Empidonax traillii extimus</i>	E
Flycatcher, southwestern willow critical habitat	N/A	D
Owl, Mexican spotted	<i>Strix occidentalis lucida</i>	T
Owl, Mexican spotted critical habitat	N/A	D
Rail, Yuma ridgeway's	<i>Rallus obsoletus yumanensis</i>	E
Reptiles		
Gartersnake, northern Mexican	<i>Thamnophis eques megalops</i>	T
Gartersnake, northern Mexican critical habitat	N/A	P
Gartersnake, narrow-headed	<i>Thamnophis rufipunctatus</i>	T
Gartersnake, narrow-headed critical habitat	N/A	P
Tortoise, Morafka's desert	<i>Gopherus morafkai</i>	C
Amphibian		
Frog, Chiricahua leopard	<i>Lithobates [Rana] chiricahuensis</i>	T
Frog, Chiricahua leopard, critical habitat	N/A	D
Fish		
Chub, Gila	<i>Gila intermedia</i>	E
Chub, Gila critical habitat	N/A	D
Chub, headwater	<i>Gila nigra</i>	C
Chub, roundtail	<i>Gila robusta</i>	C
Minnow, loach	<i>Tiaroga cobitis</i>	E
Minnow, loach, critical habitat	N/A	D
Pikeminnow, Colorado (non-essential experimental)	<i>Ptychocheilus lucius</i>	E
Pupfish, desert	<i>Cyprinodon macularius</i>	E
Spikedace	<i>Meda fulgida</i>	E
Spikedace, critical habitat	N/A	D
Sucker, razorback	<i>Xyrauchen texanus</i>	E
Sucker, razorback, critical habitat	N/A	D
Topminnow, Gila	<i>Poeciliopsis occidentalis occidentalis</i>	E
Plants		
Cliffrose, Arizona	<i>Purshia subintegra</i>	E
	<i>Echinocereus triglochidiatus var. arizonicus</i>	E
Hedgehog, Arizona		

C=candidate, D-designated, E=endangered, N/A=not applicable, P=proposed, T=threatened

**Tonto National Forest
Forest Sensitive Species
(2015)**

Common Name	Scientific Name
Mammals (4)	
Bat, Allen's lappet-browed	<i>Idionycteris phyllotis</i>
Bat, pale townsend's big-eared	<i>Corynorhinus townsendii pallescens</i>
Bat, spotted	<i>Euderma maculatum</i>
Bat, western red	<i>Lasiurus blossevillii</i>
Birds (4)	
Falcon, American peregrine	<i>Falco peregrinus anatum</i>
Flycatcher, sulphur-bellied	<i>Myiodynastes luteiventris</i>
Goshawk, northern	<i>Accipiter gentilis</i>
Junco, yellow-eyed	<i>Junco phaeonotus</i>
Reptiles (2)	
Lizard, Bezy's night	<i>Xantusia bezyi</i>
Tortoise, Morafka's desert (Federal candidate)	<i>Gopherus morafkai</i>
Amphibians (3)	
Frog, lowland leopard	<i>Lithobates [Rana] yavapaiensis</i>
Frog, western barking	<i>Eleutherodactylus augusti cactorum</i>
Frog, northern leopard	<i>Lithobates [Rana] pipiens</i>
Fish (4)	
Chub, headwater (Federal candidate)	<i>Gila nigra</i>
Chub, roundtail(Federal candidate)	<i>Gila robusta</i>
Sucker, desert	<i>Catostomus clarki</i>
Sucker, Sonora	<i>Catostomus insignis</i>
Invertebrates (5)	
Beetle, Parker's cyloepus riffle	<i>Cyloepus parkeri</i>
Caddisfly, A	<i>Wormaldia planae</i>
Mayfly, A	<i>Fallceon eatoni</i>
Midge, netwing	<i>Agathon arizonicus</i>
Springsnail, fossil	<i>Pyrgulopsis simplex</i>
Plants (23)	
Agave, Hohokam	<i>Agave murpheyi</i>
Agave, Tonto basin	<i>Agave delamateri</i>
Breadroot, Verde	<i>Pediomelum verdiensis</i>
Buckwheat, Ripley wild	<i>Eriogonum ripleyi</i>
Bugbane, Arizona	<i>Cimicifuga arizonica</i>
Dock, blumer's	<i>Rumex orthoneurus</i>
Fleabane, fish creek	<i>Erigeron piscaticus</i>
Fleabane, Mogollon	<i>Erigeron anchana</i>
Groundsel, toumey	<i>Packera neomexicana</i> var. <i>toumeyi</i> (= <i>Senecio</i> n. var. <i>t.</i>)
Mallow, Pima Indian	<i>Abutilon parishii</i>
Milkwort, Hualapai	<i>Polygala rusbyi</i>
Phlox, Arizona	<i>Phlox amabilis</i>
Rockdaisy, fish creek	<i>Perityle saxicola</i>
Rockdaisy, salt river	<i>Perityle gilensis</i> var. <i>salensis</i>
Root, Arizona alum	<i>Heuchera glomerulata</i>
Root, eastwood alum	<i>Heuchera eastwoodiae</i>
Sage, galiuro	<i>Salvia amissa</i>

Common Name	Scientific Name
Sandwort, Mt. Dellenbaugh	<i>Arenaria aberrans</i>
Sedge, Chihuahuan	<i>Carex chihuahuensis</i>
Sedge, Cochise	<i>Carex ultra</i> (= <i>C. spissa</i> var. <i>ultra</i>)
Snapdragon, mapleleaf false	<i>Mabrya acerifolia</i> (= <i>Maurandya a.</i>)
Vetch, horseshoe deer	<i>Lotus mearnsii</i> var. <i>equisolensis</i>
Woodfern, Aravaipa	<i>Thelypteris puberula</i> var. <i>sonorensis</i>

**Tonto National Forest
Management Indicator Species**

Management Indicator Species	Potential Natural Vegetation Crosswalk w/ Forest Plan Vegetation	Indicator of	Habitat Trend	Population Trend
Elk	PPM, MCA	general forest conditions	Static	Stable
Turkey	PPM, MCA	vertical diversity – forest mix	Static	Stable
Pygmy Nuthatch	PPM	Old growth pine	Static	Decrease
Violet-green swallow	PPM, MCA	Cavity-nesting habitat	Static	Decrease
Western Bluebird	PPM, MCA	Forest openings	Static	Stable
Hairy Woodpecker	PPM, MCA	Snags	Static	Stable
Goshawk	PPM, MCA	Vertical diversity	Static	Decrease
Abert Squirrel	PPM, MCA	Successional stages of pine	Static	Decrease
Ash-throated Flycatcher	PJC, PJG,	Ground cover	Static	Stable
Gray Vireo	PJC, PJG	Tree density	Static	Decrease
Townsend's Solitaire	PJC, PJG	Juniper berry production	Static	Stable
Juniper Titmouse	PJC, PJG	General woodland conditions	Static	Decrease
Northern Flicker	PJC, PJG	Snags	Static	Stable
Spotted Towhee	PJC, PJG	Successional stages of pinyon-juniper	Static	Stable
Spotted Towhee	IC	Shrub density	Static	Stable
Black-chinned Sparrow	IC	Shrub diversity	Static	Stable
Savannah Sparrow	CPG, PJG	Grass species diversity	Upward/static	Stable

Management Indicator Species	Potential Natural Vegetation Crosswalk w/ Forest Plan Vegetation	Indicator of	Habitat Trend	Population Trend
Horned Lark	CPG, PJG	Vegetation aspect	Upward/static	Decrease
Black-throated Sparrow	DC	Shrub diversity	Downward/static	Stable
Canyon Towhee	DC	Ground cover	Downward/static	Decrease
Bald Eagle	CWRF	General riparian	No change	Stable
Bell's Vireo	CWRF	Well-developed understory	No change	Decrease
Summer Tanager	CWRF	Tall, mature trees	No change	Decrease
Hooded Oriole	CWRF	Medium-sized Trees	No change	Stable
Hairy Woodpecker	MBDRF	Snags, cavities	No change	Stable
Arizona Gray Squirrel	MBDRF	General riparian	No change	Stable
Warbling Vireo	MBDRF	Tall overstory	No change	Stable
Western Wood Pewee	MBDRF	Medium overstory	No change	Decrease
Common black-hawk	MBDRF	Riparian streamside	No change	Decrease
Macro-invertebrates	Aquatic	Water quality	N/A	N/A
CPG - colorado plateau grassland, CWRF - cottonwood willow riparian forest, DC - desert communities, IC - interior chaparral, MBDRF - mixed broadleaf deciduous riparian forest, MCA - mixed conifer w/ aspen, MWRF- montane willow riparian forest, PJC - PJ chaparral, PJG - PJ grassland, PPM - ponderosa pine – mild, SDG - semi-desert grassland.				

**Tonto National Forest
Migratory bird species of concern**

Ponderosa Pine Forest: primarily pure ponderosa pine forest		
Flammulated Owl*	Northern Goshawk*	Olive-sided Flycatcher*
Grace's Warbler*	Lewis's Woodpecker*	Olive Warbler*
Ponderosa-Gambel's Oak Forest		
Band-tailed Pigeon*	Grace's Warbler*	Northern Goshawk*
Flammulated Owl*	Lewis's Woodpecker*	Olive Warbler*
		Mexican Spotted Owl*
Mixed Conifer Forest: Douglas fir, white fir, ponderosa pine, often some aspen and Gambel's oak.		
Band-tailed Pigeon*	Golden-crowned Kinglet	Olive-sided Flycatcher*
Cordilleran Flycatcher	Mexican Spotted Owl	Red-faced Warbler*
Flammulated Owl*	Northern Goshawk*	Red-naped Sapsucker*
Pinyon Pine – Juniper woodland		
Black-throated Gray Warbler*	Gray Vireo	Peregrine Falcon*
Golden Eagle*	Juniper Titmouse	Pinyon Jay
Gray Flycatcher		
Madrean Evergreen woodland: Madrean evergreen oaks, juniper, pinyon pine		
Black-throated Gray Warbler*	Golden Eagle*	
Interior chaparral: shrub live oak, manzanita, mountain-mahogany, cliffrose		
Black-chinned Sparrow		
Semi-arid grassland, often with scattered sotol, agaves, burroweed, snakeweed, yucca, mesquite		
Golden Eagle*	Swainson's Hawk	
Sonoran Desertscrub (Arizona Upland Biome): paloverde, ironwood, mesquite, catclaw, acacia, saguro, cholla, barrel cactus, prickly pear, creosote bush, jojoba, crucifixion thorn		
Bendire's Thrasher	Gila Woodpecker	Phainopepla*
Canyon Towhee	Gilded Flicker	Prairie Falcon
Costa's Hummingbird*	Golden Eagle*	Purple Martin
Elf Owl	Peregrine Falcon*	
Montane riparian wetlands: cottonwood, maple, box elder, alder, willow, some Gambel's oak, ponderosa pine, Douglas fir, white fir, and aspen		
Cordilleran Flycatcher*	Red-faced Warbler*	Red-naped Sapsucker*
MacGillivray's Warbler		
Marshlands, cienegas, ponds, and lake edges: bulrush, sedges, pondweeds, cattail, duckweed, saltgrass		
Yuma Clapper Rail		
Interior riparian deciduous forests and woodlands: sycamore, cottonwood, willow, ash, walnut, bigtooth maple, hackberry, cypress, juniper, oak		
Common Black-Hawk*	Northern Beardless-Tyrannulet*	Yellow Warbler*
Sonoran riparian deciduous forest and woodlands: primarily cottonwood, willow, mesquite, tamarisk (salt cedar), some ash, walnut, and hackberry		
Bald Eagle	Northern Beardless-Tyrannulet	Western Yellow-billed Cuckoo
Bell's Vireo*	Southwestern Willow Flycatcher	Yellow Warbler*
Common Black-Hawk*		
Sonoran riparian scrubland (dry wash): mesquite, paloverde, ironwood, burrobrush, desert broom, quailbush, desert willow		
Bell's Vireo*	Lucy's Warbler	Phainopepla*
Costa's Hummingbird*		
* Species occurs in more than 1 type of habitat		

USFS R3 REGIONAL FORESTER'S SENSITIVE SPECIES: ANIMALS - 2013

Common Name	Scientific Name	Forest(s)
AMPHIBIANS (7)		
BOREAL TOAD (Western toad)	<i>Anaxyrus boreas boreas</i> (DPS)	CAR
SACRAMENTO MOUNTAINS SALAMANDER	<i>Aneides hardii</i>	LIN
WESTERN BARKING FROG	<i>Craugastor augusti cactorum</i>	COR, TON
HUACHUCA/CANELO HILLS TREEFROG (AZ treefrog)	<i>Hyla wrightorum pop. 2</i>	COR
NORTHERN LEOPARD FROG	<i>Lithobates pipiens</i>	A-S, CAR, CIB, COC, KAI, SFE, TON
TARAHUMARA FROG	<i>Lithobates tarahumarae</i>	COR
LOWLAND LEOPARD FROG	<i>Lithobates yavapaiensis</i>	A-S, COC, COR, GIL, PRE, TON
BIRDS (35)		
NORTHERN GOSHAWK	<i>Accipiter gentilis</i>	A-S, CAR, CIB, COC, COR, GIL, KAI, LIN, PRE, SFE, TON
BOREAL OWL	<i>Aegolius funereus</i>	CAR, SFE
VIOLET-CROWNED HUMMINGBIRD	<i>Amazilia violiceps</i>	COR
BAIRD'S SPARROW	<i>Ammodramus bairdii</i>	A-S, COR, LIN
ARIZONA GRASSHOPPER SPARROW	<i>Ammodramus savannarum ammolegus</i>	COR
BURROWING OWL (Western)	<i>Athene cunicularia hypugaea</i>	A-S, CAR, CIB, COC, GIL, KAI, LIN, SFE
COMMON BLACK HAWK	<i>Buteogallus anthracinus</i>	GIL
LUCIFER HUMMINGBIRD	<i>Calothorax lucifer</i>	COR
COSTA'S HUMMINGBIRD	<i>Calypte costae</i>	GIL
NORTHERN BEARDLESS-TYRANNULET	<i>Camptostoma imberbe</i>	COR (Douglas RD)
BUFF-COLLARED NIGHTJAR	<i>Caprimulgus ridgwayi</i>	COR
MOUNTAIN PLOVER	<i>Charadrius montanus</i>	CIB (KRB)
WESTERN YELLOW BILLED CUCKOO ¹	<i>Coccyzus americanus occidentalis</i>	A-S, CAR, CIB (except BK), COC, COR, GIL, PRE, SFE, TON
COMMON GROUND DOVE	<i>Columbina passerina</i>	GIL
BROAD-BILLED HUMMINGBIRD	<i>Cyanthus latirostris</i>	COR
GRAY CATBIRD	<i>Dumetella carolinensis</i>	A-S
BUFF-BREASTED FLYCATCHER	<i>Empidonax fulvifrons</i>	COR
EARED QUETZAL	<i>Euptilotis neoxenus</i>	COR
AMERICAN PEREGRINE FALCON	<i>Falco peregrinus anatum</i>	A-S, CAR, CIB (except BK), COC, COR, GIL, KAI, LIN, PRE, SFE, TON
CACTUS FERRUGINOUS PYGMY OWL	<i>Glaucidium brasilianum cactorum</i>	COR
BALD EAGLE	<i>Haliaeetus leucocephalus</i>	ALL
WHITE-EARED HUMMINGBIRD	<i>Hylocharis leucotis</i>	GIL, COR
YELLOW-EYED JUNCO	<i>Junco phaeonotus</i>	COR (Douglas RD in NM), TON
WHITE-TAILED PTARMIGAN	<i>Lagopus leucura</i>	CAR, SFE
WHISKERED SCREECH OWL	<i>Megascops trichopsis</i>	COR
GILA WOODPECKER	<i>Melanerpes uropygialis</i>	GIL
GOULD'S WILD TURKEY	<i>Meleagris gallopavo mexicana</i>	COR
ABERT'S TOWHEE	<i>Melospiza aberti</i>	COR, GIL
SULPHUR-BELLIED FLYCATCHER	<i>Myiodynastes luteiventris</i>	COR, TON
ROSE-THROATED BECARD	<i>Pachyramphus aglaiae</i>	COR
VARIED BUNTING	<i>Passerina versicolor</i>	COR, LIN
ARIZONA WOODPECKER	<i>Picoides arizonae</i>	COR

ELEGANT TROGON	<i>Trogon elegans</i>	COR
LESSER PRAIRIE-CHICKEN ¹	<i>Tympanuchus pallidicinctus</i>	CIB (KRB and BK)
THICK-BILLED KINGBIRD	<i>Tyrannus crassirostris</i>	COR
ARIZONA BELL'S VIREO	<i>Vireo bellii arizonae</i>	GIL, LIN
GRAY VIREO	<i>Vireo vicinior</i>	CAR, COR (Douglas RD), SFE, CIB, GIL, LIN
CLAMS (3)		
CALIFORNIA FLOATER	<i>Anodonta californiensis</i>	A-S, COC
LILLJEBORG PEACLAM	<i>Pisidium lilljeborgi</i>	SFE
SANGRE DE CRISTO PEA-CLAM	<i>Pisidium sanguinichristi</i>	CAR
CRUSTACEANS (2)		
KAIBAB FAIRY SHRIMP	<i>Branchinecta kaibabensis</i>	KAI
DUMONT'S FAIRY SHRIMP	<i>Streptocephalus henridumontis</i>	CIB, LIN
FISH (13)		
MEXICAN STONEROLLER	<i>Camptostoma ornatum</i>	COR
DESERT SUCKER	<i>Catostomus clarkii</i>	A-S, COC, COR, GIL, PRE, TON
ZUNI BLUEHEAD SUCKER ¹	<i>Catostomus discobolus jarrovii</i>	CIB
SONORA SUCKER	<i>Catostomus insignis</i>	A-S, COC, COR, GIL, TON, PRE
RIO GRANDE SUCKER	<i>Catostomus plebeius</i>	CIB, CAR, GIL, SFE
LITTLE COLORADO SUCKER	<i>Catostomus sp.3</i>	COC, A-S (indirect effects as likely not on Forest Service lands {A-S only}).
GREENTHROAT DARTER	<i>Etheostoma lepidum</i>	LIN could have indirect effects. Likely not on Forest.
HEADWATER CHUB	<i>Gila nigra</i>	COC, GIL, TON
RIO GRANDE CHUB	<i>Gila pandora</i>	CAR, CIB, LIN, SFE
ROUNDTAIL CHUB	<i>Gila robusta</i>	A-S, COC, CAR, GIL, TON, PRE
HEADWATER CATFISH	<i>Ictalurus lupus</i>	LIN
RIO GRANDE CUTTHROAT TROUT	<i>Oncorhynchus clarki virginalis</i>	CAR, GIL, LIN, SFE
SUCKERMOUTH MINNOW	<i>Phenacobius mirabilis</i>	CIB (KRB)
INSECTS (25)		
SUNRISE SKIPPER	<i>Adopaeoides prittwitzii</i>	COR
NETWING MIDGE	<i>Agathon arizonicus</i>	TON
HUACHUCA GIANT SKIPPER	<i>Agathymus evansi</i>	COR
SABINO CANYON DAMSELFLY	<i>Argia sabino</i>	COR
CESTUS SKIPPER	<i>Atrytonopsis cestus</i>	COR
A STONEFLY	<i>Capnia caryi</i>	A-S, GIL
PARKER'S CYLLOEPUS RIFFLE BEETLE	<i>Cylloepus parkeri</i>	TON
CHIRICAHUA WATER SCAVENGER BEETLE	<i>Cymbiodyta arizonica</i>	COR
DASHED RINGTAIL	<i>Erpetogomphus heterodon</i>	GIL
MOTH (Notodontid moth)	<i>Euhyparpax rosea</i>	GIL
PINALENO MONKEY GRASSHOPPER	<i>Eumorsea pinaleno</i>	COR
SACRAMENTO MOUNTAINS CHECKERSPOT BUTTERFLY	<i>Euphydryas anicia cloudcrofti</i>	LIN
A MAYFLY	<i>Fallceon eatoni</i>	TON
STEPHAN'S HETERELMIS RIFFLE BEETLE	<i>Heterelmis stephani</i>	COR
"GILA" MAY FLY	<i>Lachlania dencyanna</i>	GIL
A CADDISFLY	<i>Lepidostoma apache</i>	A-S
A CADDISFLY	<i>Lepidostoma knulli</i>	A-S, COC
A CADDISFLY	<i>Limnephilus granti</i>	A-S, COR

FERRIS' COPPER	<i>Lycaena ferrisi</i>	A-S
A MAYFLY	<i>Moribaetis mimbresaurus</i>	COC
BALMORHEA SADDLE-CASE CADDISFLY	<i>Protophila balmorhea</i>	COC
A CADDISFLY	<i>Psychoronia brooksi</i>	LIN; Ruidoso RD
NOKOMIS FRITILLARY	<i>Speyeria nokomis nokomis</i>	CAR
BONITA DIVING BEETLE	<i>Stictotarusus neomexicana</i> (aka. <i>Deroneotes n.</i>)	LIN
A Cave Obligate Pseudoscorpion	<i>Tuberochernes ubicki</i>	COR
A CADDISFLY	<i>Wormaldia planae</i>	COC, PRE, TON
MAMMALS (37)		
NORTHERN PYGMY MOUSE	<i>Baiomys taylori ater</i>	COR
MEXICAN LONG-TONGUED BAT	<i>Choeronycteris mexicana</i>	COR
PALE TOWNSEND'S BIG-EARED BAT	<i>Corynorhinus townsendii pallascens</i>	A-S, CAR, CIB, COC, COR, GIL, KAI, LIN, PRE, SFE, TON
GUNNISON'S PRAIRIE DOG (prairie population)	<i>Cynomys gunnisoni</i>	CAR, CIB, SFE, GIL
GUNNISON'S PRAIRIE DOG (montane population)	<i>Cynomys gunnisoni pop. 1</i>	CAR, CIB, SFE, GIL
BLACK-TAILED PRAIRIE DOG	<i>Cynomys ludovicianus</i>	CIB (KRB only)
HOUSEROCK VALLEY CHISEL TOOTHED KANGAROO RAT (aka: Marble Canyon Kangaroo Rat)	<i>Dipodomys microps leucotis</i>	KAI
SPOTTED BAT	<i>Euderma maculatum</i>	A-S, CAR, CIB, COC, GIL, KAI, LIN, SFE, TON
WHITE MOUNTAINS GROUND SQUIRREL	<i>Ictidomys tridecemlineatus monticola</i>	A-S
ALLEN'S LAPPET-BROWED BAT	<i>Idionycteris phyllotis</i>	A-S, CIB, COC, COR, GIL, KAI, TON
WESTERN RED BAT	<i>Lasiurus blossevillii</i>	A-S, COC, COR, GIL, KAI, LIN, PRE, TON
WESTERN YELLOW BAT	<i>Lasiurus xanthinus</i>	COR
CANADA LYNX	<i>Lynx canadensis</i>	CAR, SF (species not known to occur historically. CO reintroduction in 1999 has resulted in lynx traveling through northern NM)
AMERICAN MARTEN	<i>Martes americana origenes</i>	CAR, SFE
HOODED SKUNK	<i>Mephitis macroura milleri</i>	COR*, GIL
WHITE-BELLIED LONG-TAILED VOLE	<i>Microtus longicaudus leucophaeus</i>	COR
NAVAJO MOGOLLON VOLE	<i>Microtus mogollonensis navaho</i>	A-S, COC, KAI
ARIZONA MONTANE VOLE	<i>Microtus montanus arizonensis</i>	A-S, GIL
WHITE MOUNTAINS CHIPMUNK	<i>Neotamias minimus arizonensis</i>	A-S
PEÑASCO LEAST CHIPMUNK	<i>Neotamias minimus atristriatus</i>	LIN
GOAT PEAK PIKA	<i>Ochotona princeps nigrescens</i>	SFE
AMERICAN PIKA	<i>Ochotona princeps saxatilis</i>	CAR, SFE
SPRINGERVILLE SILKY POCKET MOUSE	<i>Perognathus flavus goodpasteri</i>	A-S
MESQUITE (Merriam's) MOUSE	<i>Peromyscus merriami</i>	COR
ARIZONA GRAY SQUIRREL	<i>Sciurus arizonensis arizonensis</i>	GIL
CHIRICAHUA SQUIRREL	<i>Sciurus nayaritensis chiricahuae</i>	COR
ARIZONA SHREW	<i>Sorex arizonae</i>	COR
CINEREUS (MASKED) SHREW	<i>Sorex cinereus</i>	CAR, SFE
NEW MEXICO SHREW	<i>Sorex neomexicanus</i>	LIN
AMERICAN WATER SHREW	<i>Sorex palustris</i>	A-S, CAR, SFE
PREBLE'S SHREW	<i>Sorex preblei</i>	SFE

GUADALUPE POCKET GOPHER	<i>Thomomys bottae guadalupensis</i>	LIN
CEBOLLETA SOUTHERN POCKET GOPHER	<i>Thomomys bottae paguatae</i>	CIB
SWIFT FOX	<i>Vulpes velox</i>	CIB NGs
NEW MEXICO MEADOW JUMPING MOUSE ¹	<i>Zapus hudsonius luteus</i>	A-S, CAR, LIN, SFE

REPTILES (19)

GIANT SPOTTED WHIPTAIL	<i>Aspidoscelis stictogramma</i>	COR
RED-BACKED WHIPTAIL	<i>Aspidoscelis xanthonota</i>	COR
MOTTLED ROCK RATTLESNAKE	<i>Crotalus lepidus lepidus</i>	LIN
TWIN-SPOTTED RATTLESNAKE	<i>Crotalus pricei</i>	COR
ARIZONA RIDGENOSE RATTLESNAKE	<i>Crotalus willardi willardi</i>	COR
SONORAN DESERT TORTOISE	<i>Gopherus morafkai</i>	COR, PRE, TON
THORNSCRUB HOOK-NOSED SNAKE	<i>Gyalopion quadrangulare</i>	COR
BROWN VINESNAKE	<i>Oxybelis aeneus</i>	COR
MOUNTAIN SKINK	<i>Plestiodon callicephalus</i>	COR
SLEVIN'S BUNCHGRASS LIZARD	<i>Sceloporus slevini</i>	COR
GREEN RATSNAKE	<i>Senticolis triaspis</i>	COR
CHIHUAHAUN BLACK-HEADED SNAKE	<i>Tantilla wilcoxi</i>	COR
YAQUI BLACK-HEADED SNAKE	<i>Tantilla yaquia</i>	COR
NORTHERN MEXICAN GARTERSNAKE ¹	<i>Thamnophis eques megalops</i>	A-S, COC, COR, TON, PRE, GIL
ARID LAND RIBBONSNAKE (aka Western ribbonsnake)	<i>Thamnophis proximus diabolicus</i>	CIB (KRB), LIN
NARROW-HEADED GARTERSNAKE ¹	<i>Thamnophis rufipunctatus</i>	A-S, COC, GIL, PRE, TON
BEZY'S NIGHT LIZARD	<i>Xantusia bezyi</i>	COR, TON

SNAILS (37)

SILVER CREEK WOODLANDSNAIL	<i>Ashmunella binneyi</i>	GIL
NO COMMON NAME	<i>Ashmunella cockerelli argenticola</i>	GIL
BLACK RANGE WOODLANDSNAIL	<i>Ashmunella cockerelli cockerelli</i>	GIL
NO COMMON NAME	<i>Ashmunella cockerelli perobtusa</i>	GIL
WHITewater CREEK WOODLANDSNAIL	<i>Ashmunella danielsi</i>	GIL
IRON CREEK WOODLANDSNAIL	<i>Ashmunella mendax</i>	GIL
CAPITAN WOODLANDSNAIL	<i>Ashmunella pseudodonta</i>	LIN
NO COMMON NAME	<i>Ashmunella tetrodon animorum</i>	GIL
NO COMMON NAME	<i>Ashmunella tetrodon inermis</i>	GIL
NO COMMON NAME	<i>Ashmunella tetrodon mutator</i>	GIL
DRY CREEK WOODLANDSNAIL	<i>Ashmunella tetrodon tetrodon</i>	GIL
RIO GRANDE SNAGGLETOOTH	<i>Gastrocopta riograndensis</i>	LIN
RUIDOSO SNAGGLETOOTH	<i>Gastrocopta ruidosensis</i>	LIN, SNF
VAGABOND HOLOSPIRA	<i>Holospira montivaga</i>	LIN
NORTHERN THREEBAND (Snail)	<i>Humboldtiana ultima</i>	LIN
BEARDED MOUNTAINSNAIL	<i>Oreohelix barbata</i>	GIL, COR
PINALENO MOUNTAINSNAIL	<i>Oreohelix grahamensis</i>	COR
MAGDALENA MOUNTAINSNAIL	<i>Oreohelix magdalenae</i>	CIB
NO COMMON NAME	<i>Oreohelix metcalfei acutidiscus</i>	GIL
NO COMMON NAME (Black Range mountainsnail)	<i>Oreohelix metcalfei concentrica</i>	GIL
NO COMMON NAME	<i>Oreohelix metcalfei metcalfei</i>	GIL
NO COMMON NAME	<i>Oreohelix metcalfei radiata</i>	GIL
NO COMMON NAME	<i>Oreohelix nogalensis (aka O. strigosa nogalensis)</i>	LIN
MINERAL CREEK MOUNTAINSNAIL	<i>Oreohelix pilsbryi</i>	GIL
MORGAN CREEK MOUNTAINSNAIL	<i>Oreohelix swopei</i>	GIL
GILA SPRINGSNAIL	<i>Pyrgulopsis gilae</i>	GIL
VERDE RIM SPRINGSNAIL	<i>Pyrgulopsis glandulosa</i>	PRE

PAGE SPRINGSNAIL	<i>Pyrgulopsis morrisoni</i>	COC
FOSSIL SPRINGSNAIL	<i>Pyrgulopsis simplex</i>	COC, TON
BROWN SPRINGSNAIL	<i>Pyrgulopsis sola</i>	PRE
NEW MEXICO SPRINGSNAIL	<i>Pyrgulopsis thermalis</i>	GIL
HUACHUCA SPRINGSNAIL	<i>Pyrgulopsis thompsoni</i>	COR
CLARK PEAK TALUSSNAIL	<i>Sonorella christenseni</i>	COR
PINALENO TALUSSNAIL	<i>Sonorella grahamensis</i>	COR
NO COMMON NAME GIVEN; see Metcalf and Smartt (1997)	<i>Sonorella hachitana peloncillensis</i>	COR
MIMIC TALUSSNAIL	<i>Sonorella imitator</i>	COR
WET CANYON TALUSSNAIL	<i>Sonorella macrophallus</i>	COR
SONORAN TALLUSNAIL	<i>Sonorella magdalenensis</i>	COR

DEFINITIONS	
1	Species is proposed for federal listing, and will be removed from the RFSS list if/once the final rule is published implementing the Federal protections provided by the ESA.
A-S	Apache-Sitgreaves National Forests
CAR	Carson National Forest
CIB	Cibola National Forest
COC	Coconino National Forest
COR	Coronado National Forest
GIL	Gila National Forest
KAI	Kaibab National Forest
KRB	Kiowa/Rita Blanca National Grasslands
LIN	Lincoln National Forest
PRE	Prescott National Forest
SFE	Santa Fe National Forest

USFS R3 REGIONAL FORESTER'S SENSITIVE SPECIES: PLANTS - 2013

Common Name	Scientific Name	Forest(s)
TUFTED SAND VERBENA	<i>Abronia bigelovii</i>	CAR, SFE
PIMA INDIAN MALLOW	<i>Abutilon parishii</i>	COR, TON
WRIGHT'S DOGWEED	<i>Adenophyllum wrightii</i> var. <i>wrightii</i>	GIL
TONTO BASIN AGAVE	<i>Agave delamateri</i>	COC, PRE, TON
HOHOKAM AGAVE	<i>Agave murpheyi</i>	TON
SANTA CRUZ STRIPED AGAVE	<i>Agave parviflora</i> ssp. <i>parviflora</i>	COR
PHILLIPS' AGAVE	<i>Agave phillipsiana</i>	COC, PRE
TRELEASE AGAVE	<i>Agave schottii</i> var. <i>treleasei</i>	COR
SACRED MOUNTAIN AGAVE	<i>Agave verdensis</i>	COC
PAGE SPRINGS AGAVE	<i>Agave yavapaiensis</i>	COC
GOODDING'S ONION	<i>Allium gooddingii</i>	A-S, COR, GIL, LIN
SAIYA	<i>Amoreuxia gonzalezii</i>	COR
LARGE-FLOWERED BLUE STAR	<i>Amsonia grandiflora</i>	COR
MOGOLLON DEATH CAMAS	<i>Anticlea mogollonensis</i> (= <i>Zigadenus</i> m.)	GIL
CHAPLINE'S COLUMBINE	<i>Aquilegia chaplinei</i> (= <i>A. chrysantha</i> var. <i>chaplinei</i>)	LIN
CHIRICAHUA ROCK CRESS	<i>Arabis tricornuta</i>	COR
MT. DELLENBAUGH SANDWORT	<i>Arenaria aberrans</i>	COC, KAI, PRE, TON
LEMMON MILKWEED	<i>Asclepias lemmonii</i>	COR
GREENE MILKWEED	<i>Asclepias uncialis</i> ssp. <i>uncialis</i>	A-S, CIB, COR, GIL, PRE, SFE
ZUNI MILKVETCH	<i>Astragalus accumbens</i>	CIB
GUMBO MILKVETCH	<i>Astragalus ampullarius</i>	KAI
TALL MILKVETCH	<i>Astragalus altus</i>	LIN
MAGUIRE'S (COPPERMINE) MILKVETCH	<i>Astragalus cobrensis</i> var. <i>maguirei</i>	COR
MARBLE CANYON MILKVETCH	<i>Astragalus cremnophylax</i> var. <i>hevronii</i>	KAI
CLIFF MILKVETCH	<i>Astragalus cremnophylax</i> var. <i>myriorrhaphis</i>	KAI
VILLOUS GROUNDCOVER MILKVETCH	<i>Astragalus humistratus</i> var. <i>crispulus</i>	A-S, CIB, GIL
HUACHUCA MILKVETCH	<i>Astragalus hypoxylus</i>	COR
KERR'S MILKVETCH	<i>Astragalus kerrii</i>	LIN
CHACO MILKVETCH	<i>Astragalus micromerius</i>	CIB, SFE
PAGOSA MILKVETCH	<i>Astragalus missouriensis</i> var. <i>humistratus</i>	CAR
RIPLEY MILKVETCH	<i>Astragalus ripleyi</i>	CAR
RUSBY'S MILKVETCH	<i>Astragalus rusbyi</i>	COC, KAI
ONE-FLOWERED MILKVETCH	<i>Astragalus wittmannii</i>	CIB
AYENIA	<i>Ayenia jaliscana</i> (= <i>A. truncata</i>)	COR
SIERRA BLANCA KITTENTAILS	<i>Besseyia oblongifolia</i>	LIN
CRENULATE MOONWORT	<i>Botrychium crenulatum</i>	COC
BUSH-VIOLET	<i>Browallia eludens</i>	COR
PECOS MARIPOSA LILY	<i>Calochortus gunnisonii</i> var. <i>perpulcher</i>	SFE
CHILTEPIN	<i>Capsicum annuum</i> var. <i>glabriusculum</i>	COR
CHIHUAHUAN SEDGE	<i>Carex chihuahuensis</i>	COR, TON

COCHISE SEDGE	<i>Carex ultra</i> (=C.spissa var. ultra)	COC, COR, PRE, TON
KAIBAB PAINTBRUSH	<i>Castilleja kaibabensis</i>	KAI
WHITE MOUNTAINS PAINTBRUSH	<i>Castilleja mogollonica</i>	A-S
TRANS-PECOS INDIAN PAINTBRUSH	<i>Castilleja nervata</i>	COR
SANTA CRUZ STAR LEAF	<i>Choisya mollis</i>	COR
TUSAYAN RABBITBRUSH, DISTURBED RABBITBRUSH	<i>Chrysothamnus molestus</i>	COC, KAI
ARIZONA BUGBANE	<i>Cimicifuga arizonica</i>	COC, KAI, TON
GILA THISTLE	<i>Cirsium gilense</i>	A-S, GIL
MOGOLLON THISTLE	<i>Cirsium parryi</i> ssp. mogollonicum	COC
WRIGHT'S MARSH THISTLE	<i>Cirsium wrightii</i>	LIN
ARIZONA LEATHERFLOWER, CLUSTERED LEATHERFLOWER	<i>Clematis hirsutissima</i> var. <i>hirsutissima</i>	CAR, CIB, COC, LIN, KAI, SFE (Sensitive only for AZ forests)
MEXICAN HEMLOCK PARSLEY	<i>Conioselinum mexicanum</i>	COR
SANTA CRUZ BEEHIVE CACTUS	<i>Corypantha recurvata</i>	COR
SMOOTH BABYBONNETS	<i>Coursetia glabella</i>	COR
WOOTON'S HAWTHORN	<i>Crategus wootoniana</i>	GIL, LIN
YELLOW LADY'S-SLIPPER	<i>Cypripedium parviflorum</i> var. <i>pubescens</i> (=C. calceolus var. <i>pubescens</i> , <i>C. pubescens</i>)	A-S, CAR, GIL, LIN, SFE
GENTRY INDIGO BUSH	<i>Dalea tentaculoides</i>	COR
ALPINE LARKSPUR	<i>Delphinium alpestre</i>	CAR
ROBUST LARKSPUR	<i>Delphinium robustum</i>	CAR, SFE
METCALFE'S TICK-TREFOIL	<i>Desmodium metcalfei</i>	COC, COR, PRE, GIL
HEIL'S ALPINE WHITLOWGRASS	<i>Draba heilii</i>	SFE
SMALL-HEADED GOLDENWEED	<i>Ericameria microcephala</i> (=Haplopappus m.)	CAR
GUADALUPE RABBITBRUSH	<i>Ericameria nauseosa</i> var. <i>texensis</i> (=Chrysothamnus n. ssp t.)	LIN
MOGOLLON FLEABANE	<i>Erigeron anchana</i>	TON
ARID THRONE FLEABANE	<i>Erigeron arisolius</i>	COR
HELIOGRAPH PEAK FLEABANE	<i>Erigeron heliographis</i>	COR
HESS' FLEABANE	<i>Erigeron hessii</i>	GIL
CHIRICAHUA FLEABANE	<i>Erigeron kuschei</i>	COR
FISH CREEK FLEABANE	<i>Erigeron piscaticus</i>	TON
ROCK FLEABANE	<i>Erigeron saxatilis</i>	COC, KAI, PRE
SIVINSKI'S FLEABANE	<i>Erigeron sivinskii</i>	CIB
PECOS FLEABANE	<i>Erigeron subglaber</i>	CAR, SFE
HEATHLEAF WILD BUCKWHEAT	<i>Eriogonum ericifolium</i> var. <i>ericifolium</i>	A-S, COC, PRE
MORTON WILD BUCKWHEAT	<i>Eriogonum mortonianum</i>	KAI
RIPLEY WILD BUCKWHEAT	<i>Eriogonum ripleyi</i>	COC, PRE, TON
ATWOOD WILD BUCKWHEAT	<i>Eriogonum thompsonae</i> var. <i>atwoodii</i>	KAI

VILLARD'S PINCUSHION CACTUS	<i>Escobaria villardii</i>	LIN
WISLIZENI GENTIAN	<i>Gentianella wislizeni</i>	A-S, COR
SHOOTINGSTAR GERANIUM	<i>Geranium dodecatheoides</i>	LIN
BARTRAM STONECROP	<i>Graptopetalum bartramii</i>	COR
FLAGSTAFF PENNYROYAL	<i>Hedeoma diffusum</i>	COC, KAI, PRE
ARIZONA SNEEZEWEED	<i>Helenium arizonicum</i>	A-S, COC
ARIZONA SUNFLOWER	<i>Helianthus arizonensis</i>	A-S, COC
RUTTER'S FALSE GOLDENASTER	<i>Heterotheca rutteri</i>	COR
EASTWOOD ALUM ROOT	<i>Heuchera eastwoodiae</i>	A-S, COC, PRE, TON
ARIZONA ALUM ROOT	<i>Heuchera glomerulata</i>	A-S, COR, TON
SANDIA ALUM ROOT	<i>Heuchera pulchella</i>	CIB
CAPITAN PEAK ALUMROOT	<i>Heuchera woodsiaephila</i>	LIN
COLEMAN'S CRESTED CORALROOT	<i>Hexalectris colemanii</i>	COR
CHISOS MT. CRESTED CORALROOT	<i>Hexalectris revoluta</i>	LIN
WOOTON'S ALUMROOT	<i>Heuchera wootonii</i>	LIN
ARIZONA CORALROOT	<i>Hexalectris spicata</i> var. <i>arizonica</i>	COR, GIL, LIN
TEXAS PURPLE-SPIKE	<i>Hexalectris warnockii</i>	COR
MOGOLLON HAWKWEED	<i>Hieracium brevipilum</i> (= <i>H. fendleri</i> var. <i>mogollense</i>)	A-S, GIL
RUSBY HAWKWEED	<i>Hieracium abscissum</i> (= <i>H. rusbyi</i>)	COR, GIL
NEW MEXICO BITTERWEED	<i>Hymenoxys ambigens</i> var. <i>neomexicana</i>	COR
TALL BITTERWEED	<i>Hymenoxys brachyactis</i>	CIB
SIERRA BLANCA CLIFF DAISY	<i>Ionactis elegans</i> (= <i>Chaetopappa</i> e.)	LIN
KAIBAB BLADDERPOD	<i>Lesquerella kaibabensis</i>	KAI
LEMON LILY	<i>Lilium parryi</i>	COR
WOOD LILY	<i>Lilium philadelphicum</i>	LIN, SFE
CHIRICAHUA MUDWORT	<i>Limosella pubiflora</i>	COR
ALAMOS DEER VETCH	<i>Lotus alamosanus</i>	COR
HORSESHOE DEER VETCH	<i>Lotus mearnsii</i> var. <i>equisolensis</i>	TON
HUACHUCA MOUNTAINS LUPINE	<i>Lupinus huachucanus</i>	COR
BROADLEAF LUPINE	<i>Lupinus latifolius</i> ssp. <i>leucanthus</i>	PRE
LEMMON'S LUPINE	<i>Lupinus lemmonii</i>	COR
MAPLELEAF FALSE SNAPDRAGON	<i>Mabrya acerifolia</i> (= <i>Maurandya</i> a.)	TON
SUPINE BEAN	<i>Macroptilium supinum</i>	COR
ARIZONA MANIHOT	<i>Manihot davisiae</i>	COR
CHAMA BLAZING STAR	<i>Mentzelia conspicua</i>	CAR, SFE
SPRINGER'S BLAZING STAR	<i>Mentzelia springeri</i>	SFE
WIGGINS MILKWEED VINE	<i>Metastelma mexicanum</i> (= <i>Cynanchum wigginsii</i>)	COR
LADIES'-TRESSES	<i>Microthelys rubrocallosa</i> (= <i>Schiedeella</i> r., <i>Spiranthes</i> r.)	LIN
SOUTHWESTERN MUHLY	<i>Muhlenbergia palmeri</i> (= <i>M. dubioides</i>)	COR
SYCAMORE CANYON MUHLY	<i>Muhlenbergia elongata</i> (= <i>M. xerophila</i>)	COR
HEARTLEAF GROUNDSEL	<i>Packera cardamine</i> (= <i>Senecio cardamine</i>)	A-S, GIL
TOUMEY GROUNDSEL	<i>Packera neomexicana</i> var. <i>toumeyii</i> (= <i>Senecio</i> n. var. <i>t.</i>)	COR, TON

SPELLENBERG'S GROUNDSEL	<i>Packera spellenbergii</i> (=Senecio s.)	CIB
VIRLET PASPALUM	<i>Paspalum virletii</i>	COR
ARIZONA PASSIONFLOWER	<i>Passiflora arizonica</i>	COR
BEARDLESS CHINCHWEED	<i>Pectis imberbis</i>	COR
KAIBAB PINCUSHION CACTUS	<i>Pediocactus paradinei</i>	KAI
FICKEISEN PINCUSHION CACTUS ¹	<i>Pediocactus peeblesianus</i> var. <i>flickeisniae</i>	KAI
CHIHUAHUA SCURF-PEA	<i>Pediomelum pentaphyllum</i>	COR
VERDE BREADROOT	<i>Pediomelum verdiensis</i>	COC, PRE, TON
LYNGHOLM'S BRAKEFERN	<i>Pellaea lyngholmii</i>	COC
ALAMO PENSTEMON	<i>Penstemon alamosensis</i>	LIN
GUADALUPE PENSTEMON	<i>Penstemon cardinalis</i> ssp. <i>regalis</i>	LIN
SUNSET CRATER BEARDTONGUE	<i>Penstemon clutei</i>	COC
CATALINA BEARDTONGUE	<i>Penstemon discolor</i>	COR
MAGUIRE'S BEARDTONGUE	<i>Penstemon linarioides</i> ssp. <i>maguirei</i>	A-S, GIL
METCALFE'S PENSTEMON	<i>Penstemon metcalfei</i>	GIL
FLAGSTAFF BEARDTONGUE	<i>Penstemon nudiflorus</i>	COC, KAI, PRE
SAN MATEO PENSTEMON	<i>Penstemon pseudoparvus</i>	CIB
CHIRICAHUA ROCKDAISY	<i>Perityle cochisensis</i>	COR
SALT RIVER ROCKDAISY	<i>Perityle gilensis</i> var. <i>salensis</i>	TON
FISH CREEK ROCKDAISY	<i>Perityle saxicola</i>	TON
CLOUDCROFT SCORPIONWEED	<i>Phacelia cloudcroftensis</i>	LIN
ARIZONA PHLOX	<i>Phlox amabilis</i>	A-S, COC, KAI, PRE, TON
BROADLEAF GROUND CHERRY	<i>Physalis latiphysa</i>	COR
ALCOVE BOG ORCHID	<i>Platanthera zothecina</i>	COC
HINCKLEY'S POLEMONIUM	<i>Polemonium pauciflorum</i> ssp. <i>hinckleyi</i>	COR
HUALAPAI MILKWORT	<i>Polygala rusbyi</i>	COC, PRE, TON
WHITE-FLOWERED CINQUEFOIL	<i>Potentilla albiflora</i>	COR
CHIRICAHUA CINQUEFOIL	<i>Potentilla rhyolitica</i> var. <i>chiricahuensis</i>	COR
HUACHUCA CINQUEFOIL	<i>Potentilla rhyolitica</i> var. <i>rhyolitica</i>	COR
MEXICAN TANSY ASTER	<i>Psilactis gentryi</i> (=machaeranthera mexicana)	COR
WHISK FERN	<i>Psilotum nudum</i>	COR
DAVIDSON'S CLIFF CARROT	<i>Pteryxia davidsonii</i>	A-S, GIL
PARISH'S ALKALI GRASS	<i>Puccinellia parishii</i>	A-S
GRAND CANYON ROSE	<i>Rosa stellata</i> ssp. <i>abyssa</i>	KAI
ERTTER'S ROSE	<i>Rosa woodsii</i> var. <i>ertterae</i>	COC
SIERRA BLANCA CINQUEFOIL	<i>Potentilla sierrae-blancae</i>	LIN
BLUMER'S DOCK	<i>Rumex orthoneurus</i>	A-S, CAR, COC, COR, GIL, LIN, SFE, TON (sensitive only for AZ forests)
ARIZONA WILLOW	<i>Salix arizonica</i>	A-S, CAR, SFE

BEBB'S WILLOW	<i>Salix bebbiana</i>	Several (sensitive only for A-S and COC)
GALIURO SAGE	<i>Salvia amissa</i>	COR, TON
MEARNS SAGE	<i>Salvia dorrii ssp. mearnsii</i>	COC, PRE
CHIRICAHUA MOUNTAIN BROOKWEED	<i>Samolus vagans</i>	COR
MIMBRES FIGWORT	<i>Scrophularia macrantha</i>	GIL
NEW MEXICAN STONECROP	<i>Sedum integrifolium ssp. neomexicana</i>	LIN
HUACHUCA GROUNDSEL	<i>Senecio multidentatus var. huachucanus (=s. huachucanus)</i>	COR
NODDING BLUE-EYED GRASS	<i>Sisyrinchium cernuum</i>	COR
GUADALUPE MOUNTAINS GOLDENROD	<i>Solidago wrightii var. guadalupensis</i>	LIN
GUADALUPE MESCAL BEAN	<i>Sophora gypsophila var. guadalupensis</i>	LIN
PORSILD'S STARWORT	<i>Stellaria porsildii</i>	COR, GIL
LEMMON'S STEVIA	<i>Stevia lemmonii</i>	COR
GUADALUPE JEWELFLOWER	<i>Streptanthus sparsiflorus</i>	LIN
PINOS ALTOS FLAME FLOWER	<i>Talinum humile</i>	COR, GIL
TEPIC FLAME FLOWER	<i>Talinum marginatum</i>	COR
ARAVAIPA WOODFERN	<i>Thelypteris puberula var. sonorensis</i>	COR, TON
SONORAN NOSEBURN	<i>Tragia laciniata</i>	COR
MOGOLLON CLOVER	<i>Trifolium longipes ssp. neurophyllum (=T. neurophyllum)</i>	A-S, GIL
TUMAMOC GLOBEBERRY	<i>Tumamoca macdougallii</i>	COR
SHADE VIOLET	<i>Viola umbraticola</i>	COR

DEFINITIONS	
1	Species is proposed for federal listing, and will be removed from the RFSS list if/once the final rule is published implementing the Federal protections provided by the ESA.
A-S	Apache-Sitgreaves National Forests
CAR	Carson National Forest
CIB	Cibola National Forest
COC	Coconino National Forest
COR	Coronado National Forest
GIL	Gila National Forest
KAI	Kaibab National Forest
KRB	Kiowa/Rita Blanca National Grasslands
LIN	Lincoln National Forest
PRE	Prescott National Forest
SFE	Santa Fe National Forest

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Arizona State Office
One North Central Avenue, Suite 800
Phoenix, Arizona 85004-4427

March 1, 2017

In Reply Refer To:
6840 (9300) P

EMS TRANSMISSION 03/03/2017
Instruction Memorandum No. AZ-IM-2017-009
Expires: 9/30/2020

To: All Field Offices

From: State Director

Subject: Updated Bureau of Land Management Sensitive Species List for Arizona

Purpose: The purpose of this Instruction Memorandum (IM) is to replace expired IM No. AZ-2011-005, listing Bureau of Land Management (BLM) sensitive plant and animal species, which occur on BLM administered lands in Arizona consistent with Manual Section 6840 and current WO-230 guidance.

Policy/Action: The BLM Sensitive Species List for Arizona is contained in the Attachment. The list was developed using the criteria set forth in BLM Manual Section 6840, *Special Status Species Management*, and also includes: species listed or proposed to be listed as threatened or endangered pursuant to Section 4 of the Endangered Species Act of 1973 (ESA), federally designated candidate species, and delisted species in the 5 years following their delisting. Species appearing on the attached list will be managed as BLM sensitive, as described in BLM Manual Section 6840.

In addition to the species identified in the attached list, all species identified by BLM California as BLM sensitive, which occur on public lands in California administered by the Colorado River District, are to be managed as BLM sensitive in California. The lists of BLM California sensitive species can be found on the BLM California public web page at:

<https://www.blm.gov/programs/fish-and-wildlife/threatened-and-endangered/state-te-data/california>

Timeframe: This list is effective immediately.

Budget Impact: None.

Background: The BLM Manual Section 6840 describes the following criteria for BLM sensitive species:

In compliance with existing laws, including the BLM multiple-use mission as specified in the Federal Land Policy and Management Act of 1976, the BLM shall designate BLM sensitive species and implement measures to conserve these species and their habitats, including ESA proposed critical habitat, to promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA. All federally designated candidate species, proposed species, and delisted species in the 5 years following their delisting shall be conserved as BLM sensitive species.

- A. State Directors shall designate species within their respective states as BLM sensitive using the following criteria. For species inhabiting multiple states, State Directors shall coordinate with one another in the designation of BLM sensitive species so that species status is consistent across the species' range on BLM administered lands, where appropriate.

Species designated as BLM sensitive must be native species found on BLM administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

(1) There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species' range, or

(2) The species depends on ecological refugia or specialized or unique habitats on BLM administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

The BLM Manual Section 6840 directs the BLM to manage BLM sensitive species and their habitats to minimize or eliminate threats affecting the status of the species or to improve the condition of the species' habitat.

This revised BLM Arizona Sensitive Species List updates the 2010 list and reflects the following changes:

- The list includes species listed or proposed as threatened or endangered, pursuant to the ESA, as amended, which occur, or potentially occur on BLM managed public lands. This list does not replace the need to obtain a "species list" from the U.S. Fish and Wildlife Service (Service) for ESA compliance. Species lists can be obtained on-line at <https://ecos.fws.gov/ipac/>.
- Should the Service add species to the list of candidates, they will be considered BLM sensitive if they occur or are likely to occur on BLM managed lands in Arizona.

- The list includes species covered by conservation agreements to which the BLM is a signatory. Two former candidates with conservation agreements, Sonoran desert tortoise (*Gopherus morafkai*) and relict leopard frog (*Lithobates onca*), have been added to the list.
- The list includes species which have been petitioned for listing pursuant to the ESA and received a positive 90-day finding (substantial scientific information was presented indicating listing may be warranted) and which occur or likely occur on BLM administered public lands in Arizona and for which BLM management could likely affect the conservation status. Five species, monarch butterfly (*Danaus plexippus plexippus*), Sonoran tallussnail (*Sonorella magdalenensis*), Arizona toad (*Anaxyrus microscaphus*), desert massasauga (*Sistrurus catenatus edwardsii*) and Joshua tree (*Yucca brevifolia*), have been added to the list.
- Arizona eryngo (*Eryngium sparganophyllum*), a wetland dependent plant, has been added to the list.
- Generic groupings of Hydrobiid spring snails in genus *Pyrgulopsis* and Succineid snails in the family Succineidae have been removed from the list.
- Taxonomic updates and the results of status reviews are reflected in this list. Two former candidates, Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) and Sprague's pipit (*Anthus spragueii*), are not included in the list.
- District occurrence information has been updated.

Directives Affected: Replaces Expired IM No. AZ-2011-005.

Contact: If you have any questions, please contact Tim Hughes at 602-417-9356, or Elroy Masters at 602-417-9346.

SIGNED BY:
Deborah K. Rawhouser
for Raymond Suazo

AUTHENTICATED BY:
Susan Williams
Staff Assistant

1 Attachment:

1 – [BLM Arizona Sensitive Species List](#)
(6 pp)

cc: Director (WO-230)

Bureau of Land Management, Arizona - Bureau Sensitive Species List (February 2017)

INVERTEBRATES

Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes
Arizona Cave Amphipod	<i>Stygobromus arizonensis</i>	BLMS			h		wet caves and mines
Bylas Springsnail	<i>Pyrgulopsis arizonae</i>	BLMS			v		springs (Positive 90-day Finding)
Desert Springsnail	<i>Pyrgulopsis deserta</i>	BLMS	h				springs along the Virgin River
Gila Tryonia	<i>Tryonia gilae</i>	BLMS			v		springs (Positive 90-day Finding)
Grand Wash Springsnail	<i>Pyrgulopsis bacchus</i>	BLMS	v				springs (Positive 90-day Finding)
Kingman Springsnail	<i>Pyrgulopsis conica</i>	BLMS		v			springs (Positive 90-day Finding)
Monarch Butterfly	<i>Danaus plexippus plexippus</i>	BLMS	v	v	v	v	(Positive 90-day Finding)
Sonoran Talussnail	<i>Sonorella magdalenensis</i>	BLMS			v		talus slopes (Positive 90-day Finding)

FISH

Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes
Bluehead Sucker	<i>Catostomus discobolus</i>	BLMS	h		h		Conservation Agreement
Bonytail Chub	<i>Gila elegans</i>	FE w/CH		v-CH			See Federal Register & Recovery Plan
Desert Pupfish	<i>Cyprinodon macularius</i>	FE			v	v	See Federal Register & Recovery Plan
Desert Sucker	<i>Catostomus clarki</i>	BLMS	v	v	v	v	aquatic
Flannelmouth Sucker	<i>Catostomus latipinnis</i>	BLMS	v				Conservation Agreement
Gila Chub	<i>Gila intermedia</i>	FE w/CH			v-CH	v-CH	See Federal Register & Recovery Plan
Gila Topminnow	<i>Poeciliopsis occidentalis occidentalis</i>	FE			v	v	See Federal Register & Recovery Plan
Little Colorado Spinedace	<i>Lepidomeda vittata</i>	FT			v		See Federal Register & Recovery Plan
Little Colorado Sucker	<i>Catostomus</i> sp.	BLMS			v		Conservation Agreement
Loach Minnow	<i>Tiaroga cobitis</i>	FE w/CH			v-CH		See Federal Register & Recovery Plan
Longfin Dace	<i>Agosia chrysogaster</i>	BLMS		v	v	v	aquatic
Razorback Sucker	<i>Xyrauchen texanus</i>	FE w/CH		v-CH	h-CH		See Federal Register & Recovery Plan
Roundtail Chub	<i>Gila robusta</i>	pT BLMS		v	v		Conservation Agreement, See Federal Register
Sonora Sucker	<i>Catostomus insignis</i>	BLMS		v	v	v	aquatic
Speckled Dace	<i>Rhinichthys osculus</i>	BLMS	v	v	v	v	aquatic
Spikedace	<i>Meda fulgida</i>	FE w/CH			v-CH	h	See Federal Register & Recovery Plan
Virgin River Chub	<i>Gila seminuda</i>	FE w/CH	v-CH				See Federal Register & Recovery Plan
Virgin Spinedace	<i>Lepidomeda mollispinis mollispinis</i>	BLMS	v				Conservation Agreement (Positive 90-day Finding)

Woundfin	<i>Plagopterus argentissimus</i>	FE w/CH	v-CH					See Federal Register & Recovery Plan
AMPHIBIANS								
Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes	
Arizona Toad	<i>Anaxyrus microscaphus</i>	BLMS	v	v	v	v	mid elevation riparian/wetlands (Positive 90-day Finding)	
Chiricahua Leopard Frog	<i>Lithobates chiricahuensis</i>	FT w/CH			v-CH		See Federal Register & Recovery Plan	
Great Plains Narrow-mouthed Toad	<i>Gastrophryne olivacea</i>	BLMS			v	v	healthy grasslands	
Lowland Burrowing Treefrog	<i>Smilisca fodiens</i>	BLMS				v	healthy grasslands	
Lowland Leopard Frog	<i>Lithobates yavapaiensis</i>	BLMS		v	v	v	wetlands	
Northern Leopard Frog	<i>Lithobates pipiens</i>	BLMS	v		v	h	wetlands	
Plains Leopard Frog	<i>Lithobates blairi</i>	BLMS				h	wetlands	
Relict Leopard Frog	<i>Lithobates onca</i>	BLMS	h	v			Conservation Agreement, See Federal Register (12 Month Finding)	
Sonoran Green Toad	<i>Anaxyrus retiformis</i>	BLMS			v	v	healthy grasslands	
REPTILES								
Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes	
Arizona Striped Whiptail	<i>Aspidoscelis arizonae</i>	BLMS			v		healthy grasslands, north end of Wilcox Playa (Positive 90-day Finding)	
Desert Massasauga	<i>Sistrurus catenatus edwardsii</i>	BLMS			h		healthy grasslands (Positive 90-day Finding)	
Desert Ornate Box Turtle	<i>Terrapene ornata</i>	BLMS			v		healthy grasslands	
Flat-tailed Horned Lizard	<i>Phrynosoma mcallii</i>	BLMS		v			Conservation Agreement	
Mojave Desert Tortoise	<i>Gopherus agassizii</i>	FT w/CH	v-CH	v			See Federal Register & Recovery Plan	
Mojave Fringe-toed Lizard	<i>Uma scoparia</i>	BLMS		v			sand	
Narrow-headed Gartersnake	<i>Thamnophis rufipunctatus</i>	FT w/pCH			h-pCH		See Federal Register	
New Mexico Ridge-nosed Rattlesnake	<i>Crotalus willardi obscurus</i>	FT			v		See Federal Register & Recovery Plan	
Northern Mexican Gartersnake	<i>Thamnophis eques megalops</i>	FT w/pCH		v-pCH	v-pCH	h-pCH	See Federal Register	
Slevin's Bunchgrass Lizard	<i>Sceloporus slevini</i>	BLMS			v		healthy grasslands	
Sonoran Desert Tortoise	<i>Gopherus morafkai</i>	BLMS		v	v	v	Conservation Agreement	
Sonora Mud Turtle	<i>Kinosternon sonoriense sonoriense</i>	BLMS		v	v	v	Riparian/aquatic	
Yuman Desert Fringe-toed Lizard	<i>Uma rufopunctata</i>	BLMS		v			sand (Positive 90-day Finding)	
BIRDS (breeding)								
Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes	
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	BLMS	v	v	v	v	cliffs	
Arizona Botteri's Sparrow	<i>Peucaea botterii arizonae</i>	BLMS			v		healthy grasslands	

Arizona Grasshopper Sparrow	<i>Ammodramus savannarum ammoregus</i>	BLMS			v		healthy grasslands
Bald Eagle	<i>Haliaeetus leucocephalus</i>	BLMS	h	v	v	v	Conservation Agreement [BGEPA]
Cactus Ferruginous Pygmy-Owl	<i>Glaucidium brasilianum cactorum</i>	BLMS			v	v	dense Sonoran scrub washes
California Black Rail	<i>Laterallus jamaicensis coturniculus</i>	BLMS		v	h		marshes
California Condor	<i>Gymnogyps californianus</i>	FE/NEP	v	h	h	h	See Federal Register, Recovery Plan & 10(j) Rule
California Least Tern	<i>Sterna antillarum browni</i>	FE		h	h	h	See Federal Register & Recovery Plan
Desert Purple Martin	<i>Progne subis hesperia</i>	BLMS		h	v	v	saguaro cacti
Ferruginous Hawk	<i>Buteo regalis</i>	BLMS	v	h	v	h	healthy grasslands
Gilded Flicker	<i>Colaptes chrysoides</i>	BLMS		v	v	v	saguaro cacti
Golden Eagle	<i>Aquila chrysaetos</i>	BLMS	v	v	v	v	[BGEPA]
Le Conte's Thrasher	<i>Toxostoma lecontei</i>	BLMS		v	v	v	remote creosote scrub
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	FT w/CH	h-CH	h	v	h	See Federal Register & Recovery Plan
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	FE/NEP			h		See Federal Register, Recovery Plan & 10(j) Rule
Northern Goshawk	<i>Accipiter gentilis atricapillus</i>	BLMS	v	v	h	h	healthy forests
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	BLMS	v	v	v	v	healthy pinyon pine
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE w/CH	v-CH	v-CH	v-CH	h	See Federal Register & Recovery Plan
Western Burrowing Owl	<i>Athene cucularia hypugaea</i>	BLMS	v	v	v	v	grasslands, undeveloped valley bottoms
Western Yellow-billed Cuckoo (DPS)	<i>Coccyzus americanus</i>	FT w/pCH	v-pCH	v-pCH	v-pCH	v-pCH	See Federal Register
Yuma Ridgway's (Clapper) Rail	<i>Rallus obsoletus (=longirostris) yumanensis</i>	FE	h	v	h	v	See Federal Register & Recovery Plan

MAMMALS

Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes
Allen's Big-eared Bat	<i>Idionycteris phyllotis</i>	BLMS	v	v	v	h	caves, mines
Arizona Myotis	<i>Myotis occultus</i>	BLMS	h	v	v	h	caves, mines
Banner-tailed Kangaroo Rat	<i>Dipodomys spectabilis</i>	BLMS			v		healthy grasslands
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	BLMS			v		healthy grasslands
California Leaf-nosed Bat	<i>Macrotus californicus</i>	BLMS	h	v	v	v	caves, mines
Cave Myotis	<i>Myotis velifer</i>	BLMS		v	v	v	caves, mines
Greater Western Mastiff Bat	<i>Eumops perotis californicus</i>	BLMS	v	v	v	v	caves, mines
Gunnison's Prairie Dog	<i>Cynomys gunnisoni</i>	BLMS		h	v	h	healthy grasslands
Houserock Valley Chisel-toothed Kangaroo Rat	<i>Dipodomys microps leucotis</i>	BLMS	v				Atriplex scrub
Hualapai Mexican Vole	<i>Microtus mexicanus hualpaiensis</i>	FE pDelist		v			See Federal Register & Recovery Plan
Jaguar	<i>Panthera onca</i>	FE w/CH			v-CH		See Federal Register & Recovery Plan
Lesser Long-nosed Bat	<i>Leptonycteris curasoae yerbabuena</i>	FE pDelist			v	v	See Federal Register & Recovery Plan

Mexican Gray Wolf	<i>Canis lupus baileyi</i>	FE/NEP			h	h	See Federal Register, Recovery Plan & 10(j) Rule
Mexican Long-tongued Bat	<i>Choeronycteris mexicana</i>	BLMS			v		caves/mines
Ocelot	<i>Leopardus pardalis</i>	FE			h		See Federal Register & Recovery Plan
Sonoran Pronghorn	<i>Antilocapra americana sonoriensis</i>	FE/NEP		v	h	v	See Federal Register, Recovery Plan & 10(j) Rule
Spotted Bat	<i>Euderma maculatum</i>	BLMS	v	h	h	h	caves/ mines
Townsend's Big-eared Bat	<i>Corynorhinus (=Plecotus) townsendii</i>	BLMS	v	v	v	v	caves/mines
PLANTS							
Common Name	Scientific Name	Status	ASDO	CRDO	GDO	PDO	Habitat/Notes
Acuna Cactus	<i>Echinomastus erectocentrus var. acunensis</i>	FE w/CH			v-CH	v-CH	See Federal Register
Aquarius Milkvetch	<i>Astragalus newberryi var. aquaria</i>	BLMS		v			narrow range, limestone deposits, Burro Creek area
Aravaipa Sage	<i>Salvia amissa</i>	BLMS			v		narrow range, floodplain terraces in shady canyons
Aravaipa Woodfern	<i>Thelypteris puberula var. sonorensis</i>	BLMS		v	v	h	few scattered springs
Arizona Cliffrose	<i>Purshia subintegra</i>	FE		v			See Federal Register & Recovery Plan
Arizona Eryngo	<i>Eryngium sparganophyllum</i>	BLMS			v		Arid land springs, cienegas
Arizona Hedgehog Cactus	<i>Echinocereus triglochidiatus var. arizonicus</i>	FE			v	h	See Federal Register
Arizona Sonoran Rosewood	<i>Vauquelinia californica ssp. sonorensis</i>	BLMS			v	v	relict species in shady canyons
Bartram Stonecrop	<i>Graptopetalum bartramii</i>	BLMS			v		narrow range, rocky outcrops in canyons w/Madreaan Woodland (Positive 90-day Finding)
Blue Sand Lily	<i>Triteleopsis palmeri</i>	BLMS		v			sand dunes and sandy soils
Brady Pincushion Cactus	<i>Pediocactus bradyi</i>	FE	v				See Federal Register & Recovery Plan
California Flannelbush	<i>Fremontodendron californicum</i>	BLMS		v		v	relict populations in shady canyons
Chihuahua Breadroot (Scurfpea)	<i>Pediomelum pentaphyllum</i>	BLMS			v		Healthy grasslands (Positive 90-day Finding)
Clifton Rock Daisy	<i>Perityle ambrosiifolia</i>	BLMS			v		narrow range, cliff faces of Gila Conglomerate
Dalhouse Spleenwort	<i>Asplenium (=Ceterach) dalhousiae</i>	BLMS			v		cliff face seeps, Mule Mountains
Diamond Butte Milkvetch	<i>Astragalus toanus var. scidulus</i>	BLMS	v				narrow range, Moenkopi Formation badlands w/red soils
Fickeisen Plains Cactus	<i>Pediocactus peeblesianus var. fickeiseniae</i>	FE w/CH	v-CH			v-CH	See Federal Register
Fish Creek Fleabane	<i>Erigeron piscaticus</i>	BLMS			v		narrow range, floodplain terraces shady canyons (Positive 90-day Finding)
Gentry Indigo Bush	<i>Dalea tentaculoides</i>	BLMS			v		narrow range, floodplain terraces in shady canyons
Giant Sedge	<i>Carex spissa</i>	BLMS			v	v	springs
Gierisch Mallow	<i>Sphaeralcea gierischii</i>	FE w/CH	v-CH				See Federal Register
Grand Canyon Rose	<i>Rosa stellata var. abyssa</i>	BLMS	v				narrow range, limestone cliff rims

Holmgren (Paradox) Milk Vetch	<i>Astragalus holmgreniorum</i>	FE w/CH	v-CH				See Federal Register & Recovery Plan	
Huachuca Golden Aster	<i>Heterotheca rutteri</i>	BLMS			v		narrow range, Plains Grassland, LCNCA	
Huachuca Milkvetch	<i>Astragalus hypoxylus</i>	BLMS			h		narrow range	
Huachuca Water Umbel	<i>Lilaeopsis schaffneriana ssp. recurva</i>	FE w/CH				v-CH	See Federal Register	
Jones Cycladenia	<i>Cycladenia humilis var. jonesii</i>	FT	v				See Federal Register	
Joshua Tree	<i>Yucca brevifolia</i>	BLMS	v	v		v	(Positive 90-day Finding)	
Kaibab (Paradine) Plains Cactus	<i>Pediocactus paradinei</i>	BLMS	v				Conservation Agreement	
Kearney's Blue Star	<i>Amsonia kearneyana</i>	FE				v	See Federal Register & Recovery Plan	
Kearney Sumac	<i>Rhus kearneyi ssp. kearneyi</i>	BLMS			v		relict species in shady canyons	
Kofa Mountain Barberry	<i>Berberis harrisoniana</i>	BLMS			v	v	relict species in shady canyons	
Marble Canyon Indigo Bush	<i>Psoralea arborescens var. pubescens</i>	BLMS	v				narrow range, red soils of Moenkopi Formation, Marble Canyon	
Marble Canyon Milkvetch	<i>Astragalus cremnophylax var. hevronii</i>	BLMS	v				narrow range, limestone cliff rims, Marble Canyon	
Mt Trumbull Beardtongue	<i>Penstemon distans</i>	BLMS	v				narrow range, limestone soils	
Murphey Agave	<i>Agave murpheyi</i>	BLMS			h	v	low numbers, desert foothills, central AZ	
Nichol Turk's Head Cactus	<i>Echinocactus horizonthalonius var. nicholii</i>	FE				v	See Federal Register & Recovery Plan	
Paria Plateau (Siler) Fishhook Cactus	<i>Sclerocactus sileri</i>	BLMS	v				narrow range, sandy soils, Paria Plateau	
Parish Phacelia	<i>Phacelia parishii</i>	BLMS			v		narrow range, limestone deposits, Burro Creek area, dry lake beds, Red Lake	
Parish Wild Onion	<i>Allium parishii</i>	BLMS			v		narrow range, higher elevation desert mountains, Mohave Mountains	
Pebbles Navajo Cactus	<i>Pediocactus peeblesianus var. peeblesianus</i>	FE				v	See Federal Register & Recovery Plan	
Pima Indian Mallow	<i>Abutilon parishii</i>	BLMS			h	v	h	rocky slopes, desert mountains
Pima Pineapple Cactus	<i>Coryphantha scheeri var. robustispina</i>	FE				v	See Federal Register	
Pinto Beardtongue	<i>Penstemon bicolor</i>	BLMS			v		narrow range, desert washes, Black Mountains	
Purple-spike Coralroot	<i>Hexalectris warnockii</i>	BLMS				v	few populations, leaf litter under Madrean Woodland, Mule Mtns	
Round-leaf Broom	<i>Errazurizia rotundata</i>	BLMS				v	narrow range, Shinarump Hills, Holbrook area	
San Pedro River Wild Buckwheat	<i>Eriogonum terrenatum</i>	BLMS				v	narrow range, limestone and clay soils of St. David Formation, SPRNCA	
Sand Food	<i>Pholisma sonorae</i>	BLMS			v		sand dunes, Yuma area	
Scaly Sand Food	<i>Pholisma arenarium</i>	BLMS			v		sand dunes, Cactus Plain	
Schott Wire-lettuce	<i>Stephanomeria exiqa ssp. exiqa</i>	BLMS			v		h	sand dunes, sandy soils
September 11 Stickleaf	<i>Mentzelia memorabilis</i>	BLMS	v				narrow range, gypsum soils of Harrisburg Formation	
Siler Pincushion Cactus	<i>Pediocactus sileri</i>	FT	v				See Federal Register & Recovery Plan	

Silverleaf Sunray	<i>Enceliopsis argophylla</i>	BLMS	v	v			narrow range, gypsum soils of Moenkopi Formation
Smooth Catseye	<i>Cryptantha semiglabra</i>	BLMS	v				extremely narrow range
Sticky Wild Buckwheat	<i>Eriogonum viscidulum</i>	BLMS	v				narrow range, sandy loam soils, Virgin River Valley
Three-cornered Milkvetch	<i>Astragalus geyeri</i> var. <i>triquetrus</i>	BLMS	v				narrow range, sandy loam soils, Virgin River Valley
Tumamoc Globeberry	<i>Tumamoca macdougalii</i>	BLMS			v	v	few populations, Sonoran Desert plains
Welch's Milkweed	<i>Asclepias welschii</i>	FT	v				See Federal Register & Recovery Plan
White-margined Penstemon	<i>Penstemon albomarginatus</i>	BLMS		v			narrow range, sandy loam soils

Status and Occurrence Abbreviations:

Abbreviation	Definition
FE	Federally Endangered
pE	Proposed Endangered
FT	Federally Threatened
pT	Proposed Threatened
CH	Designated Critical Habitat
pCH	Proposed Critical Habitat
pDelist	Proposed for Delisting
NEP	Nonessential Experimental Population designated pursuant to Section 10(j) of the ESA
DPS	Distinct Population Segment
C	Federal Candidate
BLMS	Arizona Bureau of Land Management Sensitive
BGEPA	Bald and Golden Eagle Protection Act of 1940
v	Known Occurrence within the last 10 years
h	Historic or Potential Occurrence
Positive 90-day Finding	Petition for listing was found to contain substantial information indicating listing may be warranted.
ASDO	Arizona Strip District Office: [Grand Canyon – Parashant NM & Arizona Strip Field Office including Vermillion Cliffs NM]
CRDO	Colorado River District Office: [Kingman, Lake Havasu and Yuma field offices]
GDO	Gila District Office: [Safford Field Office including Gila Box Riparian NCA & Tucson Field Office including Ironwood Forest NM, San Pedro Riparian NCA, & Las Cienegas NCA]
PDO	Phoenix District Office: [Hassayampa Field Office including Agua Fria NM & Lower Sonoran Field Office including Sonoran Desert NM]

APPENDIX D

**US Fish and
Wildlife Service
Information
for Planning and
Conservation
Report (IPaC)
Online Query**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Pinal County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/1516	Threatened

Birds

NAME	STATUS
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened
Yuma Clapper Rail <i>Rallus longirostris yumanensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3505	Endangered

Fishes

NAME	STATUS
------	--------

Gila Chub <i>Gila intermedia</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/51	
Gila Topminnow (incl. Yaqui) <i>Poeciliopsis occidentalis</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116	
Loach Minnow <i>Tiaroga cobitis</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6922	
Razorback Sucker <i>Xyrauchen texanus</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/530	
Roundtail Chub <i>Gila robusta</i>	Proposed Threatened
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2782	
Spikedace <i>Meda fulgida</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6493	

Flowering Plants

NAME	STATUS
Acuna Cactus <i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/5785	
Arizona Hedgehog Cactus <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1702	
Nichol's Turk's Head Cactus <i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5343	

Mammals

NAME	STATUS
Lesser Long-nosed Bat <i>Leptonycteris curasoae yerbabuenae</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3245	
Ocelot <i>Leopardus</i> (=Felis) <i>pardalis</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	

Sonoran Pronghorn *Antilocapra americana sonoriensis* EXPN
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/4750>

Reptiles

NAME	STATUS
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/7655	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Acuna Cactus <i>Echinomastus erectocentrus</i> var. <i>acunensis</i> https://ecos.fws.gov/ecp/species/5785#crithab	Final designated
Gila Chub <i>Gila intermedia</i> https://ecos.fws.gov/ecp/species/51#crithab	Final designated
Loach Minnow <i>Tiaroga cobitis</i> https://ecos.fws.gov/ecp/species/6922#crithab	Final designated
Mexican Spotted Owl <i>Strix occidentalis lucida</i> https://ecos.fws.gov/ecp/species/8196#crithab	Final designated
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Razorback Sucker <i>Xyrauchen texanus</i> https://ecos.fws.gov/ecp/species/530#crithab	Final designated
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final designated
Spikedace <i>Meda fulgida</i> https://ecos.fws.gov/ecp/species/6493#crithab	Final designated
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Allen's Hummingbird <i>Selasphorus sasin</i> https://ecos.fws.gov/ecp/species/9637	Migrating
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding
Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Year-round
Black-throated Gray Warbler <i>Dendroica nigrescens</i>	Breeding
Brewer's Sparrow <i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Wintering
Burrowing Owl <i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird <i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating
Canyon Towhee <i>Pipilo fuscus</i>	Year-round
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Wintering
Common Black-hawk <i>Buteogallus anthracinus</i>	Breeding

Costa's Hummingbird <i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Elegant Trogon <i>Trogon elegans</i>	Year-round
Elf Owl <i>Micrathene whitneyi</i> https://ecos.fws.gov/ecp/species/9085	Breeding
Flammulated Owl <i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow <i>Passerella iliaca</i>	Wintering
Gila Woodpecker <i>Melanerpes uropygialis</i> https://ecos.fws.gov/ecp/species/5960	Year-round
Gilded Flicker <i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle <i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler <i>Dendroica graciae</i>	Breeding
Gray Vireo <i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Breeding, Wintering
Lark Bunting <i>Calamospiza melanocorys</i>	Wintering
Lawrence's Goldfinch <i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Le Conte's Thrasher <i>toxostoma lecontei</i> https://ecos.fws.gov/ecp/species/8969	Year-round
Least Bittern <i>Ixobrychus exilis</i> https://ecos.fws.gov/ecp/species/6175	Year-round
Lewis's Woodpecker <i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Wintering
Loggerhead Shrike <i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew <i>Numenius americanus</i> https://ecos.fws.gov/ecp/species/5511	Wintering
Lucy's Warbler <i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Mccown's Longspur <i>Calcarius mccownii</i> https://ecos.fws.gov/ecp/species/9292	Wintering

Mountain Plover <i>Charadrius montanus</i> https://ecos.fws.gov/ecp/species/3638	Wintering
Northern Beardless-tyrannulet <i>Camptostoma imberbe</i>	Breeding
Olive Warbler <i>Peucedramus taeniatus</i>	Year-round
Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Year-round
Phainopepla <i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Breeding
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> https://ecos.fws.gov/ecp/species/9420	Year-round
Prairie Falcon <i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler <i>Cardellina rubrifrons</i>	Breeding
Rufous Hummingbird <i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Rufous-winged Sparrow <i>Aimophila carpalis</i>	Year-round
Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Snowy Plover <i>Charadrius alexandrinus</i>	Breeding
Sonoran Yellow Warbler <i>Dendroica petechia</i> ssp. <i>sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding
Sprague's Pipit <i>Anthus spragueii</i> https://ecos.fws.gov/ecp/species/8964	Wintering
Swainson's Hawk <i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Varied Bunting <i>Passerina versicolor</i>	Breeding
Virginia's Warbler <i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding
Western Grebe <i>aechmophorus occidentalis</i> https://ecos.fws.gov/ecp/species/6743	Breeding

Williamson's Sapsucker *Sphyrapicus thyroideus*
<https://ecos.fws.gov/ecp/species/8832>

Wintering

Willow Flycatcher *Empidonax traillii*
<https://ecos.fws.gov/ecp/species/3482>

Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA/NCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the [NWI map](#) for a full list.

FRESHWATER EMERGENT WETLAND

[PEM](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PSS](#)

[PSS2A](#)

[PFO](#)

[PSS1C](#)

FRESHWATER POND

[PUB](#)

[PUS](#)

[PUBHx](#)

LAKE

[L2UB](#)

[L1UB](#)

RIVERINE

[R4SB](#)

[R2UB](#)

[R2UBF](#)

[R4USA](#)

[R2UBH](#)

[R2USC](#)

A full description for each wetland code can be found at the National Wetlands Inventory website:

<https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Not for consultation

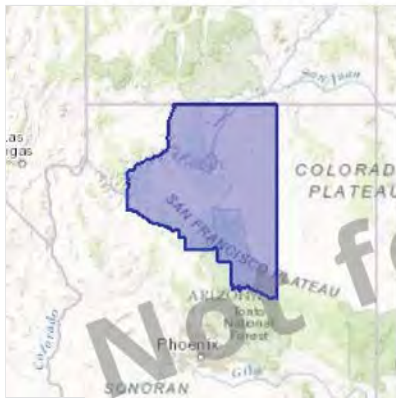
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Coconino County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/1516	Threatened

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
California Condor <i>Gymnogyps californianus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8193	EXPN
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
<p>Apache Trout <i>Oncorhynchus apache</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3532</p>	Threatened
<p>Colorado Pikeminnow (=squawfish) <i>Ptychocheilus lucius</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3531</p>	EXPN
<p>Gila Chub <i>Gila intermedia</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/51</p>	Endangered
<p>Gila Trout <i>Oncorhynchus gilae</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/781</p>	Threatened
<p>Humpback Chub <i>Gila cypha</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/3930</p>	Endangered
<p>Little Colorado Spinedace <i>Lepidomeda vittata</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6640</p>	Threatened
<p>Loach Minnow <i>Tiaroga cobitis</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6922</p>	Endangered
<p>Razorback Sucker <i>Xyrauchen texanus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/530</p>	Endangered
<p>Roundtail Chub <i>Gila robusta</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2782</p>	Proposed Threatened
<p>Spikedace <i>Meda fulgida</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6493</p>	Endangered
<p>Virgin River Chub <i>Gila seminuda</i> (=robusta) There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/1772</p>	Endangered
<p>Woundfin <i>Plagopterus argentissimus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/49</p>	EXPN

Flowering Plants

NAME	STATUS
Brady Pincushion Cactus <i>Pediocactus bradyi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6292	Endangered
Fickeisen Plains Cactus <i>Pediocactus peeblesianus fickeiseniae</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/5484	Endangered
Navajo Sedge <i>Carex specuicola</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8579	Threatened
San Francisco Peaks Ragwort <i>Packera franciscana</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1721	Threatened
Sentry Milk-vetch <i>Astragalus cremnophylax</i> var. <i>cremnophylax</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8439	Endangered
Siler Pincushion Cactus <i>Pediocactus (=Echinocactus,=Utahia) sileri</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3607	Threatened
Welsh's Milkweed <i>Asclepias welshii</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/8400	Threatened

Mammals

NAME	STATUS
Black-footed Ferret <i>Mustela nigripes</i> This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> Experimental, non-essential population of black-footed ferrets established pursuant to Section 10(j) of the ESA. Section 7 consultation not required except on lands administered by the U.S. Fish and Wildlife Service or the National Park Service. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6953	EXPN
Black-footed Ferret <i>Mustela nigripes</i> This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> Special incidental take provisions pursuant to Section 10(a)(1)(A) of the ESA apply to a reintroduced population of black-footed ferrets. Contact the Arizona Ecological Services Field Office for additional details. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6953	Endangered

Mexican Wolf <i>Canis lupus baileyi</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3916	

Reptiles

NAME	STATUS
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i>	Threatened
There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/7655	

Snails

NAME	STATUS
Kanab Ambersnail <i>Oxyloma haydeni kanabensis</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6642	

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Fickeisen Plains Cactus <i>Pediocactus peeblesianus fickeiseniae</i>	Final designated
https://ecos.fws.gov/ecp/species/5484#crithab	
Humpback Chub <i>Gila cypha</i>	Final designated
https://ecos.fws.gov/ecp/species/3930#crithab	
Little Colorado Spinedace <i>Lepidomeda vittata</i>	Final designated
https://ecos.fws.gov/ecp/species/6640#crithab	
Mexican Spotted Owl <i>Strix occidentalis lucida</i>	Final designated
https://ecos.fws.gov/ecp/species/8196#crithab	
Narrow-headed Gartersnake <i>Thamnophis rufipunctatus</i>	Proposed
https://ecos.fws.gov/ecp/species/2204#crithab	
Navajo Sedge <i>Carex specuicola</i>	Final designated
https://ecos.fws.gov/ecp/species/8579#crithab	
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i>	Proposed
https://ecos.fws.gov/ecp/species/7655#crithab	
Razorback Sucker <i>Xyrauchen texanus</i>	Final designated
https://ecos.fws.gov/ecp/species/530#crithab	
San Francisco Peaks Ragwort <i>Packera franciscana</i>	Final designated
https://ecos.fws.gov/ecp/species/1721#crithab	

Yellow-billed Cuckoo *Coccyzus americanus*
<https://ecos.fws.gov/ecp/species/3911#crithab>

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding
Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black Rosy-finch <i>Leucosticte atrata</i> https://ecos.fws.gov/ecp/species/9460	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Breeding
Black-throated Gray Warbler <i>Dendroica nigrescens</i>	Breeding
Brewer's Sparrow <i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Breeding, Wintering

Burrowing Owl <i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird <i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating
Canyon Towhee <i>Pipilo fuscus</i>	Year-round
Cassin's Finch <i>Carpodacus cassinii</i> https://ecos.fws.gov/ecp/species/9462	Year-round
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Wintering
Common Black-hawk <i>Buteogallus anthracinus</i>	Breeding
Costa's Hummingbird <i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Flammulated Owl <i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow <i>Passerella iliaca</i>	Wintering
Gilded Flicker <i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle <i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler <i>Dendroica graciae</i>	Breeding
Gray Vireo <i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Breeding
Greater Sage-grouse <i>Centrocercus urophasianus</i> https://ecos.fws.gov/ecp/species/8159	Year-round
Juniper Titmouse <i>Baeolophus ridgwayi</i>	Year-round
Lawrence's Goldfinch <i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Le Conte's Thrasher <i>Toxostoma lecontei</i> https://ecos.fws.gov/ecp/species/8969	Year-round
Lewis's Woodpecker <i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Year-round
Loggerhead Shrike <i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round

Lucy's Warbler <i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Olive Warbler <i>Peucedramus taeniatus</i>	Breeding
Olive-sided Flycatcher <i>Contopus cooperi</i> https://ecos.fws.gov/ecp/species/3914	Breeding
Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Breeding
Phainopepla <i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Breeding
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> https://ecos.fws.gov/ecp/species/9420	Year-round
Prairie Falcon <i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler <i>Cardellina rubrifrons</i>	Breeding
Rufous Hummingbird <i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Sonoran Yellow Warbler <i>Dendroica petechia</i> ssp. <i>sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding
Swainson's Hawk <i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Virginia's Warbler <i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding
Western Grebe <i>aechmophorus occidentalis</i> https://ecos.fws.gov/ecp/species/6743	Breeding
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> https://ecos.fws.gov/ecp/species/8832	Breeding, Wintering
Willow Flycatcher <i>Empidonax traillii</i> https://ecos.fws.gov/ecp/species/3482	Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA/NCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Gila County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1516	Threatened

Birds

NAME	STATUS
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened
Yuma Clapper Rail <i>Rallus longirostris yumanensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3505	Endangered

Fishes

NAME	STATUS
------	--------

<p>Apache Trout <i>Oncorhynchus apache</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3532</p>	Threatened
<p>Colorado Pikeminnow (=squawfish) <i>Ptychocheilus lucius</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3531</p>	EXPN
<p>Desert Pupfish <i>Cyprinodon macularius</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/7003</p>	Endangered
<p>Gila Chub <i>Gila intermedia</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/51</p>	Endangered
<p>Gila Topminnow (incl. Yaqui) <i>Poeciliopsis occidentalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116</p>	Endangered
<p>Gila Trout <i>Oncorhynchus gilae</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/781</p>	Threatened
<p>Headwater Chub <i>Gila nigra</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1373</p>	Proposed Threatened
<p>Little Colorado Spinedace <i>Lepidomeda vittata</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6640</p>	Threatened
<p>Loach Minnow <i>Tiaroga cobitis</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6922</p>	Endangered
<p>Razorback Sucker <i>Xyrauchen texanus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/530</p>	Endangered
<p>Roundtail Chub <i>Gila robusta</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2782</p>	Proposed Threatened
<p>Spikedace <i>Meda fulgida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6493</p>	Endangered
<p>Woundfin <i>Plagopterus argentissimus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/49</p>	EXPN

Flowering Plants

NAME	STATUS
Arizona Hedgehog Cactus <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1702	Endangered

Mammals

NAME	STATUS
Gray Wolf <i>Canis lupus</i> No critical habitat has been designated for this species.	PEXPN
Lesser Long-nosed Bat <i>Leptonycteris curasoae yerbabuenae</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3245	Endangered
Mexican Wolf <i>Canis lupus baileyi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3916	Endangered
Ocelot <i>Leopardus (=Felis) pardalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	Endangered

Reptiles

NAME	STATUS
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/7655	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> https://ecos.fws.gov/ecp/species/1516#crithab	Final designated
Gila Chub <i>Gila intermedia</i> https://ecos.fws.gov/ecp/species/51#crithab	Final designated
Mexican Spotted Owl <i>Strix occidentalis lucida</i> https://ecos.fws.gov/ecp/species/8196#crithab	Final designated
Narrow-headed Gartersnake <i>Thamnophis rufipunctatus</i> https://ecos.fws.gov/ecp/species/2204#crithab	Proposed
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> https://ecos.fws.gov/ecp/species/7655#crithab	Proposed

Razorback Sucker <i>Xyrauchen texanus</i> https://ecos.fws.gov/ecp/species/530#crithab	Final designated
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final designated
Spikedace <i>Meda fulgida</i> https://ecos.fws.gov/ecp/species/6493#crithab	Final designated
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding
Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Breeding

Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	Breeding
Brewer's Sparrow	<i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Breeding, Wintering
Burrowing Owl	<i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird	<i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating
Canyon Towhee	<i>Pipilo fuscus</i>	Year-round
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	Wintering
Common Black-hawk	<i>Buteogallus anthracinus</i>	Breeding
Costa's Hummingbird	<i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Elegant Trogon	<i>Trogon elegans</i>	Year-round
Elf Owl	<i>Micrathene whitneyi</i> https://ecos.fws.gov/ecp/species/9085	Breeding
Flammulated Owl	<i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow	<i>Passerella iliaca</i>	Wintering
Gila Woodpecker	<i>Melanerpes uropygialis</i> https://ecos.fws.gov/ecp/species/5960	Year-round
Gilded Flicker	<i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle	<i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler	<i>Dendroica graciae</i>	Breeding
Gray Vireo	<i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Breeding
Lark Bunting	<i>Calamospiza melanocorys</i>	Wintering
Lawrence's Goldfinch	<i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Le Conte's Thrasher	<i>Toxostoma lecontei</i> https://ecos.fws.gov/ecp/species/8969	Year-round

Lewis's Woodpecker <i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Wintering
Loggerhead Shrike <i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew <i>Numenius americanus</i> https://ecos.fws.gov/ecp/species/5511	Wintering
Lucy's Warbler <i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Northern Beardless-tyrannulet <i>Camptostoma imberbe</i>	Breeding
Olive Warbler <i>Peucedramus taeniatus</i>	Breeding
Olive-sided Flycatcher <i>Contopus cooperi</i> https://ecos.fws.gov/ecp/species/3914	Breeding
Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Year-round
Phainopepla <i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Breeding
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> https://ecos.fws.gov/ecp/species/9420	Year-round
Prairie Falcon <i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler <i>Cardellina rubrifrons</i>	Breeding
Rufous Hummingbird <i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Sonoran Yellow Warbler <i>Dendroica petechia</i> ssp. <i>sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding
Swainson's Hawk <i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Virginia's Warbler <i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding
Western Grebe <i>aechmophorus occidentalis</i> https://ecos.fws.gov/ecp/species/6743	Breeding

Williamson's Sapsucker *Sphyrapicus thyroideus*
<https://ecos.fws.gov/ecp/species/8832>

Wintering

Willow Flycatcher *Empidonax traillii*
<https://ecos.fws.gov/ecp/species/3482>

Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA/NCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Maricopa County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened
Yuma Clapper Rail <i>Rallus longirostris yumanensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3505	Endangered

Fishes

NAME	STATUS
Colorado Pikeminnow (=squawfish) <i>Ptychocheilus lucius</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3531	EXPN

Desert Pupfish <i>Cyprinodon macularius</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/7003	Endangered
Gila Topminnow (incl. Yaqui) <i>Poeciliopsis occidentalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116	Endangered
Razorback Sucker <i>Xyrauchen texanus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/530	Endangered
Roundtail Chub <i>Gila robusta</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2782	Proposed Threatened
Spikedace <i>Meda fulgida</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/6493	Endangered
Woundfin <i>Plagopterus argentissimus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/49	EXPN

Flowering Plants

NAME	STATUS
Acuna Cactus <i>Echinomastus erectocentrus</i> var. <i>acunensis</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/5785	Endangered
Arizona Cliffrose <i>Purshia</i> (=Cowania) <i>subintegra</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/866	Endangered
Arizona Hedgehog Cactus <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1702	Endangered
Nichol's Turk's Head Cactus <i>Echinocactus horzonthalonius</i> var. <i>nicholii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5343	Endangered

Mammals

NAME	STATUS
Lesser Long-nosed Bat <i>Leptonycteris curasoae</i> <i>yerbabuenae</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3245	Endangered

Ocelot <i>Leopardus (=Felis) pardalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	Endangered
Sonoran Pronghorn <i>Antilocapra americana sonoriensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4750	EXPN
Sonoran Pronghorn <i>Antilocapra americana sonoriensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4750	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Acuna Cactus <i>Echinomastus erectocentrus</i> var. <i>acunensis</i> https://ecos.fws.gov/ecp/species/5785#crithab	Final designated
Mexican Spotted Owl <i>Strix occidentalis lucida</i> https://ecos.fws.gov/ecp/species/8196#crithab	Final designated
Razorback Sucker <i>Xyrauchen texanus</i> https://ecos.fws.gov/ecp/species/530#crithab	Final designated
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final designated
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Allen's Hummingbird <i>Selasphorus sasin</i> https://ecos.fws.gov/ecp/species/9637	Migrating
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding
Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Wintering, Breeding
Black-throated Gray Warbler <i>Dendroica nigrescens</i>	Breeding, Migrating
Brewer's Sparrow <i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Wintering
Burrowing Owl <i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird <i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating
Canyon Towhee <i>Pipilo fuscus</i>	Year-round
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Wintering
Common Black-hawk <i>Buteogallus anthracinus</i>	Breeding
Costa's Hummingbird <i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Elf Owl <i>Micrathene whitneyi</i> https://ecos.fws.gov/ecp/species/9085	Breeding
Flammulated Owl <i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow <i>Passerella iliaca</i>	Wintering

Gila Woodpecker <i>Melanerpes uropygialis</i> https://ecos.fws.gov/ecp/species/5960	Year-round
Gilded Flicker <i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle <i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler <i>Dendroica graciae</i>	Breeding
Gray Vireo <i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Breeding, Wintering
Lark Bunting <i>Calamospiza melanocorys</i>	Wintering
Lawrence's Goldfinch <i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Le Conte's Thrasher <i>toxostoma lecontei</i> https://ecos.fws.gov/ecp/species/8969	Year-round
Least Bittern <i>Ixobrychus exilis</i> https://ecos.fws.gov/ecp/species/6175	Year-round
Lesser Yellowlegs <i>Tringa flavipes</i> https://ecos.fws.gov/ecp/species/9679	Wintering
Lewis's Woodpecker <i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Wintering
Loggerhead Shrike <i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew <i>Numenius americanus</i> https://ecos.fws.gov/ecp/species/5511	Wintering
Lucy's Warbler <i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Mountain Plover <i>Charadrius montanus</i> https://ecos.fws.gov/ecp/species/3638	Wintering
Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Year-round
Phainopepla <i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Breeding
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> https://ecos.fws.gov/ecp/species/9420	Year-round

Prairie Falcon <i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler <i>Cardellina rubrifrons</i>	Breeding
Rufous Hummingbird <i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Snowy Plover <i>Charadrius alexandrinus</i>	Breeding
Sonoran Yellow Warbler <i>Dendroica petechia ssp. sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding, Migrating
Swainson's Hawk <i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Varied Bunting <i>Passerina versicolor</i>	Breeding
Virginia's Warbler <i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding
Western Grebe <i>aechmophorus occidentalis</i> https://ecos.fws.gov/ecp/species/6743	Breeding
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> https://ecos.fws.gov/ecp/species/8832	Wintering
Willow Flycatcher <i>Empidonax traillii</i> https://ecos.fws.gov/ecp/species/3482	Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/COS models: the models were developed as part of the NOAA/COS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA/COS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the [NWI map](#) for a full list.

FRESHWATER EMERGENT WETLAND

[PEM](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PSS](#)

[PFO](#)

[PFO1A](#)

[PSS1B](#)

FRESHWATER POND

[PUB](#)

[PUS](#)

[PAB3H](#)

[PUSjh](#)

LAKE

[L1UB](#)

[L2UBFh](#)

[L2UB](#)

[L2US](#)

OTHER

[PUSAh](#)

[PUSCh](#)

[PUSCx](#)

RIVERINE

[R4SB](#)

[R2UB](#)

[R2US](#)

[R4USA](#)

[R4USC](#)

[R4USJ](#)

[R4SBA](#)

[R2EM](#)

A full description for each wetland code can be found at the National Wetlands Inventory website:

<https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Not for consultation

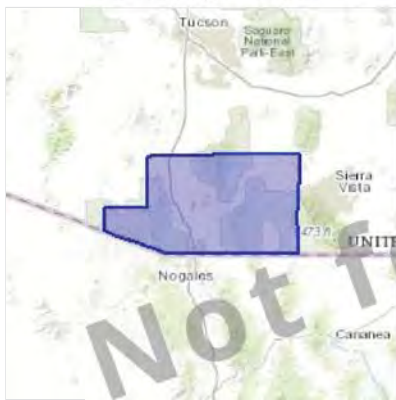
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Santa Cruz County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1516	Threatened
Sonora Tiger Salamander <i>Ambystoma tigrinum stebbinsi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2096	Endangered

Birds

NAME	STATUS
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
------	--------

Desert Pupfish <i>Cyprinodon macularius</i>	Endangered
There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/7003	
Gila Chub <i>Gila intermedia</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/51	
Gila Topminnow (incl. Yaqui) <i>Poeciliopsis occidentalis</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116	
Sonora Chub <i>Gila ditaenia</i>	Threatened
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1394	

Flowering Plants

NAME	STATUS
Canelo Hills Ladies'-tresses <i>Spiranthes delitescens</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8098	
Huachuca Water-umbel <i>Lilaeopsis schaffneriana</i> var. <i>recurva</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1201	
Pima Pineapple Cactus <i>Coryphantha scheeri</i> var. <i>robustispina</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4919	

Mammals

NAME	STATUS
Jaguar <i>Panthera onca</i>	Endangered
There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/3944	
Lesser Long-nosed Bat <i>Leptonycteris curasoae yerbabuenae</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3245	
Ocelot <i>Leopardus</i> (=Felis) <i>pardalis</i>	Endangered
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	
Sonoran Pronghorn <i>Antilocapra americana sonoriensis</i>	EXPN
No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4750	

Reptiles

NAME	STATUS
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/7655	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> https://ecos.fws.gov/ecp/species/1516#crithab	Final designated
Gila Chub <i>Gila intermedia</i> https://ecos.fws.gov/ecp/species/51#crithab	Final designated
Huachuca Water-umbel <i>Lilaeopsis schaffneriana</i> var. <i>recurva</i> https://ecos.fws.gov/ecp/species/1201#crithab	Final designated
Jaguar <i>Panthera onca</i> https://ecos.fws.gov/ecp/species/3944#crithab	Final designated
Mexican Spotted Owl <i>Strix occidentalis lucida</i> https://ecos.fws.gov/ecp/species/8196#crithab	Final designated
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Sonora Chub <i>Gila ditaenia</i> https://ecos.fws.gov/ecp/species/1394#crithab	Final designated
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final designated
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Allen's Hummingbird <i>Selasphorus sasin</i> https://ecos.fws.gov/ecp/species/9637	Migrating
Arizona Woodpecker <i>Picoides arizonae</i>	Year-round
Baird's Sparrow <i>Ammodramus bairdii</i> https://ecos.fws.gov/ecp/species/5113	Wintering
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding
Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Wintering
Black-throated Gray Warbler <i>Dendroica nigrescens</i>	Breeding, Migrating
Blue-throated Hummingbird <i>Lampornis clemenciae</i>	Breeding
Botteri's Sparrow <i>Aimophila botterii</i>	Breeding
Brewer's Sparrow <i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Wintering
Buff-breasted Flycatcher <i>Empidonax fulvifrons</i> https://ecos.fws.gov/ecp/species/9586	Year-round
Burrowing Owl <i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird <i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating

Canyon Towhee	<i>Pipilo fuscus</i>	Year-round
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	Wintering
Common Black-hawk	<i>Buteogallus anthracinus</i>	Breeding
Costa's Hummingbird	<i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Elegant Trogon	<i>Trogon elegans</i>	Year-round
Elf Owl	<i>Micrathene whitneyi</i> https://ecos.fws.gov/ecp/species/9085	Breeding
Five-striped Sparrow	<i>Aimophila quinquestriata</i>	Breeding
Flammulated Owl	<i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow	<i>Passerella iliaca</i>	Wintering
Gila Woodpecker	<i>Melanerpes uropygialis</i> https://ecos.fws.gov/ecp/species/5960	Year-round
Gilded Flicker	<i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle	<i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler	<i>Dendroica graciae</i>	Breeding
Grasshopper Sparrow	<i>Ammodramus savannarum ammoregus</i>	Year-round
Gray Vireo	<i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Wintering
Lark Bunting	<i>Calamospiza melanocorys</i>	Wintering
Lawrence's Goldfinch	<i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Lewis's Woodpecker	<i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Wintering
Loggerhead Shrike	<i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew	<i>Numenius americanus</i> https://ecos.fws.gov/ecp/species/5511	Wintering

Lucifer Hummingbird	<i>Calothorax lucifer</i>	Breeding
Lucy's Warbler	<i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Mccown's Longspur	<i>Calcarius mccownii</i> https://ecos.fws.gov/ecp/species/9292	Wintering
Mountain Plover	<i>Charadrius montanus</i> https://ecos.fws.gov/ecp/species/3638	Wintering
Northern Beardless-tyrannulet	<i>Camptostoma imberbe</i>	Breeding
Olive Warbler	<i>Peucedramus taeniatus</i>	Year-round
Peregrine Falcon	<i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Year-round
Phainopepla	<i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Year-round
Prairie Falcon	<i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler	<i>Cardellina rubrifrons</i>	Breeding
Rose-throated Becard	<i>Pachyramphus aglaiae</i>	Breeding
Rufous Hummingbird	<i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Rufous-winged Sparrow	<i>Aimophila carpalis</i>	Year-round
Short-eared Owl	<i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Sonoran Yellow Warbler	<i>Dendroica petechia</i> ssp. <i>sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding
Sprague's Pipit	<i>Anthus spragueii</i> https://ecos.fws.gov/ecp/species/8964	Wintering
Swainson's Hawk	<i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Varied Bunting	<i>Passerina versicolor</i>	Breeding
Virginia's Warbler	<i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding

Williamson's Sapsucker *Sphyrapicus thyroideus*
<https://ecos.fws.gov/ecp/species/8832>

Wintering

Willow Flycatcher *Empidonax traillii*
<https://ecos.fws.gov/ecp/species/3482>

Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA/NCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Yavapai County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

📠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because

species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Amphibians

NAME	STATUS
Chiricahua Leopard Frog <i>Rana chiricahuensis</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/1516	Threatened

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered
California Condor <i>Gymnogyps californianus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8193	EXPN
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Colorado Pikeminnow (=squawfish) <i>Ptychocheilus lucius</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3531	EXPN
Desert Pupfish <i>Cyprinodon macularius</i> There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. https://ecos.fws.gov/ecp/species/7003	Endangered
Gila Chub <i>Gila intermedia</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/51	Endangered
Gila Topminnow (incl. Yaqui) <i>Poeciliopsis occidentalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116	Endangered
Gila Trout <i>Oncorhynchus gilae</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/781	Threatened
Headwater Chub <i>Gila nigra</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1373	Proposed Threatened
Loach Minnow <i>Tiaroga cobitis</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6922	Endangered
Razorback Sucker <i>Xyrauchen texanus</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/530	Endangered
Roundtail Chub <i>Gila robusta</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2782	Proposed Threatened
Spikedace <i>Meda fulgida</i> There is a final critical habitat designated for this species. Your location overlaps the designated critical habitat. https://ecos.fws.gov/ecp/species/6493	Endangered
Woundfin <i>Plagopterus argentissimus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/49	EXPN

Flowering Plants

NAME	STATUS
------	--------

Arizona Cliffrose *Purshia* (=Cowania) *subintegra* Endangered
 No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/866>

Mammals

NAME	STATUS
<p>Black-footed Ferret <i>Mustela nigripes</i></p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> Special incidental take provisions pursuant to Section 10(a)(1)(A) of the ESA apply to a reintroduced population of black-footed ferrets. Contact the Arizona Ecological Services Field Office for additional details. <p>No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6953</p>	Endangered
<p>Black-footed Ferret <i>Mustela nigripes</i></p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> Experimental, non-essential population of black-footed ferrets established pursuant to Section 10(j) of the ESA. Section 7 consultation not required except on lands administered by the U.S. Fish and Wildlife Service or the National Park Service. <p>No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6953</p>	EXPN
<p>Lesser Long-nosed Bat <i>Leptonycteris curasoae yerbabuena</i></p> <p>No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3245</p>	Endangered

Reptiles

NAME	STATUS
<p>Northern Mexican Gartersnake <i>Thamnophis eques megalops</i></p> <p>There is a proposed critical habitat for this species. Your location overlaps the proposed critical habitat. https://ecos.fws.gov/ecp/species/7655</p>	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
<p>Chiricahua Leopard Frog <i>Rana chiricahuensis</i> https://ecos.fws.gov/ecp/species/1516#crithab</p>	Final designated
<p>Gila Chub <i>Gila intermedia</i> https://ecos.fws.gov/ecp/species/51#crithab</p>	Final designated
<p>Loach Minnow <i>Tiaroga cobitis</i> https://ecos.fws.gov/ecp/species/6922#crithab</p>	Final designated
<p>Mexican Spotted Owl <i>Strix occidentalis lucida</i> https://ecos.fws.gov/ecp/species/8196#crithab</p>	Final designated

Narrow-headed Gartersnake <i>Thamnophis rufipunctatus</i> https://ecos.fws.gov/ecp/species/2204#crithab	Proposed
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Razorback Sucker <i>Xyrauchen texanus</i> https://ecos.fws.gov/ecp/species/530#crithab	Final designated
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final designated
Spikedace <i>Meda fulgida</i> https://ecos.fws.gov/ecp/species/6493#crithab	Final designated
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626	Wintering
Bell's Vireo <i>Vireo bellii</i> https://ecos.fws.gov/ecp/species/9507	Breeding

Bendire's Thrasher <i>Toxostoma bendirei</i> https://ecos.fws.gov/ecp/species/9435	Year-round
Black-chinned Sparrow <i>Spizella atrogularis</i> https://ecos.fws.gov/ecp/species/9447	Wintering, Breeding
Black-throated Gray Warbler <i>Dendroica nigrescens</i>	Breeding, Migrating
Brewer's Sparrow <i>Spizella breweri</i> https://ecos.fws.gov/ecp/species/9291	Breeding, Wintering
Burrowing Owl <i>Athene cunicularia</i> https://ecos.fws.gov/ecp/species/9737	Year-round
Calliope Hummingbird <i>Stellula calliope</i> https://ecos.fws.gov/ecp/species/9526	Migrating
Canyon Towhee <i>Pipilo fuscus</i>	Year-round
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Wintering
Common Black-hawk <i>Buteogallus anthracinus</i>	Breeding
Costa's Hummingbird <i>Calypte costae</i> https://ecos.fws.gov/ecp/species/9470	Year-round
Elf Owl <i>Micrathene whitneyi</i> https://ecos.fws.gov/ecp/species/9085	Breeding
Flammulated Owl <i>Otus flammeolus</i> https://ecos.fws.gov/ecp/species/7728	Breeding
Fox Sparrow <i>Passerella iliaca</i>	Wintering
Gila Woodpecker <i>Melanerpes uropygialis</i> https://ecos.fws.gov/ecp/species/5960	Year-round
Gilded Flicker <i>Colaptes chrysoides</i> https://ecos.fws.gov/ecp/species/2960	Year-round
Golden Eagle <i>Aquila chrysaetos</i> https://ecos.fws.gov/ecp/species/1680	Year-round
Grace's Warbler <i>Dendroica graciae</i>	Breeding
Gray Vireo <i>Vireo vicinior</i> https://ecos.fws.gov/ecp/species/8680	Breeding
Juniper Titmouse <i>Baeolophus ridgwayi</i>	Year-round
Lark Bunting <i>Calamospiza melanocorys</i>	Wintering

Lawrence's Goldfinch <i>Carduelis lawrencei</i> https://ecos.fws.gov/ecp/species/9464	Year-round
Le Conte's Thrasher <i>toxostoma lecontei</i> https://ecos.fws.gov/ecp/species/8969	Year-round
Least Bittern <i>Ixobrychus exilis</i> https://ecos.fws.gov/ecp/species/6175	Year-round
Lewis's Woodpecker <i>Melanerpes lewis</i> https://ecos.fws.gov/ecp/species/9408	Year-round
Loggerhead Shrike <i>Lanius ludovicianus</i> https://ecos.fws.gov/ecp/species/8833	Year-round
Long-billed Curlew <i>Numenius americanus</i> https://ecos.fws.gov/ecp/species/5511	Wintering
Lucy's Warbler <i>Vermivora luciae</i> https://ecos.fws.gov/ecp/species/6626	Breeding
Olive Warbler <i>Peucedramus taeniatus</i>	Breeding
Olive-sided Flycatcher <i>Contopus cooperi</i> https://ecos.fws.gov/ecp/species/3914	Breeding
Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831	Year-round
Phainopepla <i>phainopepla nitens</i> https://ecos.fws.gov/ecp/species/1372	Year-round
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> https://ecos.fws.gov/ecp/species/9420	Year-round
Prairie Falcon <i>Falco mexicanus</i> https://ecos.fws.gov/ecp/species/4736	Year-round
Red-faced Warbler <i>Cardellina rubrifrons</i>	Breeding
Rufous Hummingbird <i>selasphorus rufus</i> https://ecos.fws.gov/ecp/species/8002	Migrating
Rufous-crowned Sparrow <i>Aimophila ruficeps</i> https://ecos.fws.gov/ecp/species/9718	Year-round
Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295	Wintering
Sonoran Yellow Warbler <i>Dendroica petechia</i> ssp. <i>sonorana</i> https://ecos.fws.gov/ecp/species/2893	Breeding, Migrating

Swainson's Hawk <i>Buteo swainsoni</i> https://ecos.fws.gov/ecp/species/1098	Breeding
Virginia's Warbler <i>Vermivora virginiae</i> https://ecos.fws.gov/ecp/species/9441	Breeding
Western Grebe <i>aechmophorus occidentalis</i> https://ecos.fws.gov/ecp/species/6743	Breeding
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> https://ecos.fws.gov/ecp/species/8832	Wintering
Willow Flycatcher <i>Empidonax traillii</i> https://ecos.fws.gov/ecp/species/3482	Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the [NWI map](#) for a full list.

FRESHWATER EMERGENT WETLAND

[PEM1Ah](#)
[PEM1A](#)
[PEM1Ch](#)
[PEM1C](#)
[PEM1B](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PSS](#)
[PFO1A](#)
[PSS1A](#)
[PFO1J](#)
[PSS1J](#)
[PSS2J](#)
[PFO](#)
[PSS1C](#)
[PSS1B](#)
[PSS2A](#)
[PSS1Ah](#)
[PFO1B](#)

FRESHWATER POND

[PUB](#)
[PUSjh](#)
[PUSCh](#)
[PUSCx](#)
[PUBHh](#)
[PUSAx](#)
[PAB3Hh](#)
[PUSJx](#)
[PUSKx](#)
[PUBFh](#)
[PAB4Kh](#)
[PUSKh](#)
[PUBKx](#)
[PABFh](#)
[PAB4Cx](#)
[PABFx](#)
[PAB4Ch](#)

LAKE

[L1UB](#)
[L2UBFh](#)
[L2US](#)
[L2USKh](#)
[L1UBHh](#)
[L2USAh](#)

OTHER

[PUSAh](#)

RIVERINE

[R4SBA](#)
[R4SB](#)
[R2UB](#)
[R2UBH](#)
[R4USA](#)
[R4SBC](#)
[R2USA](#)
[R4SBJ](#)
[R2US](#)
[R3USJ](#)
[R4USJ](#)
[R3USA](#)
[R2USC](#)

A full description for each wetland code can be found at the National Wetlands Inventory website:

<https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Not for consultation

APPENDIX E

**Arizona Game
and Fish Department
Heritage Database
Management
System (HDMS)
On-Line Review**

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Apache South Lands

User Project Number:

Land Exchange

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02997

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Apache South Lands Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 105.12

Lat/Long (DD): 33.2801 / -111.0782

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T2S, R12E

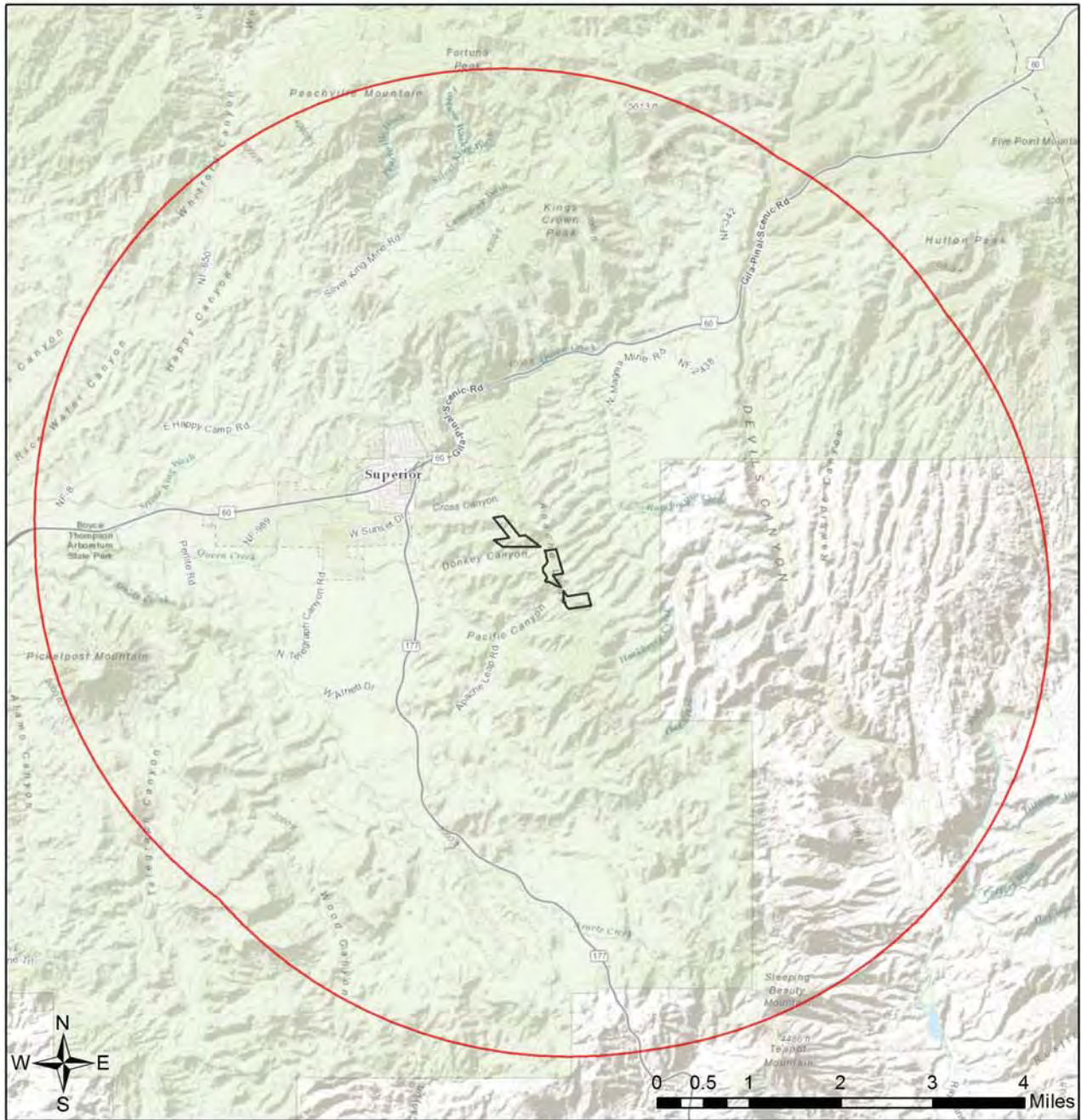
USGS Quad(s): SUPERIOR



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - Apache South Lands

Web Map As Submitted By User



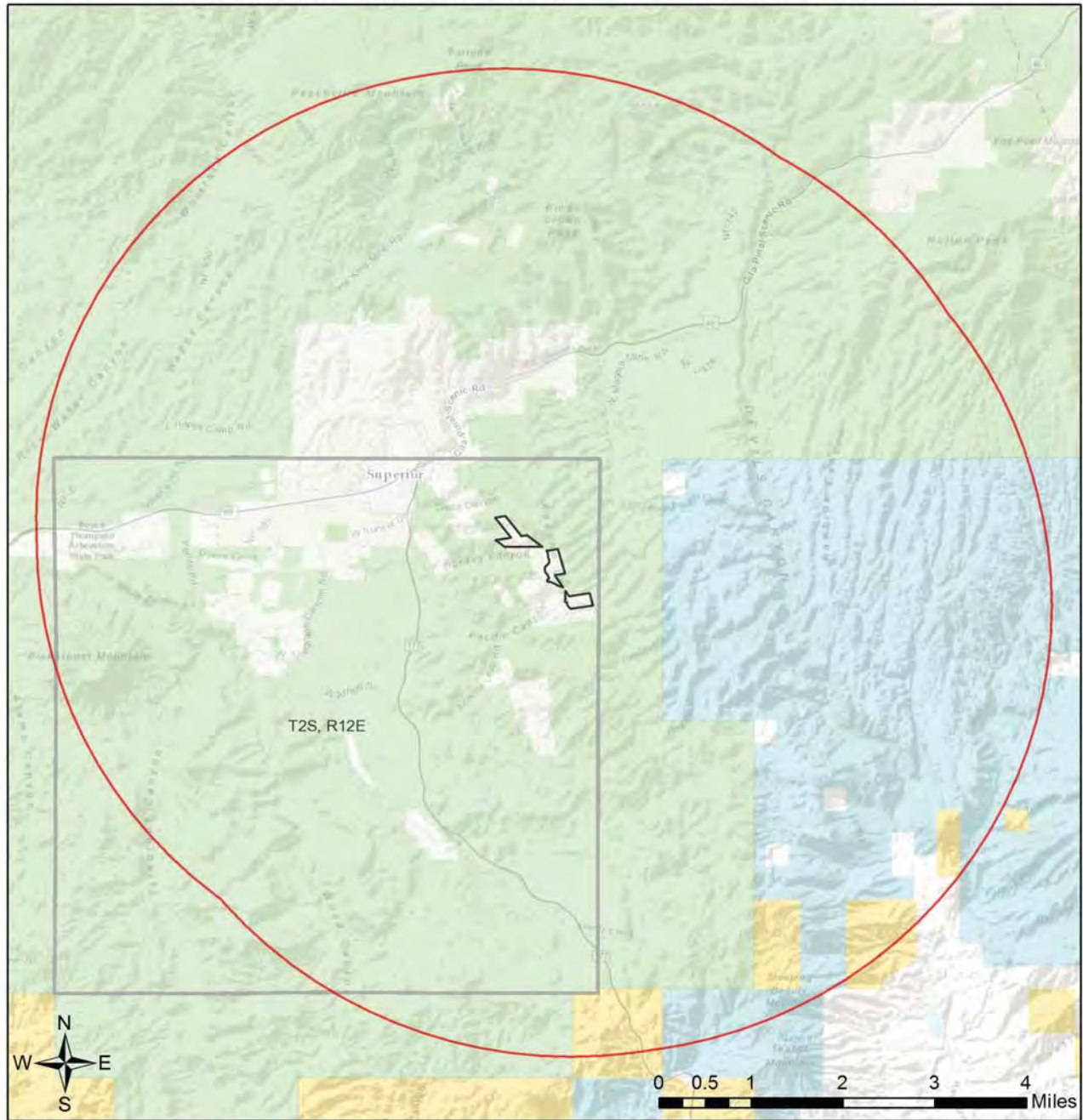
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 105.12
Lat/Long (DD): 33.2801 / -111.0782
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T2S, R12E
USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Apache South Lands

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 105.12
 Lat/Long (DD): 33.2801 / -111.0782
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T2S, R12E
 USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
CH for Gila intermedia	Gila chub Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis yumanensis	Yuma Myotis	SC				1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Apache Withdraw

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02996

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Apache Withdraw Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 697.15

Lat/Long (DD): 33.2879 / -111.0790

County(s): Pinal

AGFD Region(s): Mesa

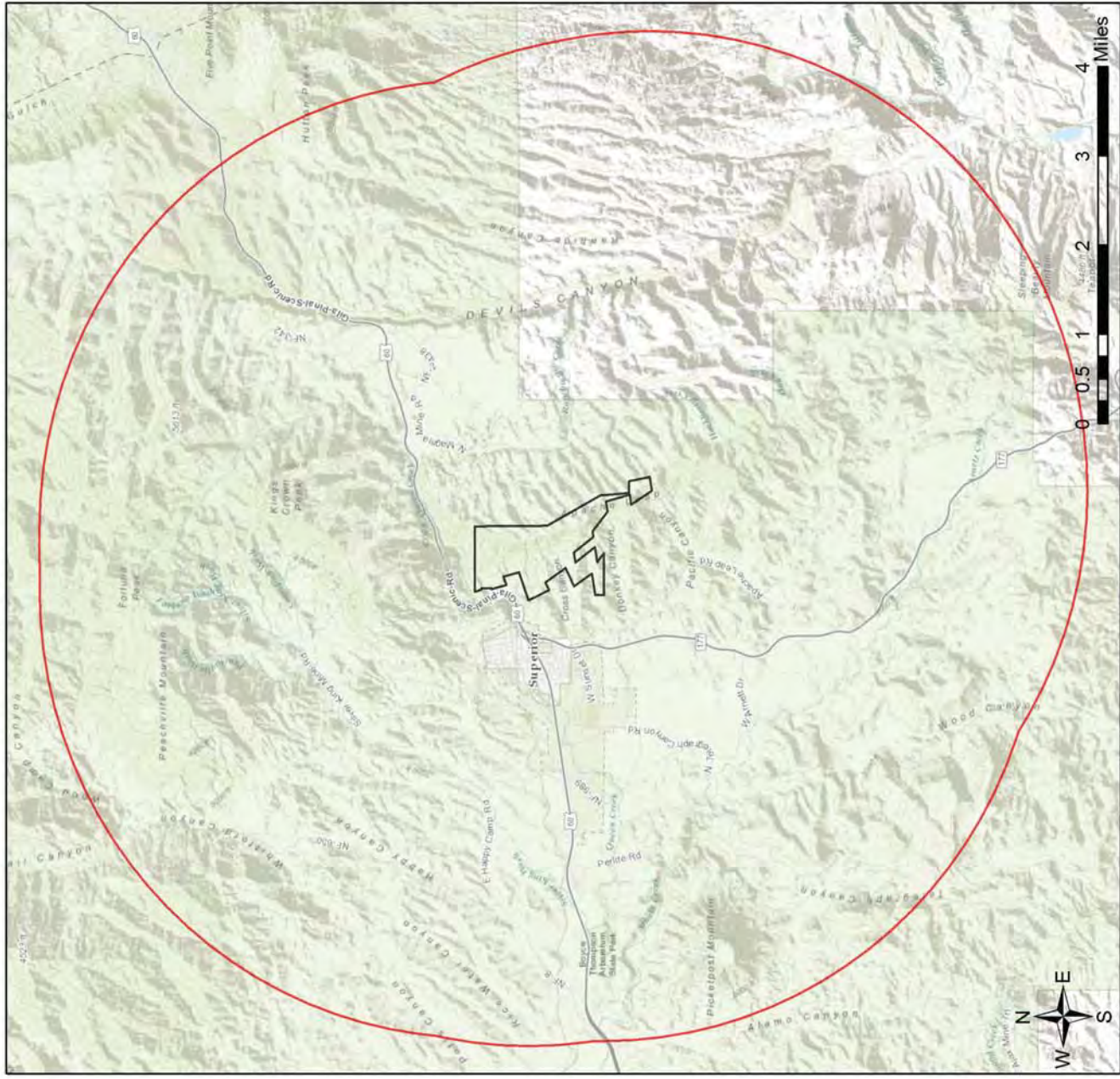
Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E


USGS Quad(s): SUPERIOR

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),




Land Exchange - Apache Withdraw Web Map As Submitted By User



 Project Boundary

Project Size (acres): 697.15

 Buffered Project Boundary

Lat/Long (DD): 33.2879 / -111.0790

County(s): Pinal

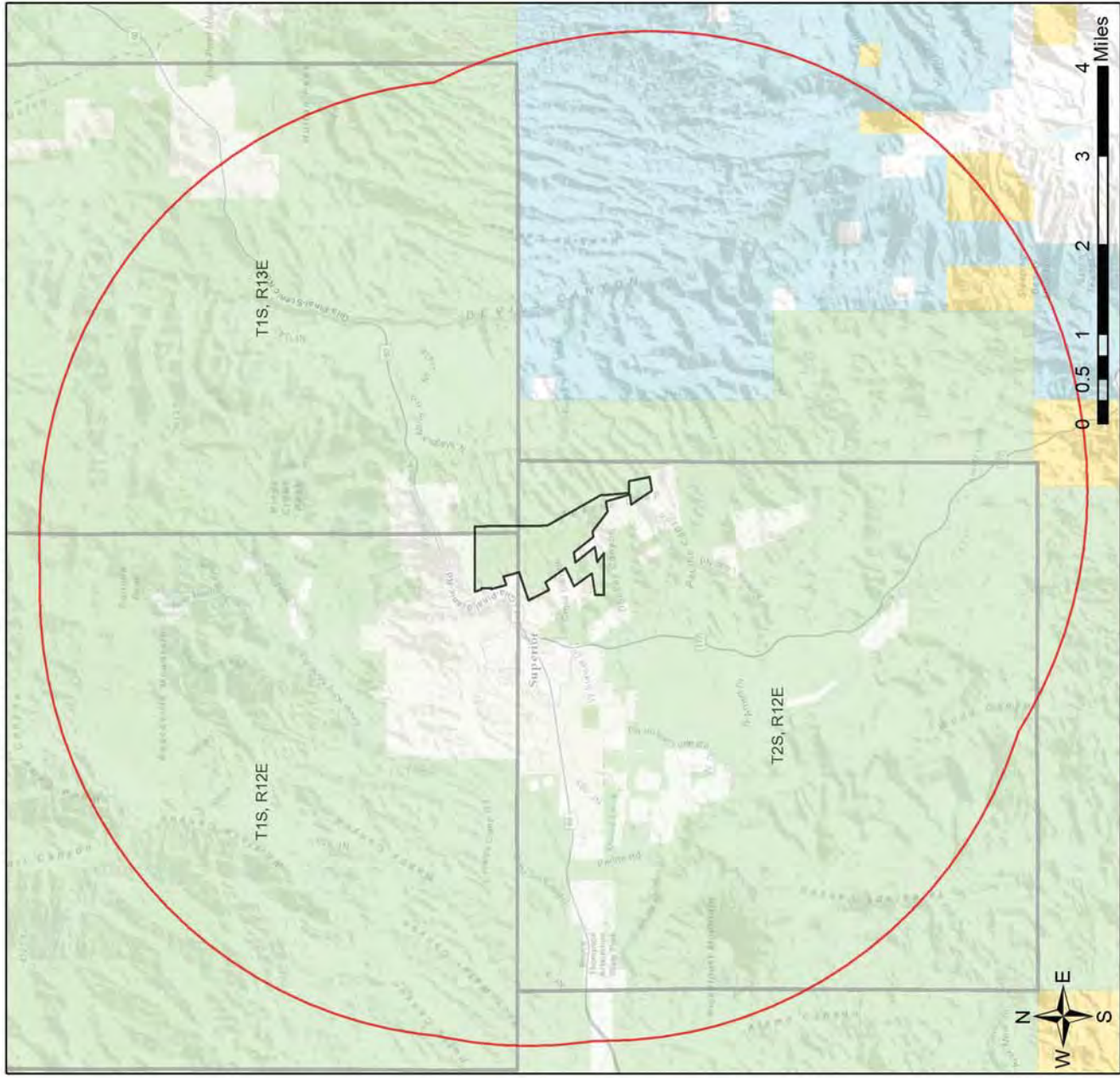
AGFD Region(s): Mesa

Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E

USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, Mapbox, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Apache Withdraw Topo Basemap With Township/Ranges and Land Ownership



	Project Boundary		Mixed/Other	Project Size (acres): 697.15
	Buffered Project Boundary		National Park/Mon.	Lat/Long (DD): 33.2879 / -111.0790
	Township/Ranges		Private	County(s): Pinal
	AZ Game and Fish Dept.		State and Regional Parks	AGFD Region(s): Mesa
	BLM		State Trust	Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E
	BOR		US Forest Service	USGS Quad(s): SUPERIOR
	Indian Res.		Wildlife Area/Refuge	
	Military			

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Abutilon parishii</i>	Pima Indian Mallow	SC	S	S	SR	
<i>Agosia chrysogaster chrysogaster</i>	Gila Longfin Dace	SC	S	S		1B
<i>Aquila chrysaetos</i>	Golden Eagle	BGA	S			1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
CH for Gila intermedia	Gila chub Designated Critical Habitat					
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Echinocereus triglochidiatus</i> var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC	S	S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	CCA	S			1A
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Agosia chrysogaster</i>	Longfin Dace	SC	S			1B
<i>Aix sponsa</i>	Wood Duck					1B
<i>Ammodramus savannarum perpallidus</i>	Western Grasshopper Sparrow					1B
<i>Ammospermophilus harrisi</i>	Harris' Antelope Squirrel					1B
<i>Anaxyrus microscaphus</i>	Arizona Toad	SC				1B
<i>Anthus spragueii</i>	Sprague's Pipit	C*				1A
<i>Aquila chrysaetos</i>	Golden Eagle	BGA	S			1B
<i>Aspidoscelis flagellicauda</i>	Gila Spotted Whiptail					1B
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	SC	S	S		1B
<i>Botaurus lentiginosus</i>	American Bittern					1B
<i>Buteo regalis</i>	Ferruginous Hawk	SC	S	S		1B
<i>Catostomus clarkii</i>	Desert Sucker	SC	S	S		1B
<i>Catostomus insignis</i>	Sonora Sucker	SC	S	S		1B
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii eximius</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae verbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Toxostoma lecontei	Le Conte's Thrasher					1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/TortoiseHandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://azgfa.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Appleton

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02995

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

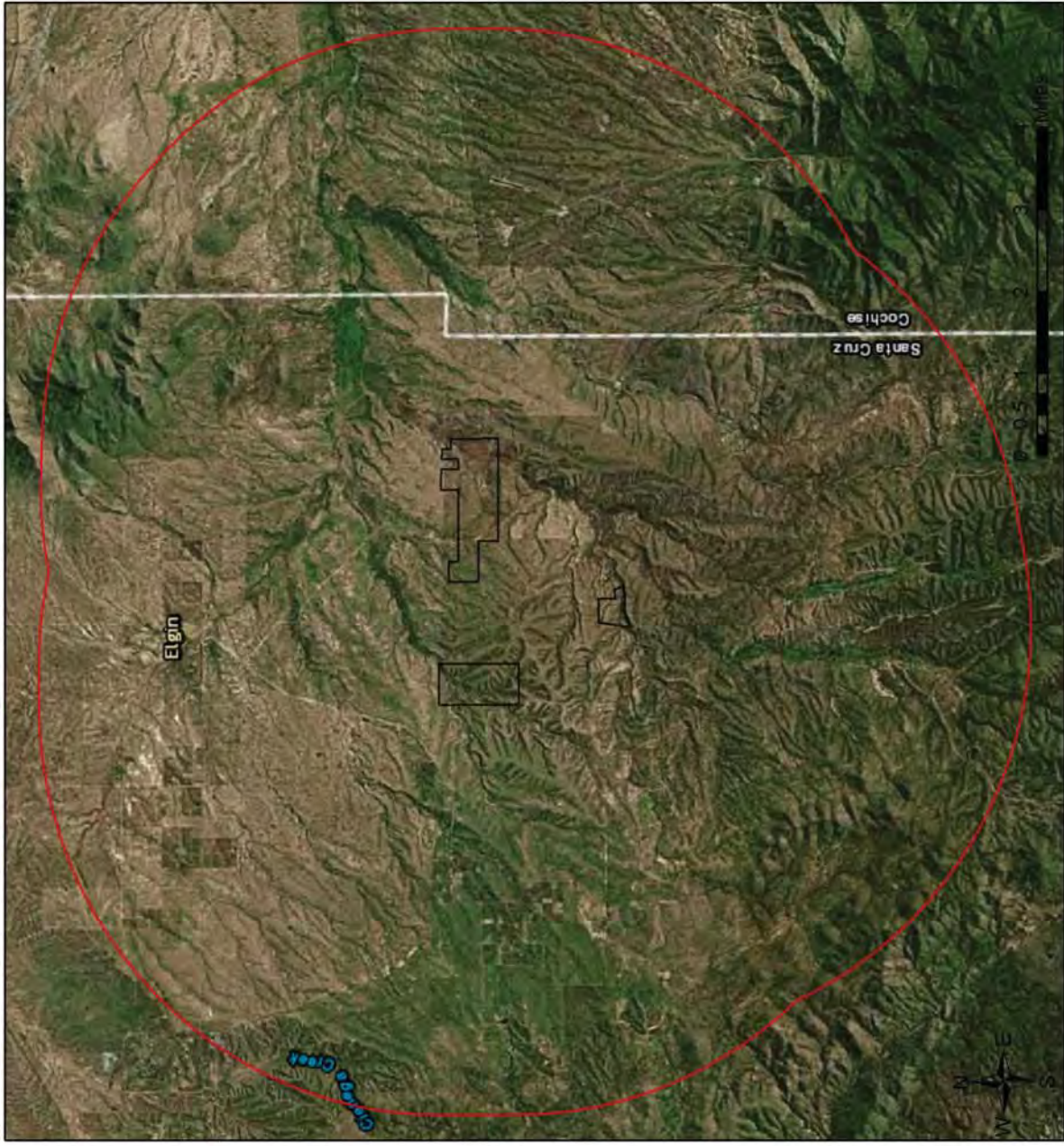
Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Appleton Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 955.82

Lat/Long (DD): 31.6080 / -110.4968

County(s): Santa Cruz

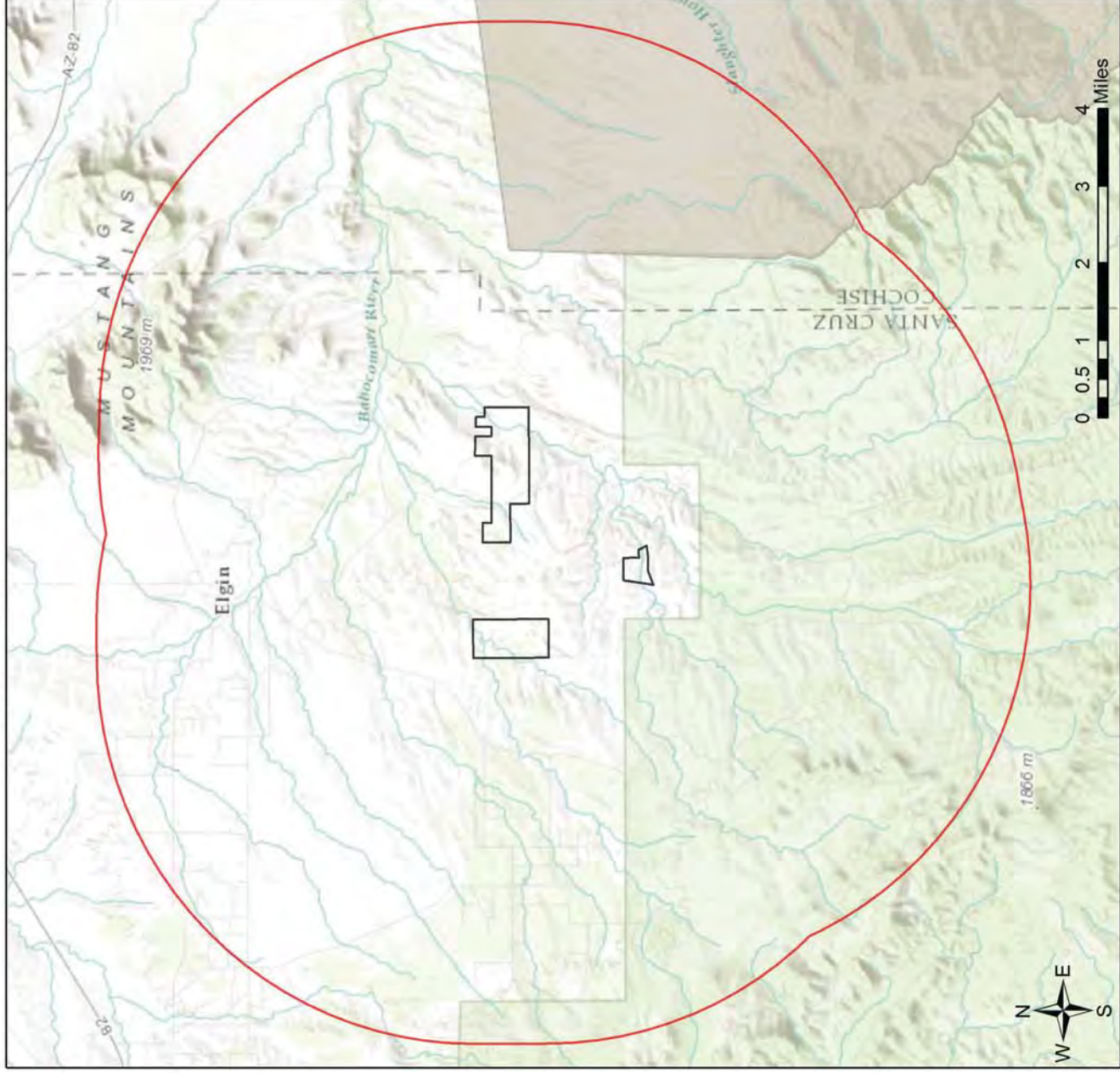
AGFD Region(s): Tucson


Township/Range(s): T21S, R18E


USGS Quad(s): PYEATT RANCH; O'DONNELL CANYON

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),

Land Exchange - Appleton Web Map As Submitted By User



 Project Boundary

 Buffered Project Boundary

Project Size (acres): 955.82

Lat/Long (DD): 31.6080 / -110.4968

County(s): Santa Cruz

AGFD Region(s): Tucson

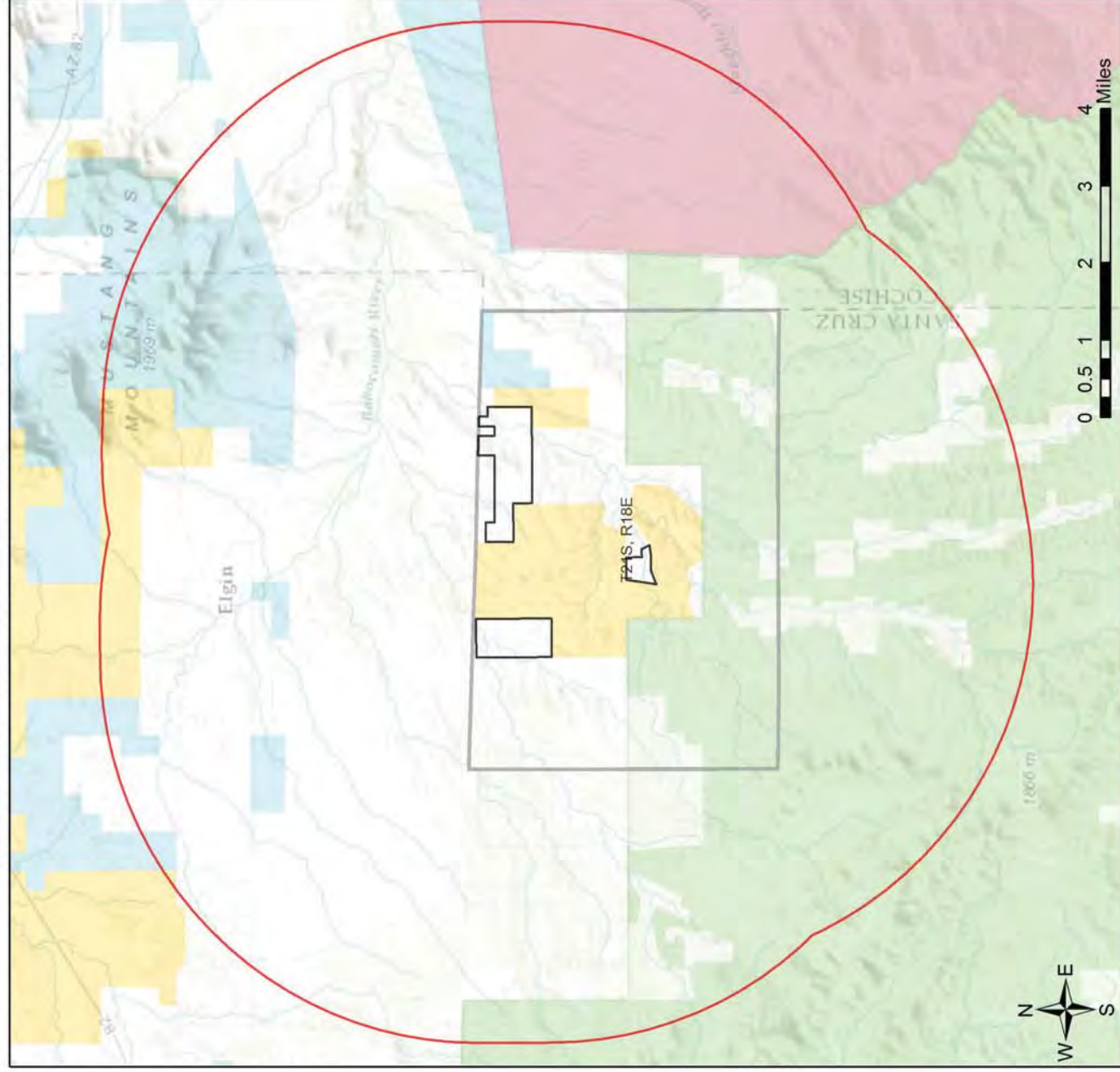
Township/Range(s): T21S, R18E
















USGS Quad(s): PYEATT RANCH; O'DONNELL CANYON

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Appleton

Topo Basemap With Township/Ranges and Land Ownership



	Project Boundary		Mixed/Other	Project Size (acres): 955.82
	Buffered Project Boundary		National Park/Mon.	Lat/Long (DD): 31.6080 / -110.4968
	Township/Ranges		Private	County(s): Santa Cruz
	AZ Game and Fish Dept.		State and Regional Parks	AGFD Region(s): Tucson
	BLM		State Trust	Township/Range(s): T21S, R18E
	BOR		US Forest Service	USGS Quad(s): PYEATT RANCH; O'DONNELL CANYON
	Indian Res.		Wildlife Area/Refuge	
	Military			

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysoaster chrysoaster	Gila Longfin Dace	SC		S		1B
Allium glandulosum	Gland Onion				SR	
Ammodramus bairdii	Baird's Sparrow	SC	S			1C
Ammodramus savannarum ammolegus	Arizona grasshopper sparrow		S	S		1B
Anthus spragueii	Sprague's Pipit	C*				1A
Appleton-Whittell Research Ranch of the National Audubon Society	Important Bird Area					
Asclepias uncialis	Greene Milkweed	SC	S			
Baiomys taylori	Northern Pygmy Mouse		S			
Bat Colony						
Browallia eludens	Bush-violet	SC	S			
Buteo plagiatus	Gray Hawk	SC				
CH for Gila intermedia	Gila chub Designated Critical Habitat					
CH for Panthera onca	Jaguar Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican spotted owl Designated Critical Habitat					
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Choeronycteris mexicana	Mexican Long-tongued Bat	SC	S	S		1C
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Coursetia glabella	Smooth Baby-bonnets	SC	S			
Crotalus lepidus klauberi	Banded Rock Rattlesnake					1A
Crotalus willardi willardi	Arizona Ridge-nosed Rattlesnake		S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinomastus intertextus	White Fishhook Cactus				SR	
Erigeron arisolius	Arid Throne Fleabane		S			
Gila intermedia	Gila Chub	LE				1A
Huachuca Mountains, Coronado National Forest	Important Bird Area					
Hyla wrightorum (Huachuca/Canelo Hills Pop.)	Arizona Treefrog (Huachuca/Canelo DPS)	C,DPS	S			1A
Lasiurus blossevillii	Western Red Bat		S			1B
Leptonycteris curasoae yerbabuena	Lesser Long-nosed Bat	LE				1A
Lilaeopsis schaffneriana ssp. recurva	Huachuca Water-umbel	LE			HS	
Lithobates chiricahuensis	Chiricahua Leopard Frog	LT				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Lobelia fenestralis	Leafy Lobelia					SR

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Myotis velifer	Cave Myotis	SC		S		1B
PCH for Thamnophis eques megalops	Northern Mexican gartersnake Proposed Critical Habitat					
Patagonia - Santa Rita Linkage Design	Wildlife Corridor					
Pectis imberbis	Beardless Chinch Weed	SC	S			
PheMERanthus humilis	Pinos Altos Flameflower	SC	S		SR	
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Pyrgulopsis thompsoni	Huachuca Springsnail	C*	S	S		1A
Santa Rita - Tumacacori Linkage Design	Wildlife Corridor					
Sceloporus slevini	Slevin's Bunchgrass Lizard		S	S		1B
Senticolis triaspis intermedia	Northern Green Ratsnake		S			1B
Spiranthes delitescens	Canelo Hills Ladies'-tresses	LE			HS	
Terrapene ornata luteola	Desert Box Turtle			S		1A
Thamnophis eques megalops	Northern Mexican Gartersnake	LT	S			1A
Tragia laciniata	Sonoran Noseburn		S			

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Amazilia violiceps	Violet-crowned Hummingbird		S			1B
Ambystoma mavortium stebbinsi	Sonoran Tiger Salamander	LE				1A
Ammodramus savannarum ammolegus	Arizona grasshopper sparrow		S	S		1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anthus spragueii	Sprague's Pipit	C*				1A
Antilocapra americana americana	America Pronghorn					1B
Antronostomus ridgwayi	Buff-collared Nighthawk		S			1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cucularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccythraustes vespertinus</i>	Evening Grosbeak					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallascens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Craugastor augusti</i>	Barking Frog					1B
<i>Crotalus lepidus</i>	Rock Rattlesnake					1A
<i>Crotalus pricei</i>	Twin-spotted Rattlesnake		S			1A
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Crotalus willardi</i>	Ridge-nosed Rattlesnake	PS				1A
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog	SC		S		1A
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax fulvifrons pygmaeus</i>	Northern Buff-breasted Flycatcher	SC	S			1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Glaucidium gnoma gnoma</i>	Northern Pygmy-owl					1B
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Hyla wrightorum</i> (Huachuca/Canelo Hills Pop.)	Arizona Treefrog (Huachuca/Canelo DPS)	C,DPS	S			1A
<i>Hypsiglena sp. nov.</i>	Hooded Nightsnake					1B
<i>Inciilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lampornis clemenciae</i>	Blue-throated Hummingbird					1B
<i>Lampropeltis getula nigrita</i>	Western Black Kingsnake					1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates chiricahuensis</i>	Chiricahua Leopard Frog	LT				1A
<i>Lithobates tarahumarae</i>	Tarahumara Frog	SC	S			1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Megascops trichopsis</i>	Whiskered Screech-owl		S			1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Meleagris gallopavo mexicana</i>	Gould's Turkey		S			1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher					1B
<i>Myiodynastes luteiventris</i>	Sulphur-bellied Flycatcher		S			1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Notiosorex cockrumi</i>	Cockrum's Desert Shrew					1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Pachyramphus aglaiae</i>	Rose-throated Becard		S			1B
<i>Panthera onca</i>	Jaguar			LE		1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucea botterii arizonae</i>	Arizona Botteri's Sparrow			S		1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Picoides arizonae</i>	Arizona Woodpecker		S			1B
<i>Poecilopsis occidentalis occidentalis</i>	Gila Topminnow			LE		1A
<i>Poliptila nigriceps</i>	Black-capped Gnatcatcher					1B
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Pyrgulopsis thompsoni</i>	Huachuca Springsnail	C*	S	S		1A
<i>Sceloporus slevini</i>	Slevin's Bunchgrass Lizard		S	S		1B
<i>Sciurus arizonensis</i>	Arizona Gray Squirrel					1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Sialia sialis fulva</i>	Azure Bluebird					1B
<i>Sorex arizonae</i>	Arizona Shrew	SC	S			1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Tantilla wilcoxi</i>	Chihuahuan Black-headed Snake		S			1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Thamnophis eques megalops	Northern Mexican Gartersnake	PT	S			1A
Thomomys umbrinus intermedius	Southern Pocket Gopher					1B
Troglodytes pacificus	Pacific Wren					1B
Trogon elegans	Elegant Trogon		S			1B
Tyrannus crassirostris	Thick-billed Kingbird		S			1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Antilocapra americana americana	America Pronghorn					1B
Callipepla gambelii	Gambel's Quail					
Callipepla squamata	Scaled Quail					1C
Cyrtonyx montezumae	Montezuma Quail					1C
Meleagris gallopavo	Wild Turkey					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Sciurus nayaritensis	Mexican Fox Squirrel					
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Analysis indicates that your project is located in the vicinity of an identified wildlife habitat linkage corridor. Project planning and implementation efforts should focus on maintaining adequate opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: <http://www.corridordesign.org/arizona>. Please contact your local Arizona Game and Fish Department Regional Office for specific project recommendations: http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Cave Creek

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02992

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Cave Creek Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 149.18

Lat/Long (DD): 33.9360 / -111.9504

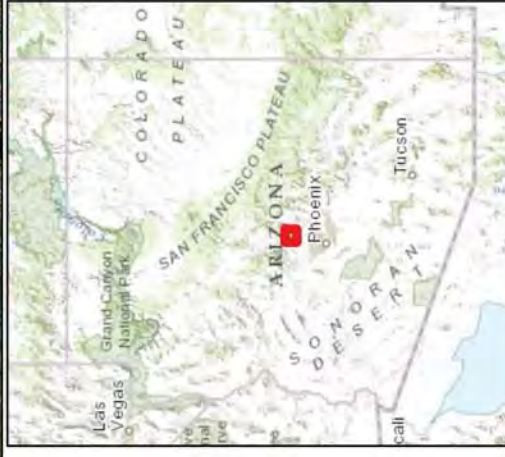
County(s): Maricopa

AGFD Region(s): Mesa

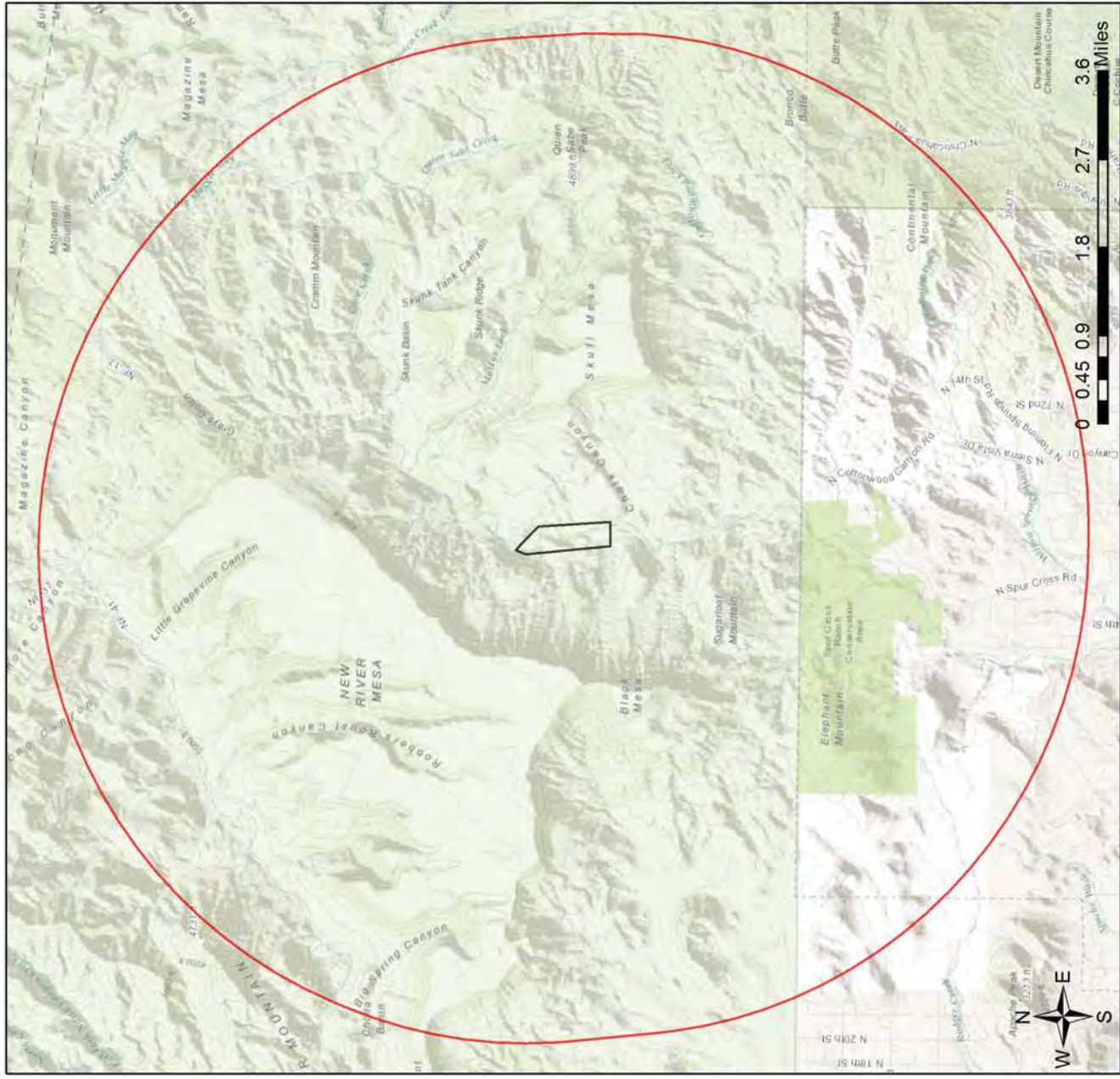
Township/Range(s): T7N, R4E


USGS Quad(s): NEW RIVER MESA

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),




Land Exchange - Cave Creek Web Map As Submitted By User



 Project Boundary

Project Size (acres): 149.18

 Buffered Project Boundary

Lat/Long (DD): 33.9360 / -111.9504

County(s): Maricopa

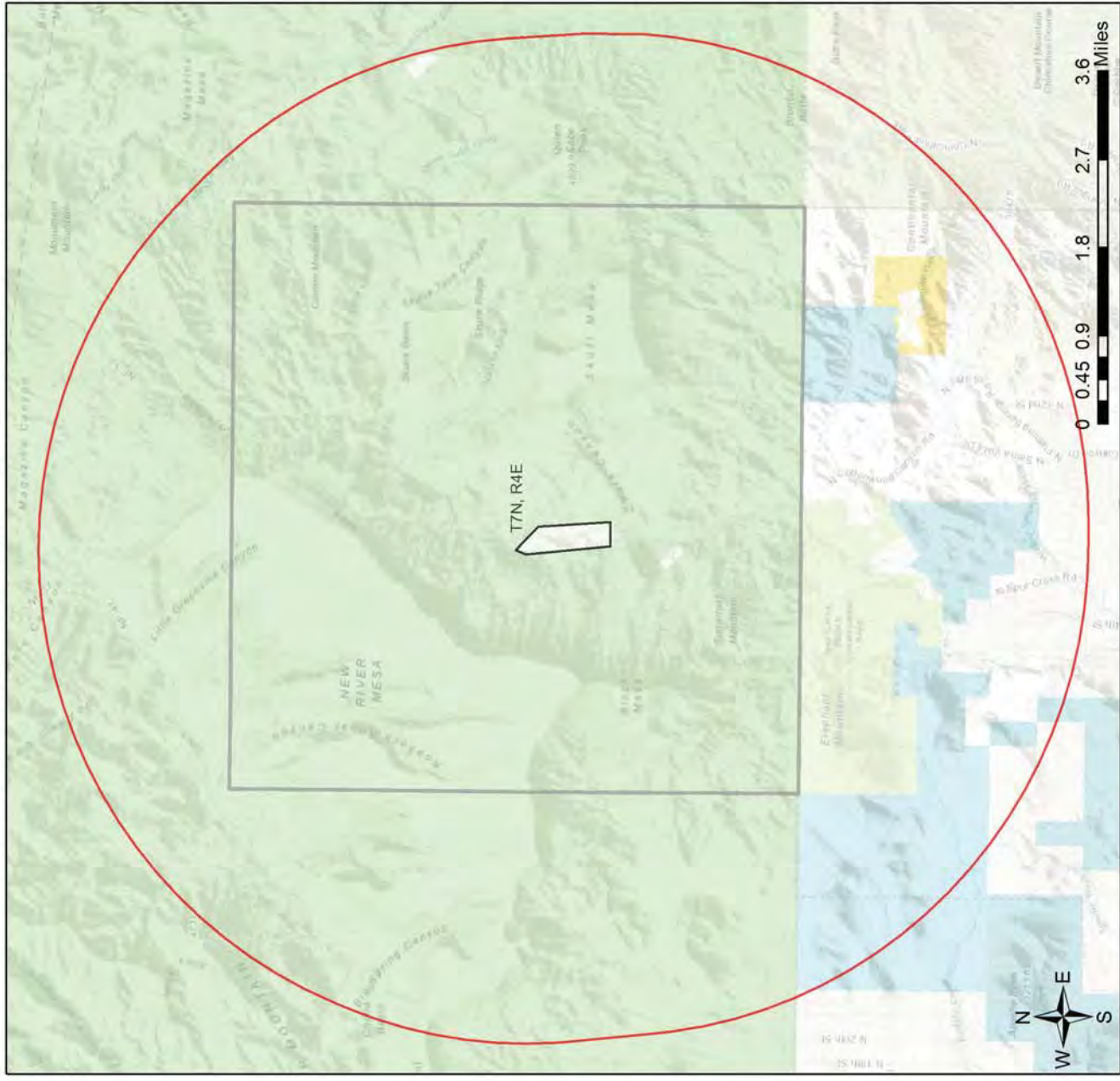
AGFD Region(s): Mesa

Township/Range(s): T7N, R4E

USGS Quad(s): NEW RIVER MESA

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Cave Creek Topo Basemap With Township/Ranges and Land Ownership



	Project Boundary		Mixed/Other	Project Size (acres): 149.18
	Buffered Project Boundary		National Park/Mon.	Lat/Long (DD): 33.9360 / -111.9504
	Township/Ranges		Private	County(s): Maricopa
	AZ Game and Fish Dept.		State and Regional Parks	AGFD Region(s): Mesa
	BLM		State Trust	Township/Range(s): T7N, R4E
	BOR		US Forest Service	USGS Quad(s): NEW RIVER MESA
	Indian Res.		Wildlife Area/Refuge	
	Military			

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agave murpheyi	Hohokam Agave	SC	S	S	HS	
Agave toumeyana var. bella	Toumey Agave				SR	
Agave x arizonica	Arizona agave	No status			HS	
Agosia chrysoygaster chrysoygaster	Gila Longfin Dace	SC	S	S	1B	1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Aquila chrysaetos	Golden Eagle	BGA	S	S		1B
Cave Creek Riparian Maricopa County	Important Bird Area					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Heuchera eastwoodiae	Senator Mine Alumroot	S				
Lasiurus blossevillii	Western Red Bat	S				1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mammillaria viridiflora	Varied Fishhook Cactus				SR	
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysoygaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Aquila chrysaetos	Golden Eagle	BGA	S	S		1B
Athene cucularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Corynorhinus townsendii pallascens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Inciilius alvarius</i>	Sonoran Desert Toad					1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Lontra canadensis lataxina</i>	Southeastern River Otter					1B
<i>Lontra canadensis sonora</i>	Southwestern River Otter	SC				1B
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Maricopella allynsmithi</i>	Squaw Park Talussnail	SC				1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melozone aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Perognathus longimembris</i>	Little Pocket Mouse					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Rhinichthys osculus	Speckled Dace	SC		S		1B
Sciurus arizonensis	Arizona Gray Squirrel					1B
Setophaga petechia	Yellow Warbler					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Devils Canyon_Hand drawn

User Project Number:

AA Vicinity

Project Description:

AA Vicinity

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03091

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Devils Canyon_Hand drawn Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 2,811.36

Lat/Long (DD): 33.2642 / -111.0194

County(s): Pinal

AGFD Region(s): Mesa

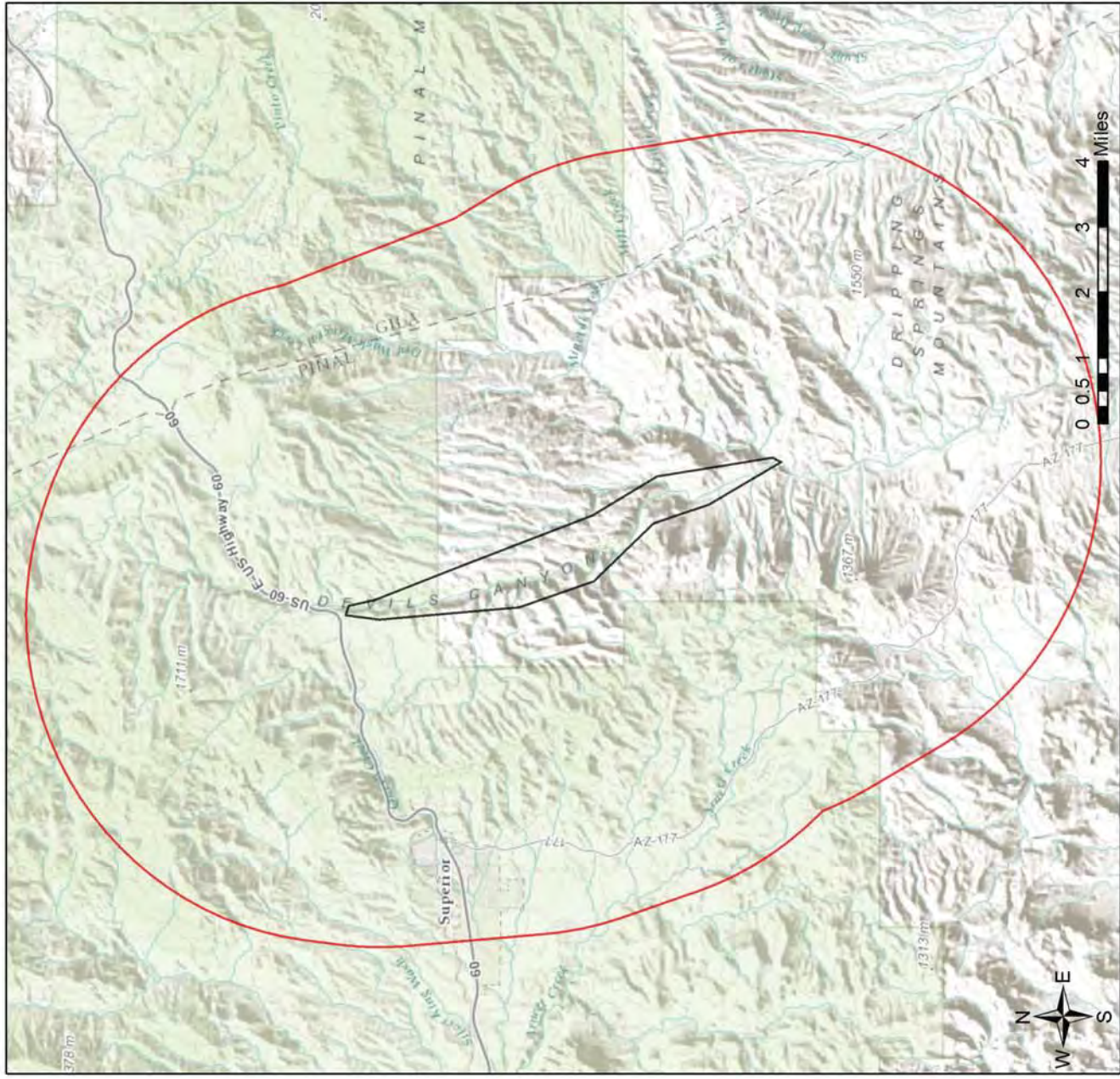
Township/Range(s): T1S, R13E; T2S, R13E

USGS Quad(s): SUPERIOR; TEAPOT MOUNTAIN +

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Devils Canyon_Hand drawn Web Map As Submitted By User



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,811.36

Lat/Long (DD): 33.2642 / -111.0194

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R13E; T2S, R13E

USGS Quad(s): SUPERIOR; TEAPOT MOUNTAIN +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapboxIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
CH for Gila intermedia	Gila chub Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican spotted owl Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Myotis ciliolabrum	Western Small-footed Myotis	SC				
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Opuntia versicolor	Stag-horn Cholla				SR	
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccythraustes vespertinus</i>	Evening Grosbeak					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Lontra canadensis sonora</i>	Southwestern River Otter	SC				1B
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Melospiza lincolnii	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Microtus mexicanus	Mexican Vole					1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tuberculifer	Dusky-capped Flycatcher					1B
Myiodynastes luteiventris	Sulphur-bellied Flycatcher		S			1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Dripping Springs

Project Description:

Land exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02993

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Dripping Springs Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 159.63

Lat/Long (DD): 33.0974 / -110.8436

County(s): Gila; Pinal

AGFD Region(s): Mesa

Township/Range(s): T4S, R15E

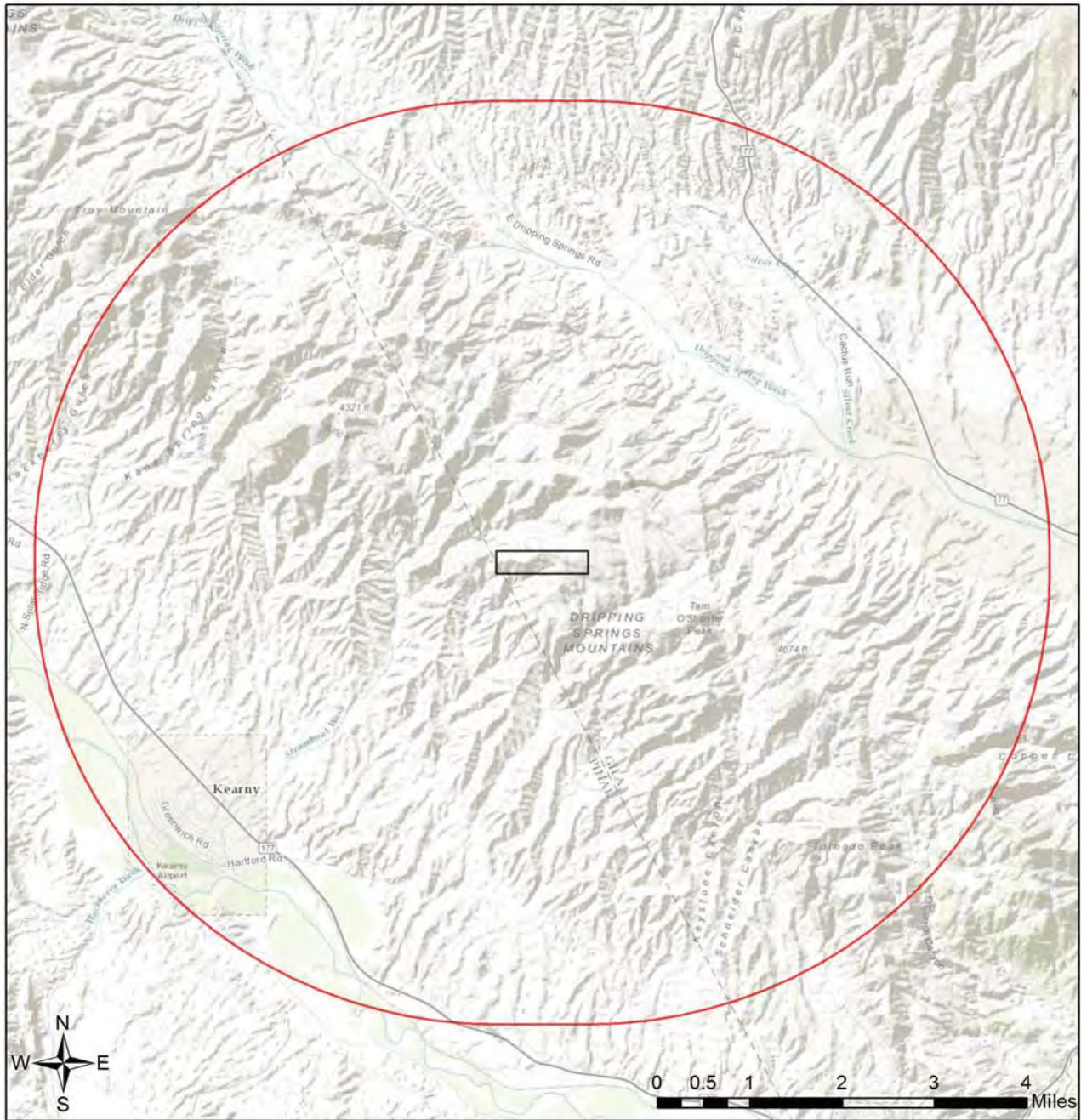
USGS Quad(s): HAYDEN



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - Dripping Springs

Web Map As Submitted By User



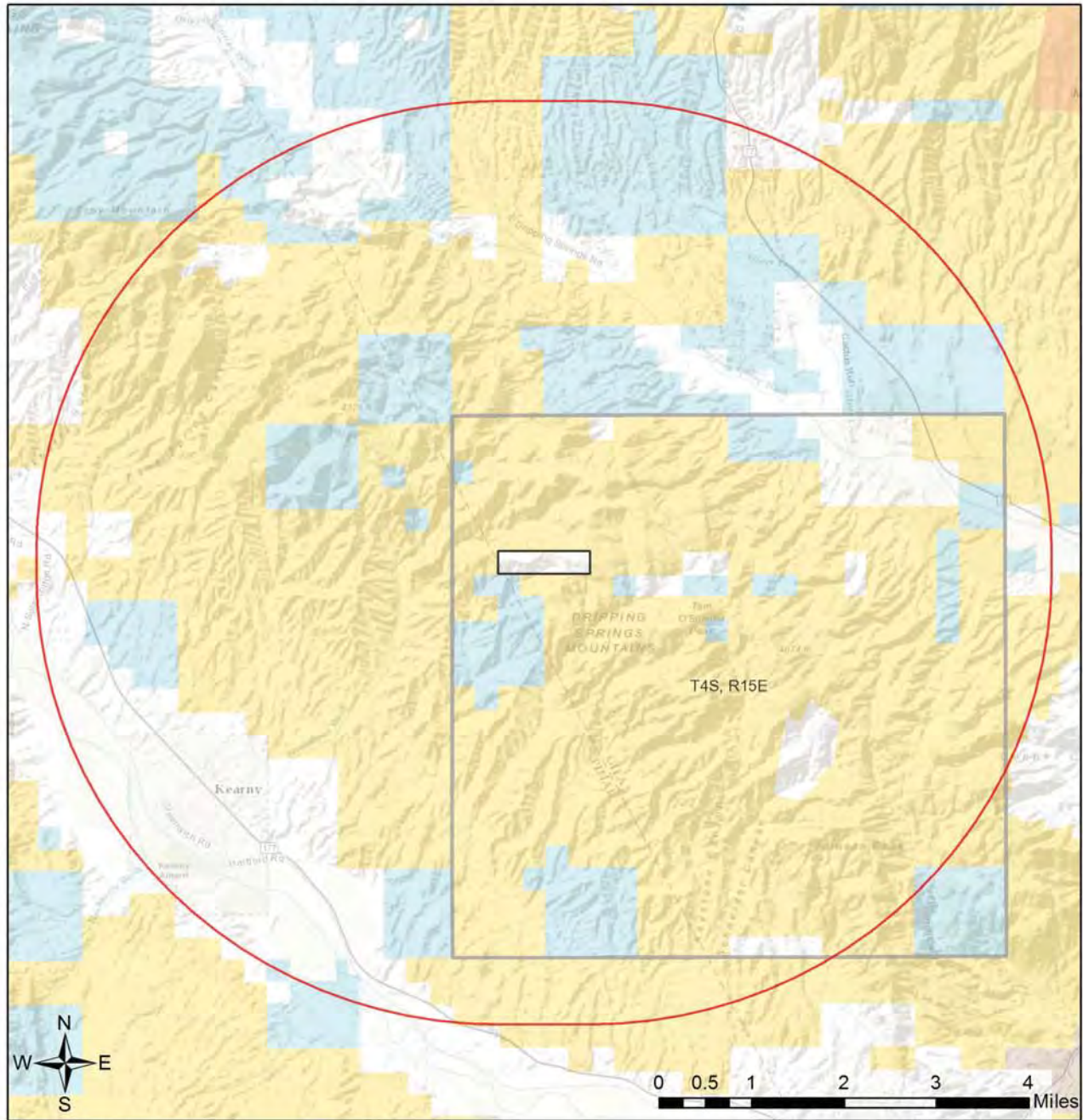
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 159.63
Lat/Long (DD): 33.0974 / -110.8436
County(s): Gila; Pinal
AGFD Region(s): Mesa
Township/Range(s): T4S, R15E
USGS Quad(s): HAYDEN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Dripping Springs

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 159.63
 Lat/Long (DD): 33.0974 / -110.8436
 County(s): Gila; Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T4S, R15E
 USGS Quad(s): HAYDEN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
CH for Empidonax traillii extimus	Southwestern willow flycatcher Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eriogonum capillare	San Carlos Wild-buckwheat	SC			SR	
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BG A	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Mammillaria viridiflora	Varied Fishhook Cactus				SR	
PCH for Coccyzus americanus	Yellow-billed Cuckoo Proposed Critical Habitat					
Terrapene ornata luteola	Desert Box Turtle			S		1A

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccothraustes vespertinus	Evening Grosbeak					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuenae</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher					1B
<i>Myiodynastes luteiventris</i>	Sulphur-bellied Flycatcher		S			1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Panthera onca</i>	Jaguar	LE				1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Troglodytes pacificus	Pacific Wren					1B
Tyrannus crassirostris	Thick-billed Kingbird		S			1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml .

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007

Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - East Clear Creek

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02994

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

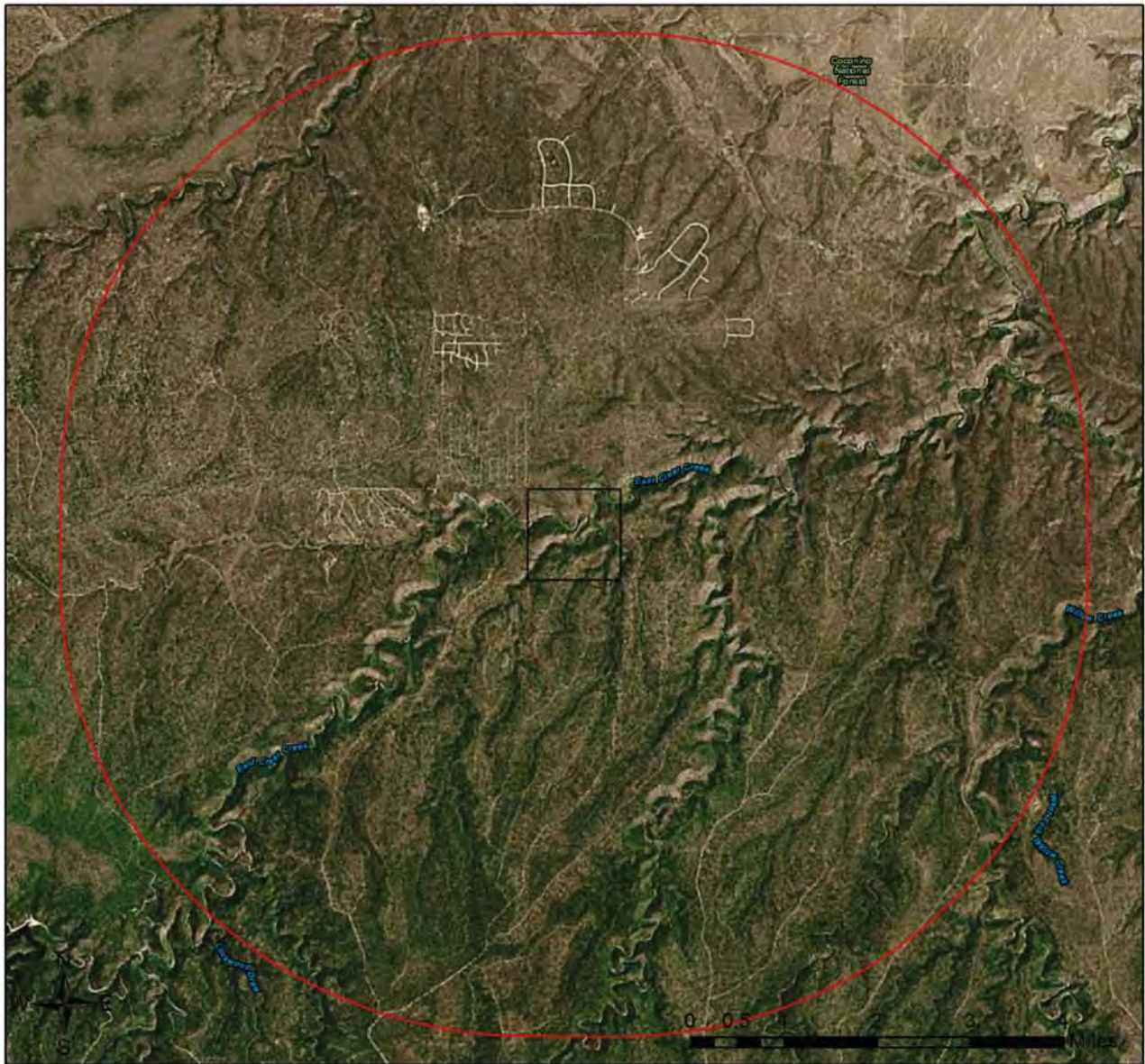
Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - East Clear Creek Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 633.87

Lat/Long (DD): 34.6167 / -111.0813

County(s): Coconino

AGFD Region(s): Flagstaff

Township/Range(s): T14N, R12E

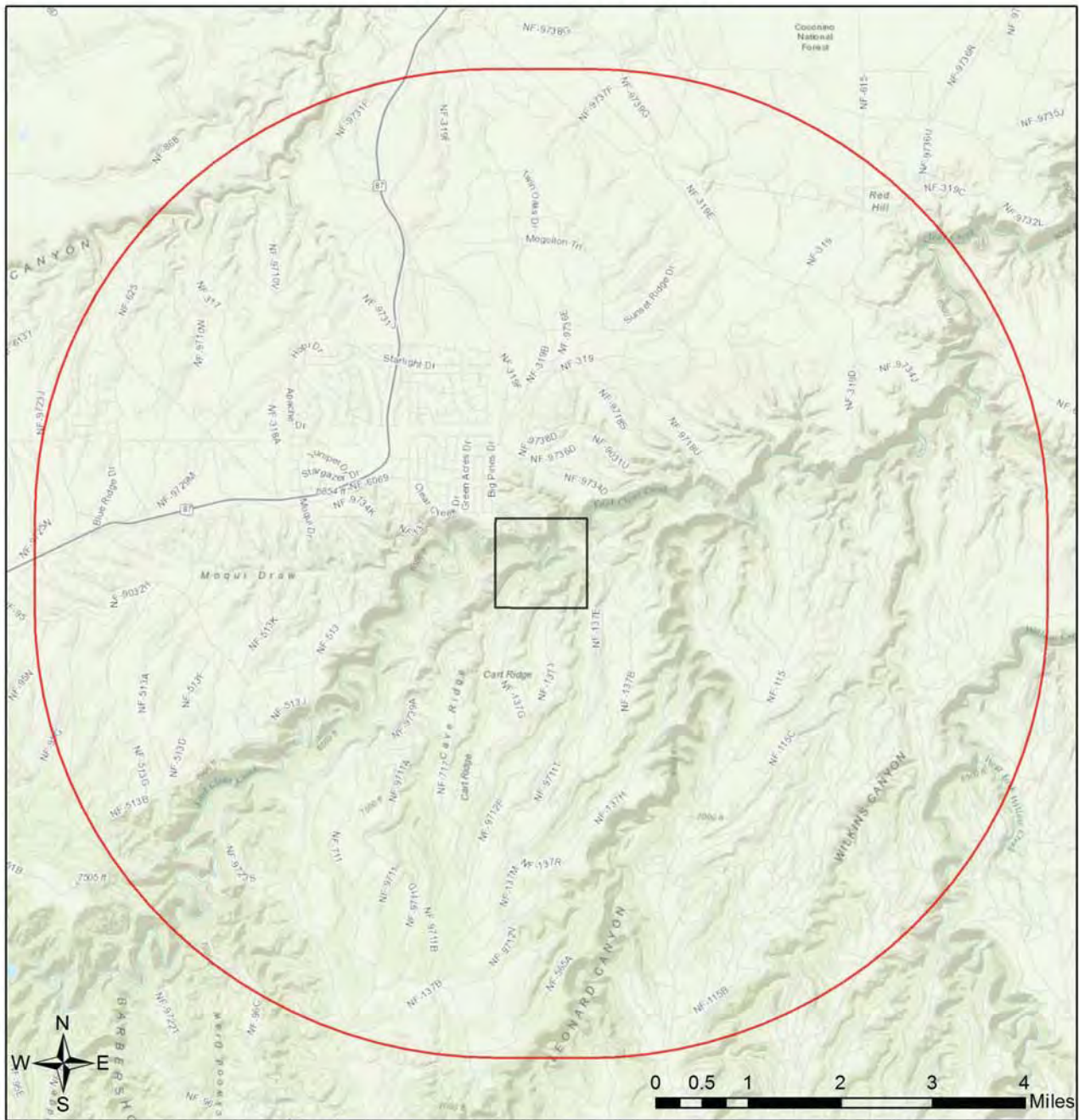
USGS Quad(s): LEONARD CANYON

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - East Clear Creek

Web Map As Submitted By User



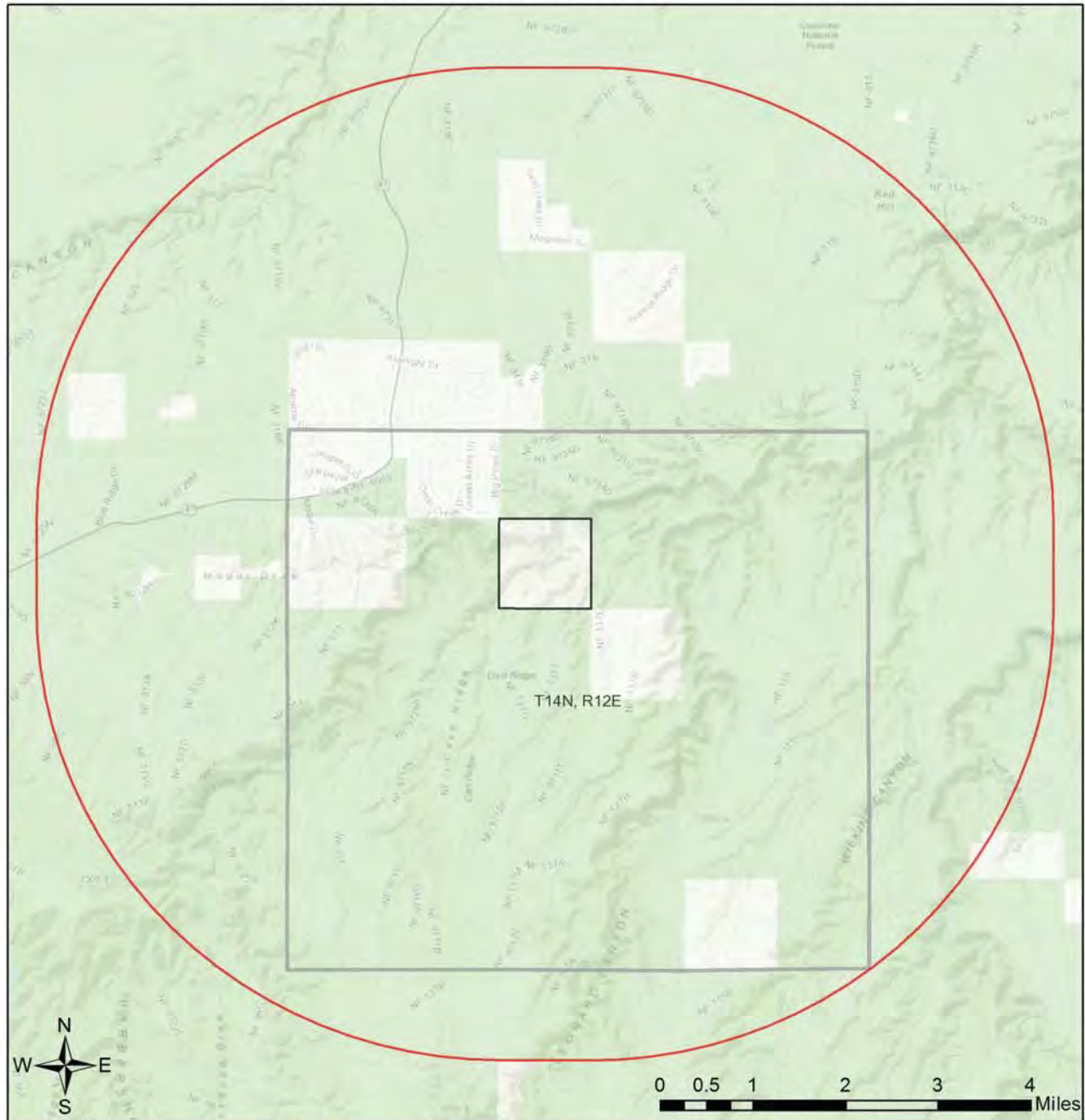
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 633.87
Lat/Long (DD): 34.6167 / -111.0813
County(s): Coconino
AGFD Region(s): Flagstaff
Township/Range(s): T14N, R12E
USGS Quad(s): LEONARD CANYON

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - East Clear Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 633.87
 Lat/Long (DD): 34.6167 / -111.0813
 County(s): Coconino
 AGFD Region(s): Flagstaff
 Township/Range(s): T14N, R12E
 USGS Quad(s): LEONARD CANYON

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Accipiter gentilis	Northern Goshawk	SC	S	S		1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anodonta californiensis	California Floater	SC	S			1A
CH for Lepidomeda vitatta	Little Colorado spinedace Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican spotted owl Designated Critical Habitat					
Catostomus sp. 3	Little Colorado Sucker	CCA	S	S		1A
Erigeron saxatilis	Rock Fleabane		S			
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC,BG A	S	S		1A
Lepidomeda vittata	Little Colorado Spinedace	LT				1A
Lithobates chiricahuensis	Chiricahua Leopard Frog	LT				1A
Lithobates pipiens	Northern Leopard Frog		S	S		1A
Rhinichthys osculus	Speckled Dace	SC		S		1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Accipiter gentilis atricapillus	Northern Goshawk	SC	S			1B
Ambystoma mavortium nebulosum	Arizona Tiger Salamander					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anodonta californiensis	California Floater	SC	S			1A
Antilocapra americana americana	America Pronghorn					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus discobolus	Bluehead Sucker	PS		S		1A
Catostomus sp. 3	Little Colorado Sucker	SC	S	S		1A
Chordeiles minor	Common Nighthawk					1B
Coccythraustes vespertinus	Evening Grosbeak					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B
Cynomys gunnisoni	Gunnison's Prairie Dog	SC		S		1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Geothlypis tolmiei	MacGillivray's Warbler					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay			S		1B
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lepidomeda vittata</i>	Little Colorado Spinedace	LT				1A
<i>Lithobates chiricahuensis</i>	Chiricahua Leopard Frog	LT				1A
<i>Lithobates pipiens</i>	Northern Leopard Frog		S	S		1A
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Mustela nigripes</i>	Black-footed Ferret	LE,XN				1A
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher					1B
<i>Myiodynastes luteiventris</i>	Sulphur-bellied Flycatcher		S			1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Neotamias cinereicollis</i>	Gray-collared Chipmunk					1B
<i>Neotoma stephensi</i>	Stephen's Woodrat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Rhinichthys osculus</i>	Speckled Dace	SC		S		1B
<i>Sciurus arizonensis</i>	Arizona Gray Squirrel					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vulpes macrotis</i>	Kit Fox					1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Antilocapra americana americana</i>	America Pronghorn					1B
<i>Cervus elaphus</i>	Elk					
<i>Meleagris gallopavo</i>	Wild Turkey					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Sciurus aberti</i>	Abert's Squirrel					

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Tamiasciurus hudsonicus mogollonensis	Red Squirrel					
Ursus americanus	American Black Bear					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

EPS Analysis Area

Project Description:

EPS

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Sarah Richman

Organization:

WestLand Resources

On Behalf Of:

CONSULTING

Project ID:

HGIS-04091

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

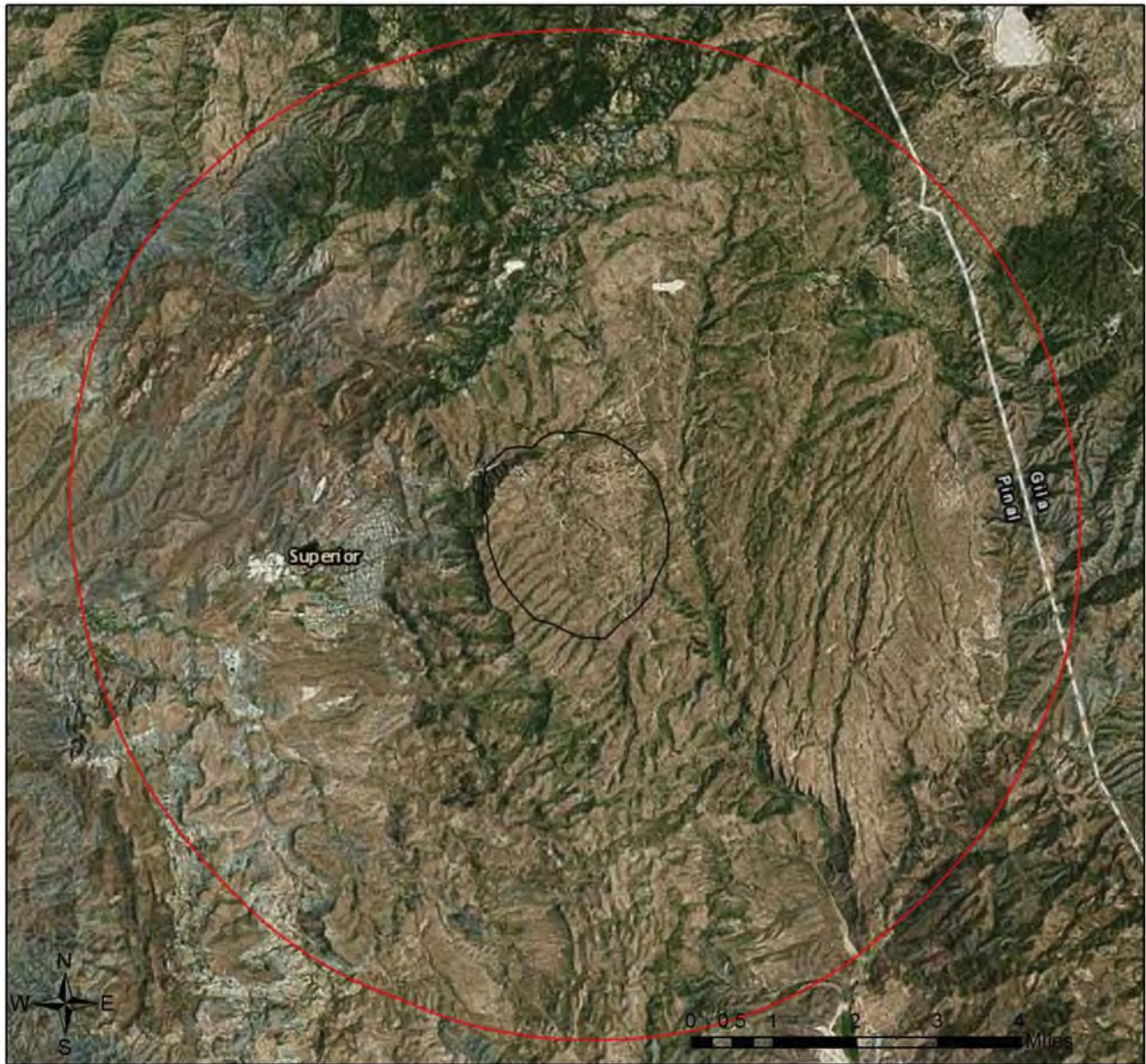
Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

EPS Analysis Area Aerial Image Basemap With Locator Map



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,863.19

Lat/Long (DD): 33.2946 / -111.0565

County(s): Pinal

AGFD Region(s): Mesa

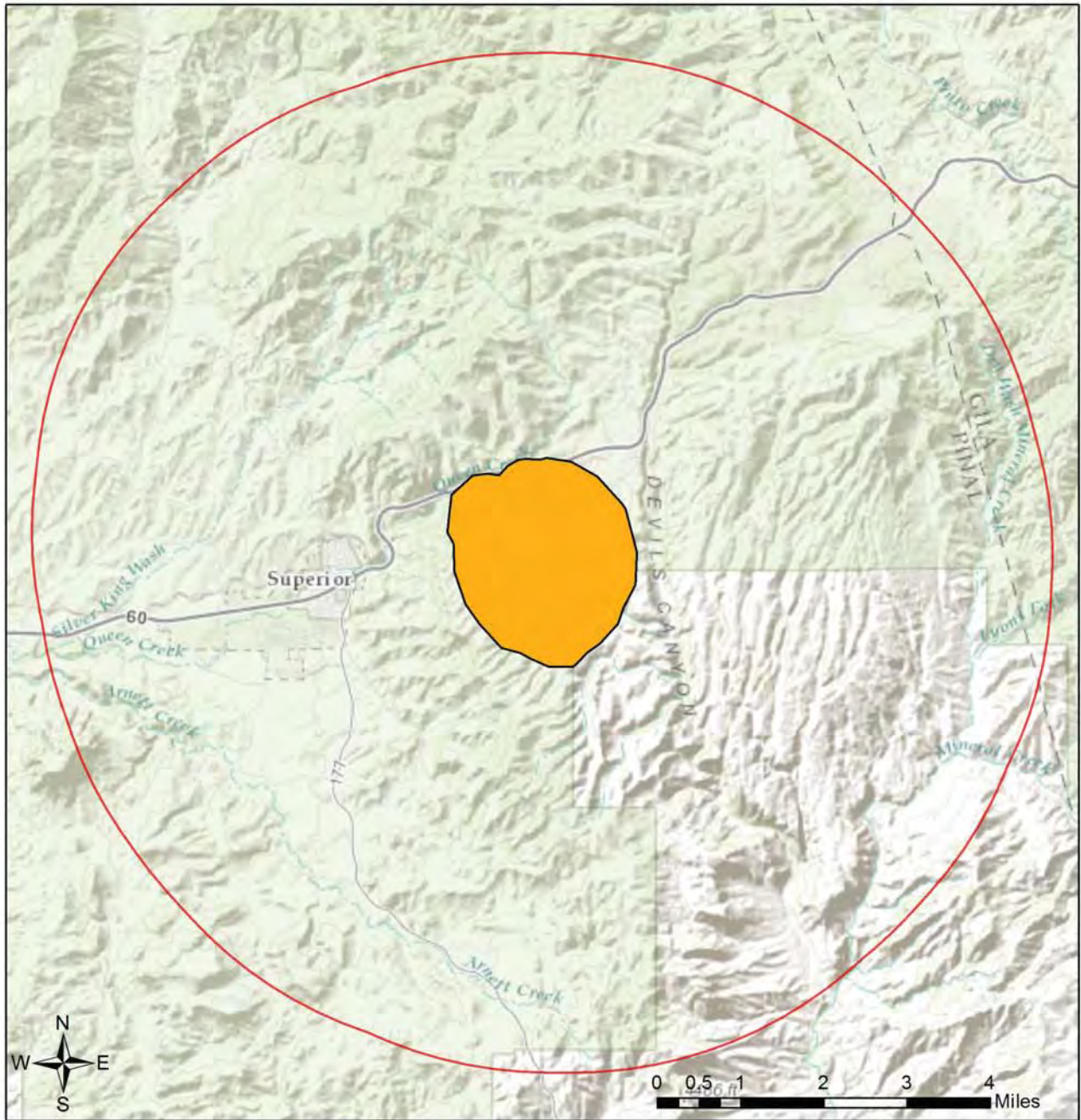
Township/Range(s): T1S, R13E; T1S, R12E; T2S, R13E +




USGS Quad(s): SUPERIOR

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



EPS Analysis Area Web Map As Submitted By User



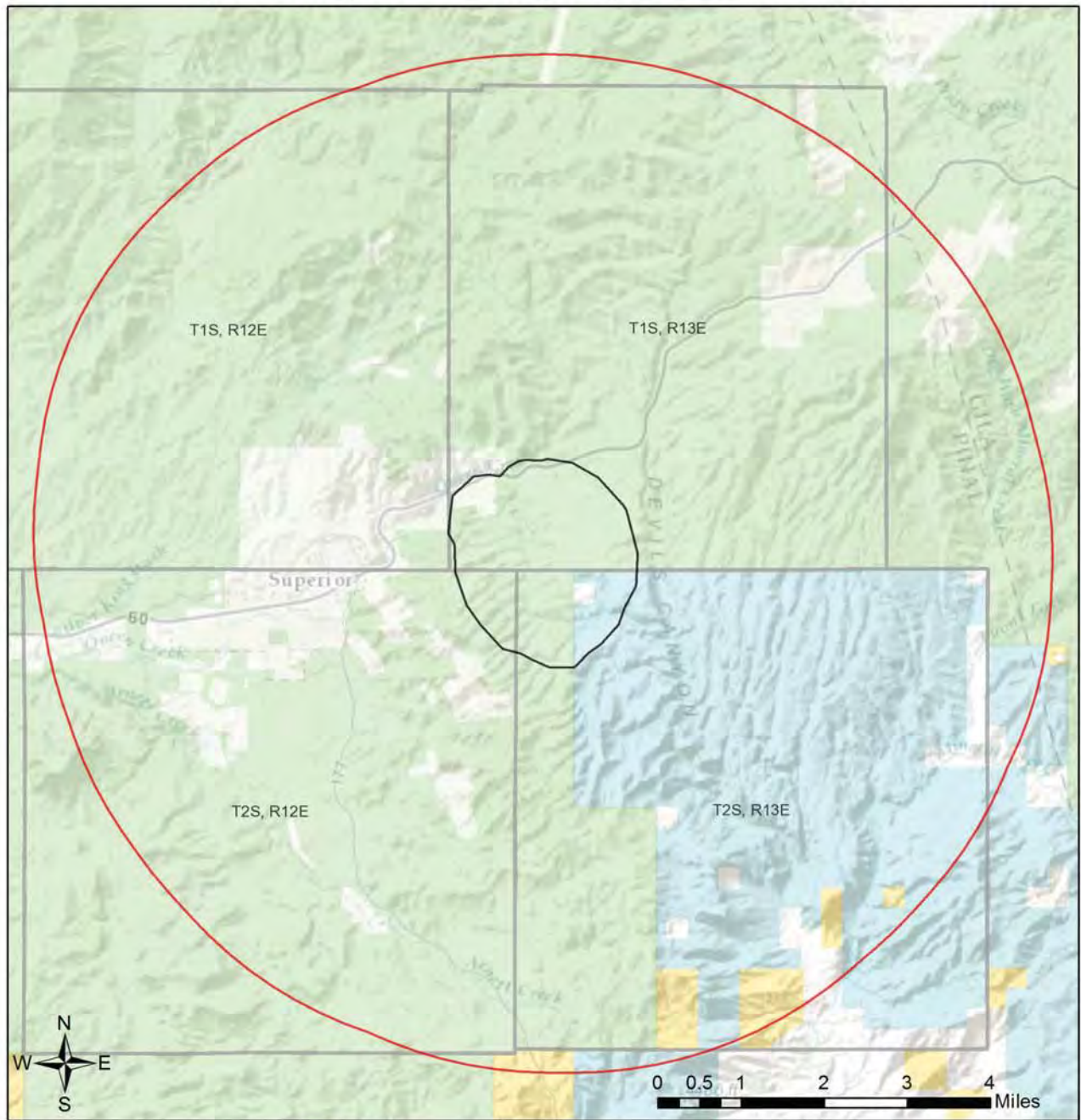
-  Project Boundary
-  Buffered Project Boundary
- 

Project Size (acres): 2,863.19
Lat/Long (DD): 33.2946 / -111.0565
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R13E; T1S, R12E; T2S, R13E +
USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

EPS Analysis Area

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,863.19
 Lat/Long (DD): 33.2946 / -111.0565
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R13E; T1S, R12E; T2S, R13E +
 USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
CH for Gila intermedia	Gila Chub Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican Spotted Owl Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis ciliolabrum	Western Small-footed Myotis	SC				
Myotis yumanensis	Yuma Myotis	SC				1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B
Crotalus tigris	Tiger Rattlesnake					1B
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eugenes fulgens	Magnificent Hummingbird					1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gila robusta	Roundtail Chub	C*	S			1A
Gopherus morafkai	Sonoran Desert Tortoise	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Ictinia mississippiensis	Mississippi Kite					1B
Idionycteris phyllotis	Allen's Lappet-browed Bat	SC	S	S		1B
Incilius alvarius	Sonoran Desert Toad					1B
Junco phaeonotus	Yellow-eyed Junco		S			1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris curasoae yerbabuena	Lesser Long-nosed Bat	LE				1A
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Lontra canadensis sonora	Southwestern River Otter	SC				1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Meda fulgida	Spikedace	LE				1A
Melanerpes uropygialis	Gila Woodpecker					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Melospiza lincolnii	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Microtus mexicanus	Mexican Vole					1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, <https://www.azgfd.com/agency/offices> or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

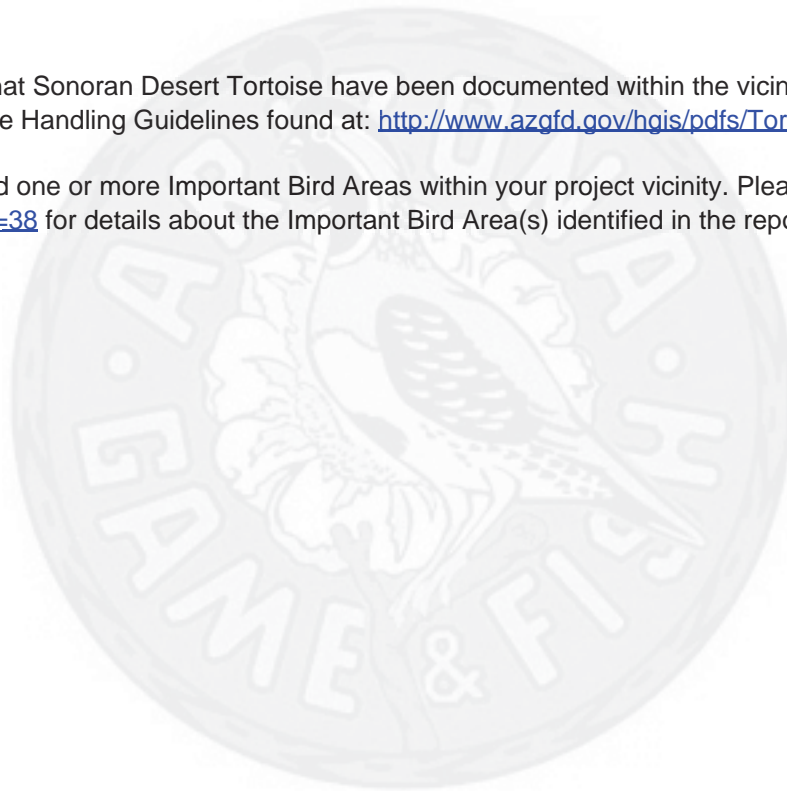
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Lower San Pedro

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03001

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Lower San Pedro Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 3,105.98

Lat/Long (DD): 32.7157 / -110.6278

County(s): Pinal

AGFD Region(s): Tucson

Township/Range(s): T8S, R17E; T8S, R16E; T9S, R17E

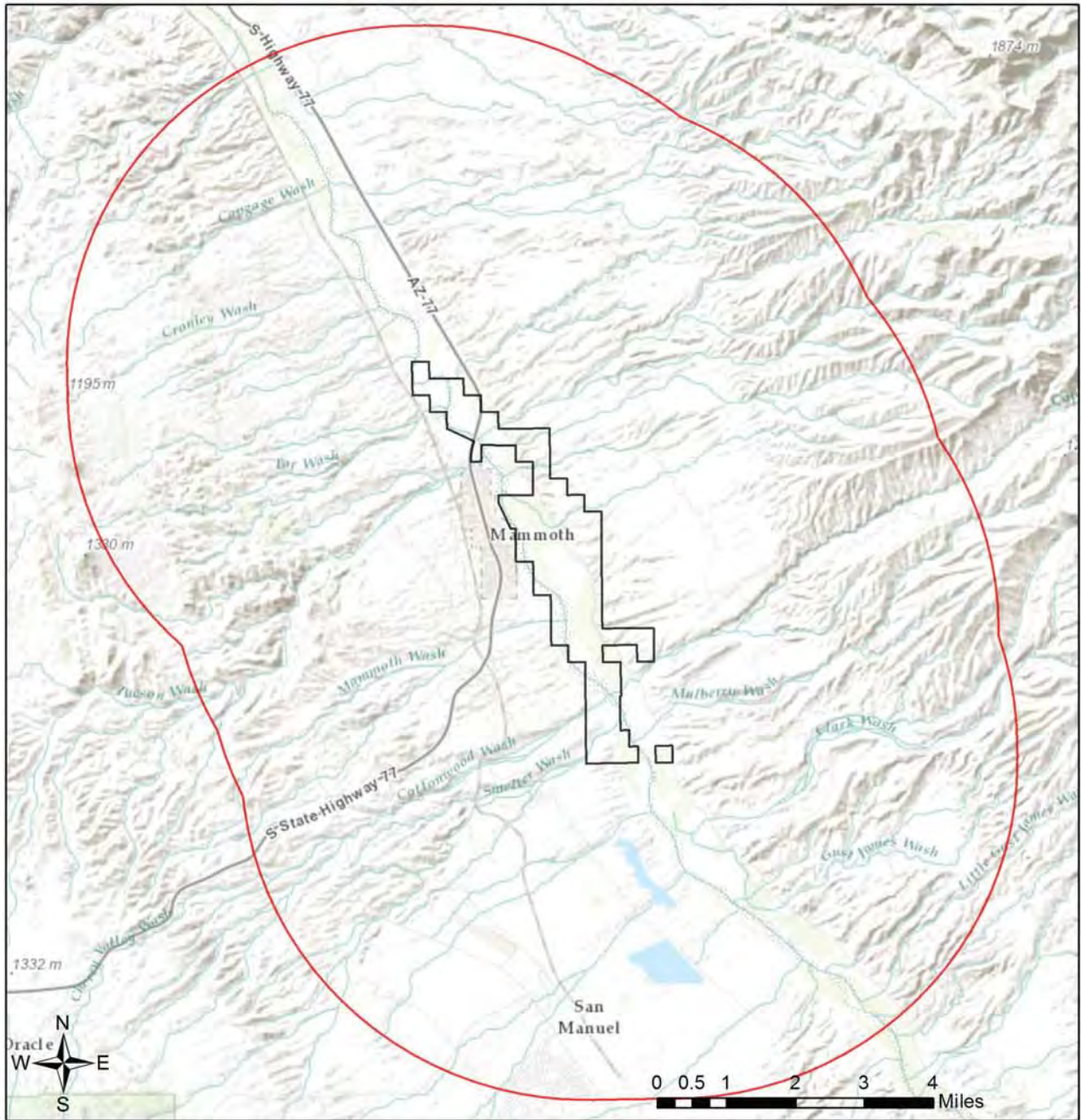
USGS Quad(s): LOOKOUT MOUNTAIN; CLARK RANCH +



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - Lower San Pedro

Web Map As Submitted By User



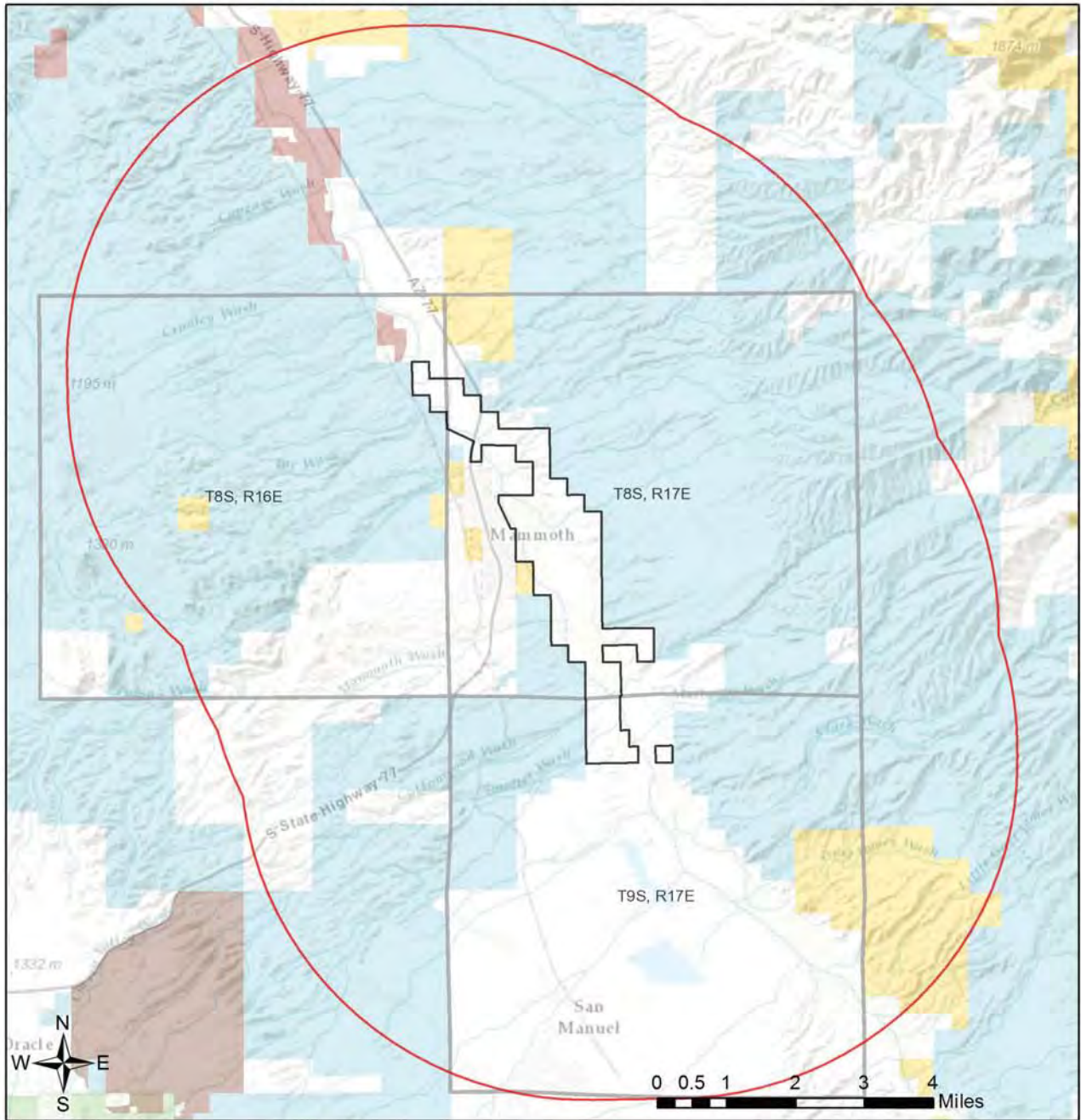
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 3,105.98
Lat/Long (DD): 32.7157 / -110.6278
County(s): Pinal
AGFD Region(s): Tucson
Township/Range(s): T8S, R17E; T8S, R16E; T9S, R17E
USGS Quad(s): LOOKOUT MOUNTAIN; CLARK RANCH +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Lower San Pedro

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 3,105.98
 Lat/Long (DD): 32.7157 / -110.6278
 County(s): Pinal
 AGFD Region(s): Tucson
 Township/Range(s): T8S, R17E; T8S, R16E; T9S, R17E
 USGS Quad(s): LOOKOUT MOUNTAIN; CLARK RANCH +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Buteo plagiatus	Gray Hawk	SC				
CH for Empidonax traillii extimus	Southwestern willow flycatcher Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eriogonum capillare	San Carlos Wild-buckwheat	SC			SR	
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Heloderma suspectum suspectum	Reticulate Gila Monster					1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Lower San Pedro River IBA	Important Bird Area					
Opuntia versicolor	Stag-horn Cholla				SR	
PCH for Coccyzus americanus	Yellow-billed Cuckoo Proposed Critical Habitat					
PCH for Thamnophis eques megalops	Northern Mexican gartersnake Proposed Critical Habitat					
Santa Catalina/Rincon - Galiuro Linkage Design	Wildlife Corridor					
Terrapene ornata luteola	Desert Box Turtle			S		1A
Tyrannus crassirostris	Thick-billed Kingbird		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog	SC		S		1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Hypsiglena sp. nov.</i>	Hooded Nightsnake					1B
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuenae</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates chiricahuensis</i>	Chiricahua Leopard Frog	LT				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Megascops trichopsis</i>	Whiskered Screech-owl		S			1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Meleagris gallopavo mexicana</i>	Gould's Turkey		S			1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Picoides arizonae	Arizona Woodpecker		S			1B
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Troglodytes pacificus	Pacific Wren					1B
Tyrannus crassirostris	Thick-billed Kingbird		S			1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Meleagris gallopavo	Wild Turkey					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Analysis indicates that your project is located in the vicinity of an identified wildlife habitat linkage corridor. Project planning and implementation efforts should focus on maintaining adequate opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: <http://www.corridordesign.org/arizona>. Please contact your local Arizona Game and Fish Department Regional Office for specific project recommendations: http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Lower MARRCO and Filter Plant

Project Description:

Lower MARRCO and Filter Plant

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Sarah Richman

Organization:

WestLand Resources

On Behalf Of:

CONSULTING

Project ID:

HGIS-04092

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

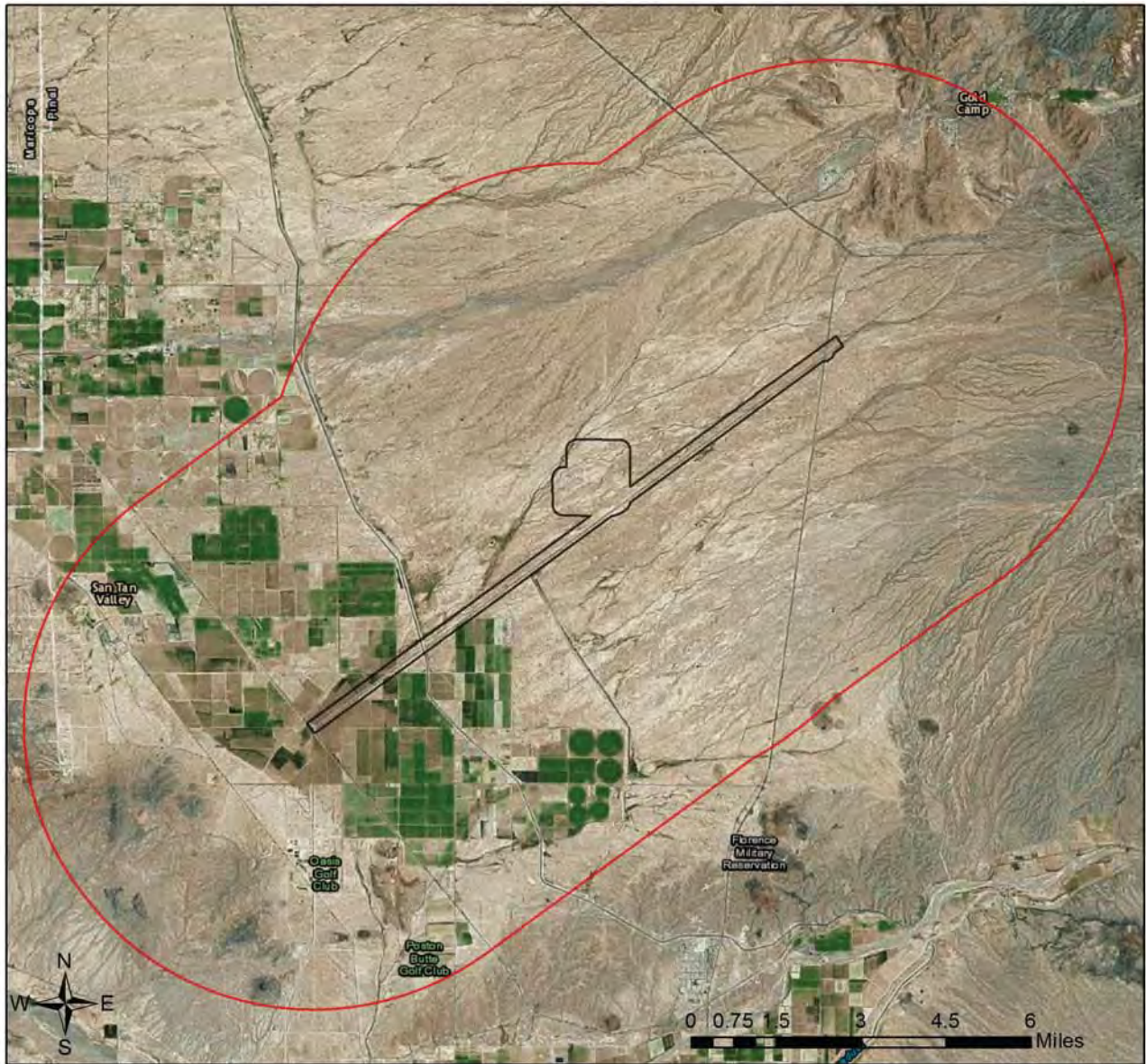
Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Lower MARRCO and Filter Plant Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 2,709.19

Lat/Long (DD): 33.1892 / -111.4176

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T2S, R10E; T2S, R9E; T3S, R8E +

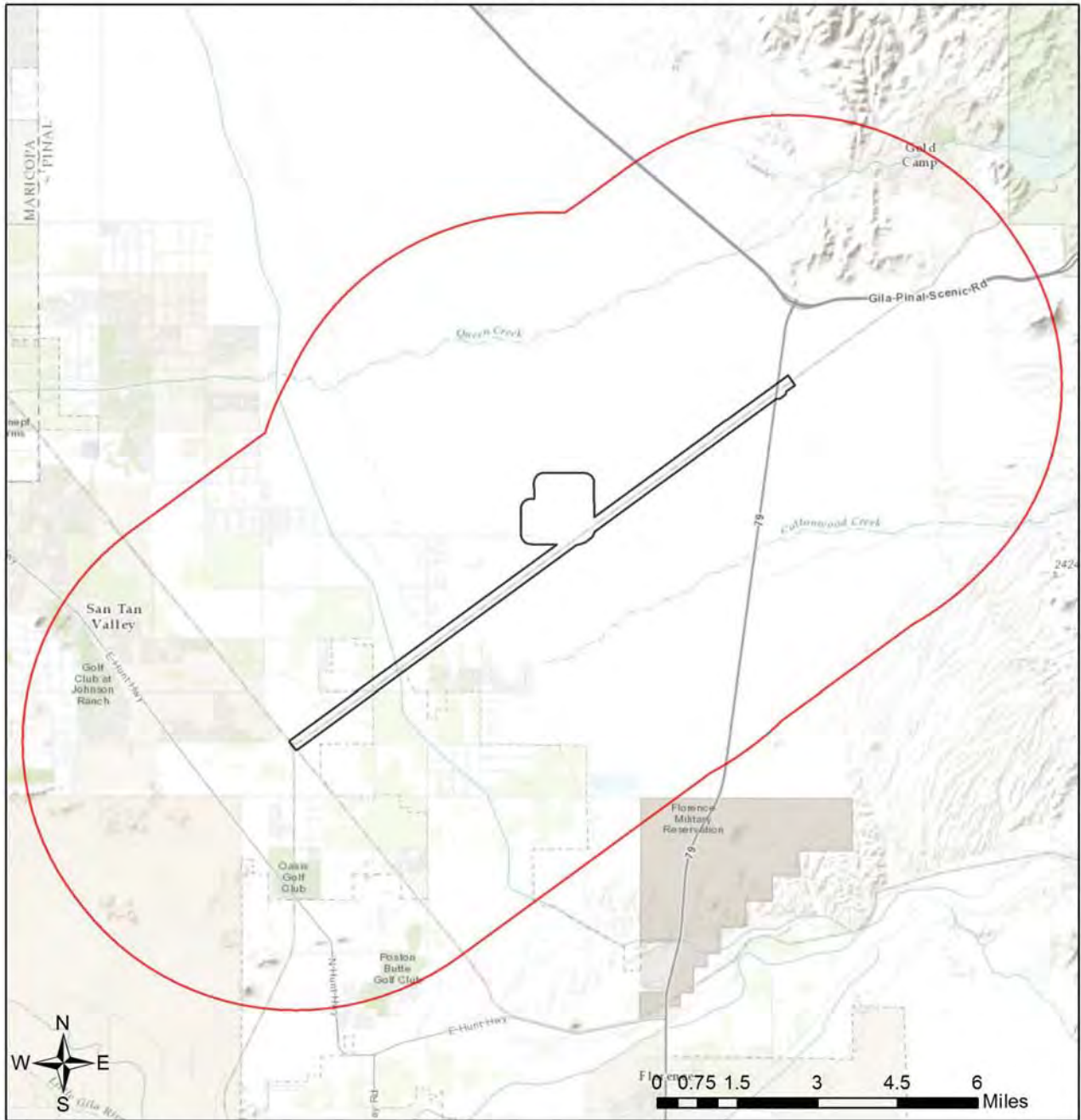
USGS Quad(s): SACATON NE; MAGMA +



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Lower MARRCO and Filter Plant

Web Map As Submitted By User



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 2,709.19

Lat/Long (DD): 33.1892 / -111.4176

County(s): Pinal

AGFD Region(s): Mesa

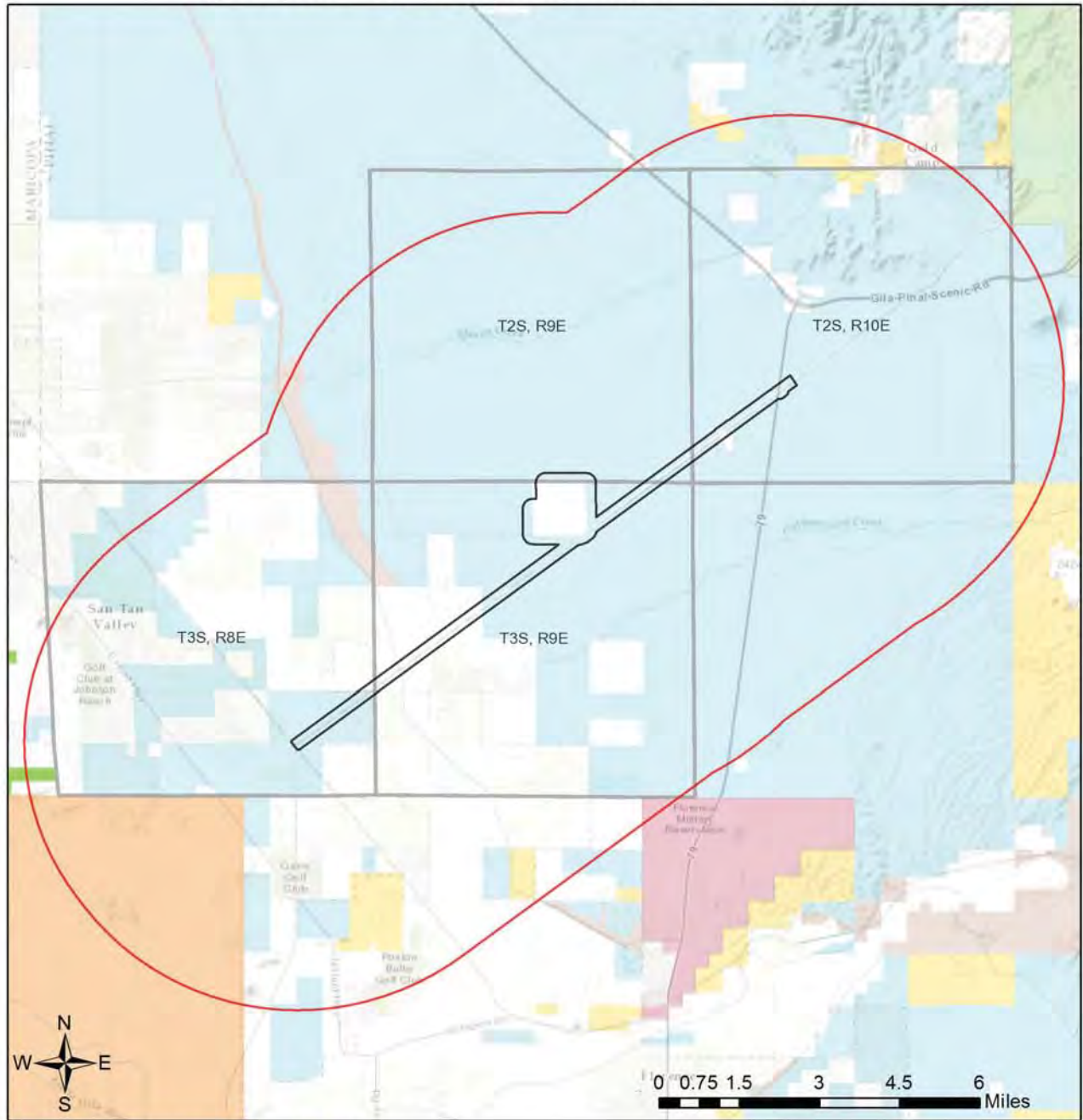
Township/Range(s): T2S, R10E; T2S, R9E; T3S, R8E +

USGS Quad(s): SACATON NE; MAGMA +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Lower MARRCO and Filter Plant

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,709.19
 Lat/Long (DD): 33.1892 / -111.4176
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T2S, R10E; T2S, R9E; T3S, R8E +
 USGS Quad(s): SACATON NE; MAGMA +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Gila River Indian Reservation	Gila River Indian Reservation					
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Cyananthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gopherus morafkai	Sonoran Desert Tortoise	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	LE				1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolni	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma goodei	Goode's Horned Lizard					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Rallus longirostris yumanensis	Yuma Clapper Rail	LE				1A
Setophaga petechia	Yellow Warbler					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	Le Conte's Thrasher					1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, <https://www.azgfd.com/agency/offices> or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

Tribal Lands are within the vicinity of your project area and may require further coordination. Please contact:

Gila River Indian Community
PO Box 97
Sacaton, AZ 85247
(520) 562-6000
(520) 562-6010 (fax)

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Upper MARRCO

Project Description:

Upper MARRCO

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Sarah Richman

Organization:

WestLand Resources

On Behalf Of:

CONSULTING

Project ID:

HGIS-04094

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Upper MARRCO

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 2,274.79

Lat/Long (DD): 33.3031 / -111.2335

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R11E; T2S, R10E; T2S, R11E +

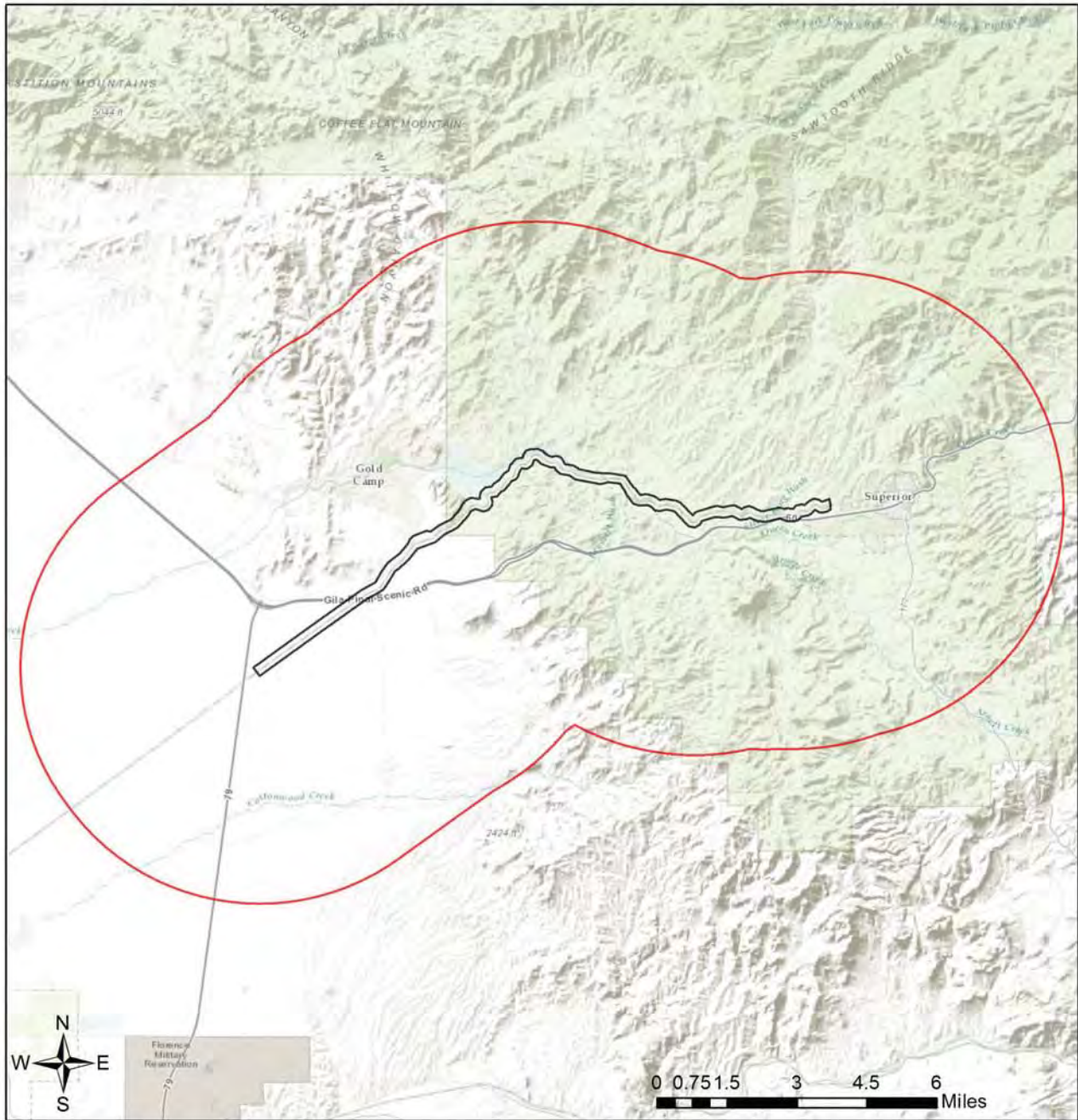
USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN +

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Upper MARRCO

Web Map As Submitted By User



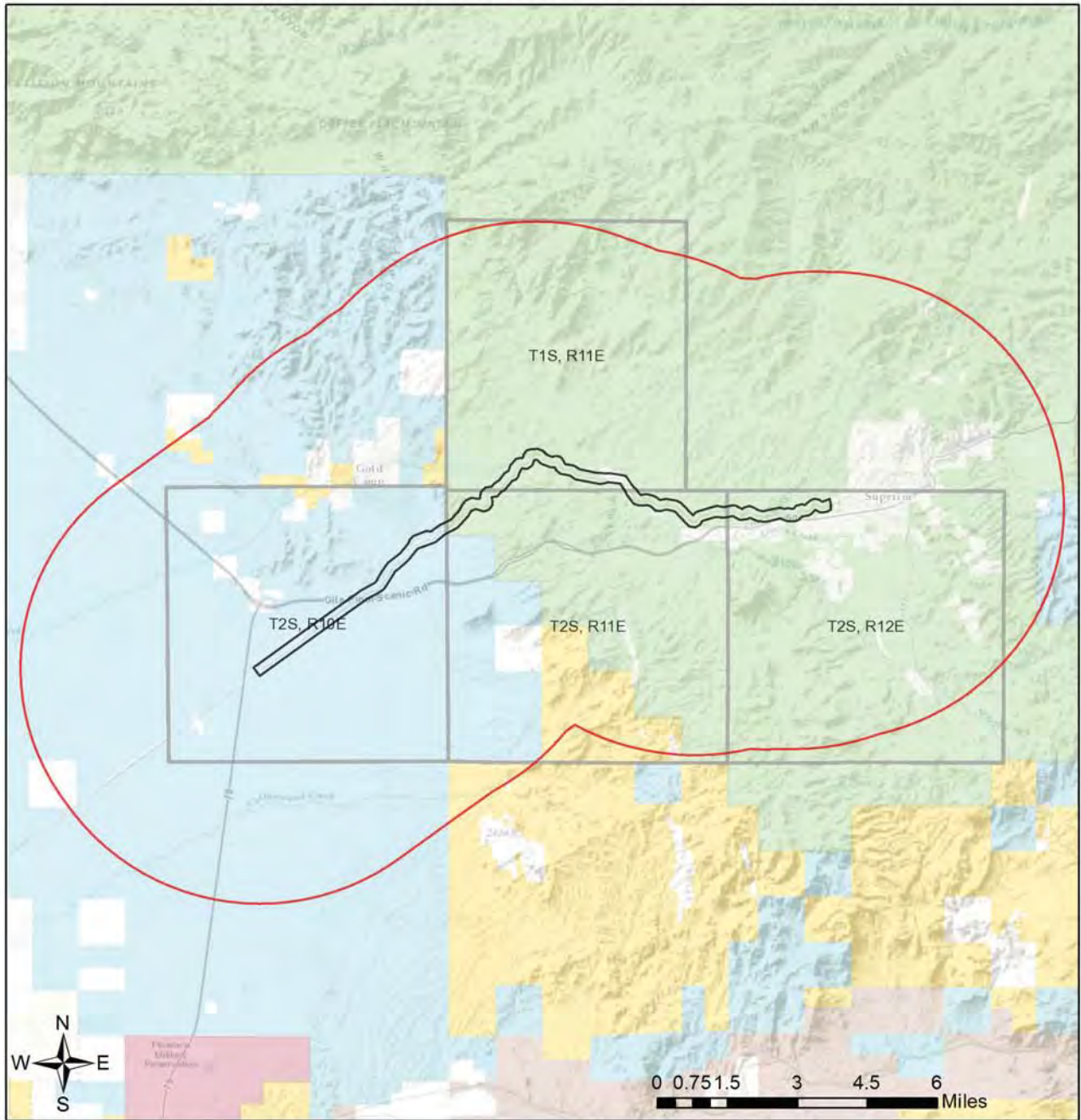
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,274.79
Lat/Long (DD): 33.3031 / -111.2335
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R11E; T2S, R10E; T2S, R11E +
USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Upper MARRCO

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,274.79
 Lat/Long (DD): 33.3031 / -111.2335
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R11E; T2S, R10E; T2S, R11E +
 USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN +

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Lasiurus blossevillii	Western Red Bat		S			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mabrya acerifolia	Mapleleaf False Snapdragon		S			
Myotis yumanensis	Yuma Myotis	SC				1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chionactis occipitalis klauberi</i>	Tucson Shovel-nosed Snake	SC				1A
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuenae</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Toxostoma lecontei</i>	Le Conte's Thrasher					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B
<i>Xyrauchen texanus</i>	Razorback Sucker	LE				1A

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, <https://www.azgfd.com/agency/offices> or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Oak Flat Area - Land Exchange

Project Description:

Oak Flat Area

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03070

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:



Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Oak Flat Area - Land Exchange Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 2,417.00

Lat/Long (DD): 33.2967 / -111.0557

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R13E; T2S, R13E; T2S, R12E

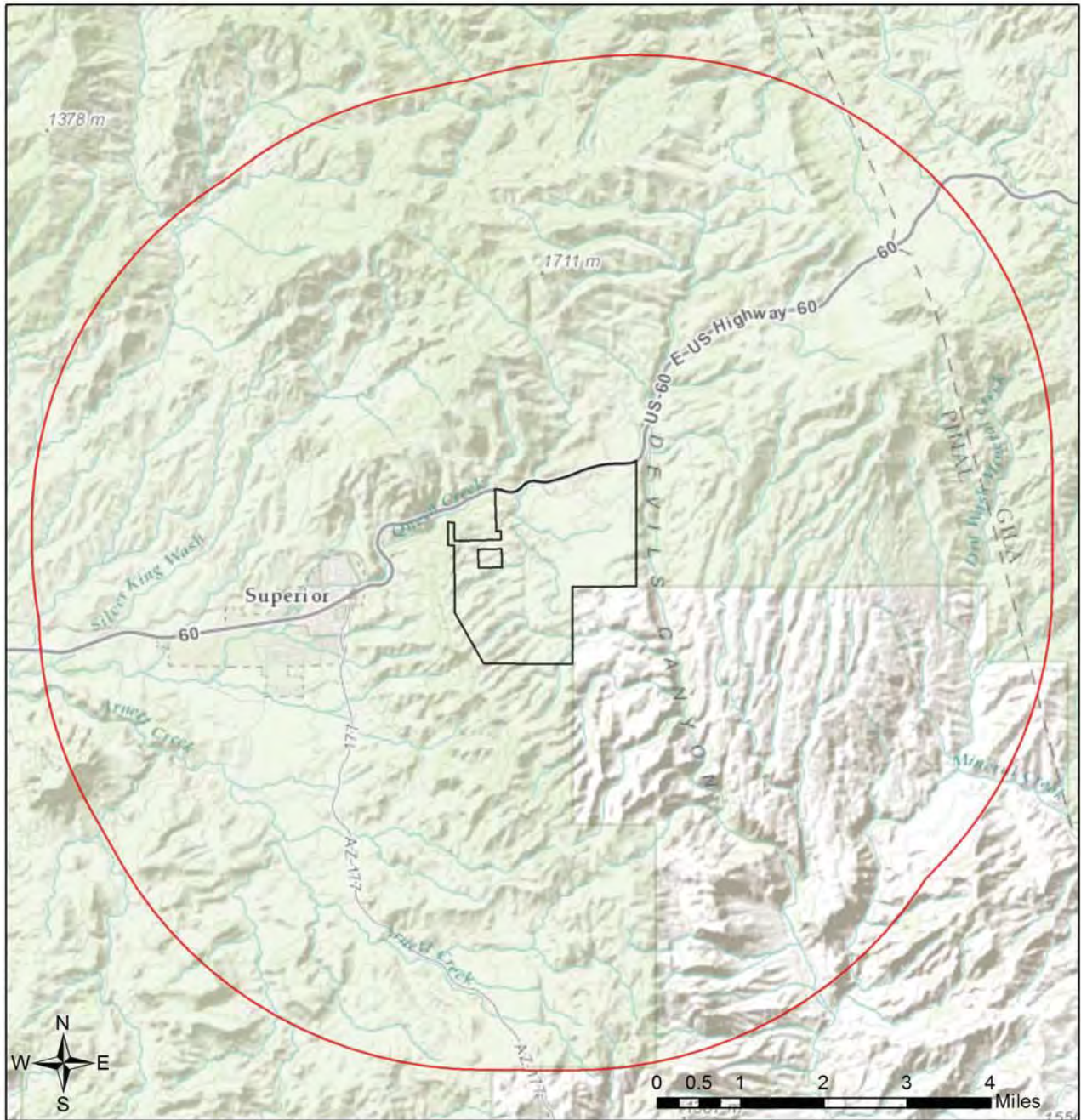
USGS Quad(s): SUPERIOR

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Oak Flat Area - Land Exchange

Web Map As Submitted By User



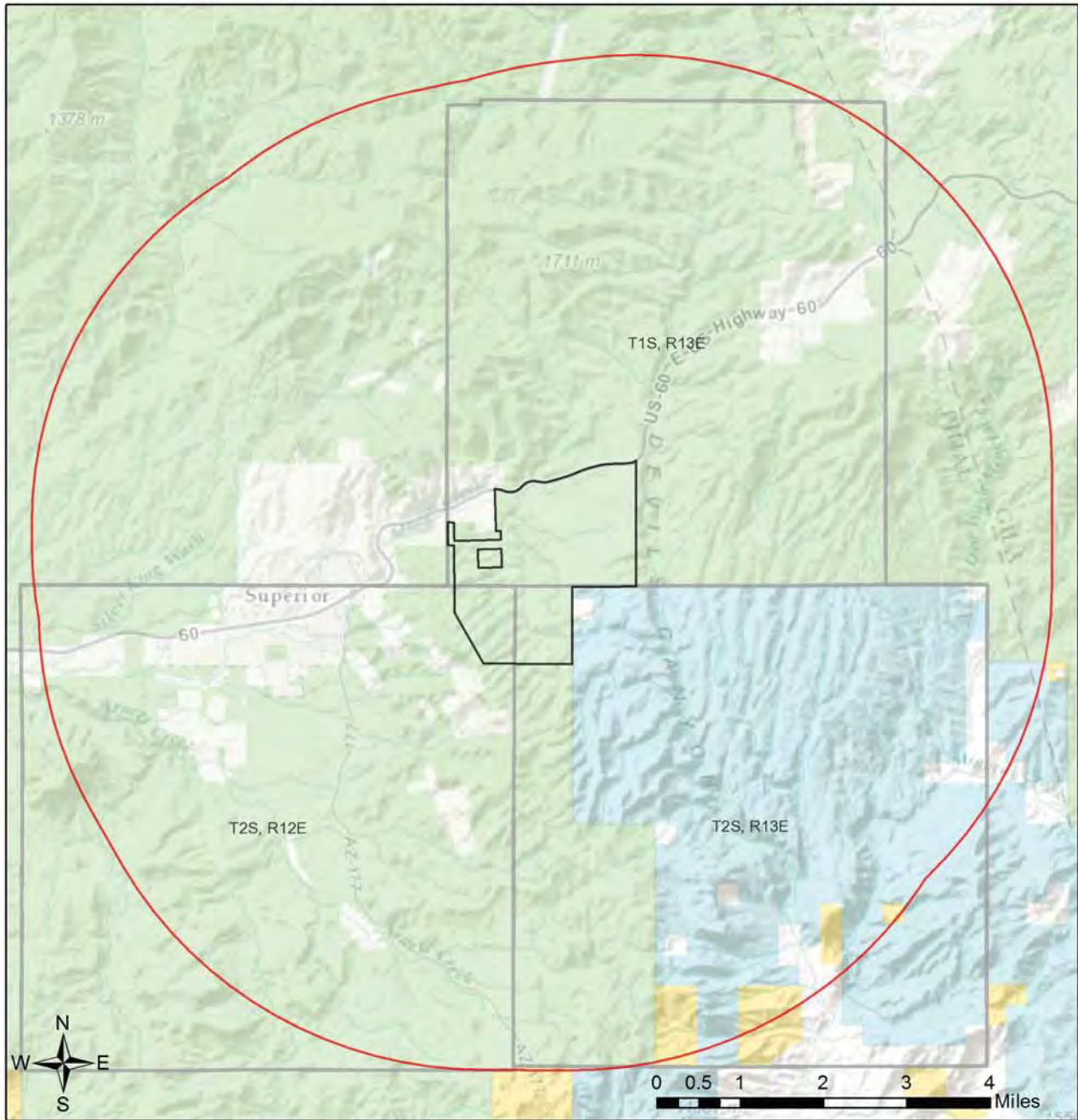
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,417.00
Lat/Long (DD): 33.2967 / -111.0557
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R13E; T2S, R13E; T2S, R12E
USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Oak Flat Area - Land Exchange

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,417.00
 Lat/Long (DD): 33.2967 / -111.0557
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R13E; T2S, R13E; T2S, R12E
 USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
CH for Gila intermedia	Gila chub Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican spotted owl Designated Critical Habitat					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis ciliolabrum	Western Small-footed Myotis	SC				
Myotis yumanensis	Yuma Myotis	SC				1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B
Crotalus tigris	Tiger Rattlesnake					1B
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eugenes fulgens	Magnificent Hummingbird					1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gila robusta	Roundtail Chub	C*	S			1A
Gopherus morafkai	Sonoran Desert Tortoise	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Ictinia mississippiensis	Mississippi Kite					1B
Idionycteris phyllotis	Allen's Lappet-browed Bat	SC	S	S		1B
Incilius alvarius	Sonoran Desert Toad					1B
Junco phaeonotus	Yellow-eyed Junco		S			1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris curasoae yerbabuena	Lesser Long-nosed Bat	LE				1A
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Lontra canadensis sonora	Southwestern River Otter	SC				1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Meda fulgida	Spikedace	LE				1A
Melanerpes uropygialis	Gila Woodpecker					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Melospiza lincolnii	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Microtus mexicanus	Mexican Vole					1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Terrapene ornata	Ornate Box Turtle					1A
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Ursus americanus	American Black Bear					
Zenaida asiatica	White-winged Dove					

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Lower Queen Creek

Project Description:

AA Vicinity

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03092

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Lower Queen Creek Aerial Image Basemap With Locator Map



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,494.37

Lat/Long (DD): 33.2940 / -111.2191

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R10E; T1S, R11E; T2S, R11E +

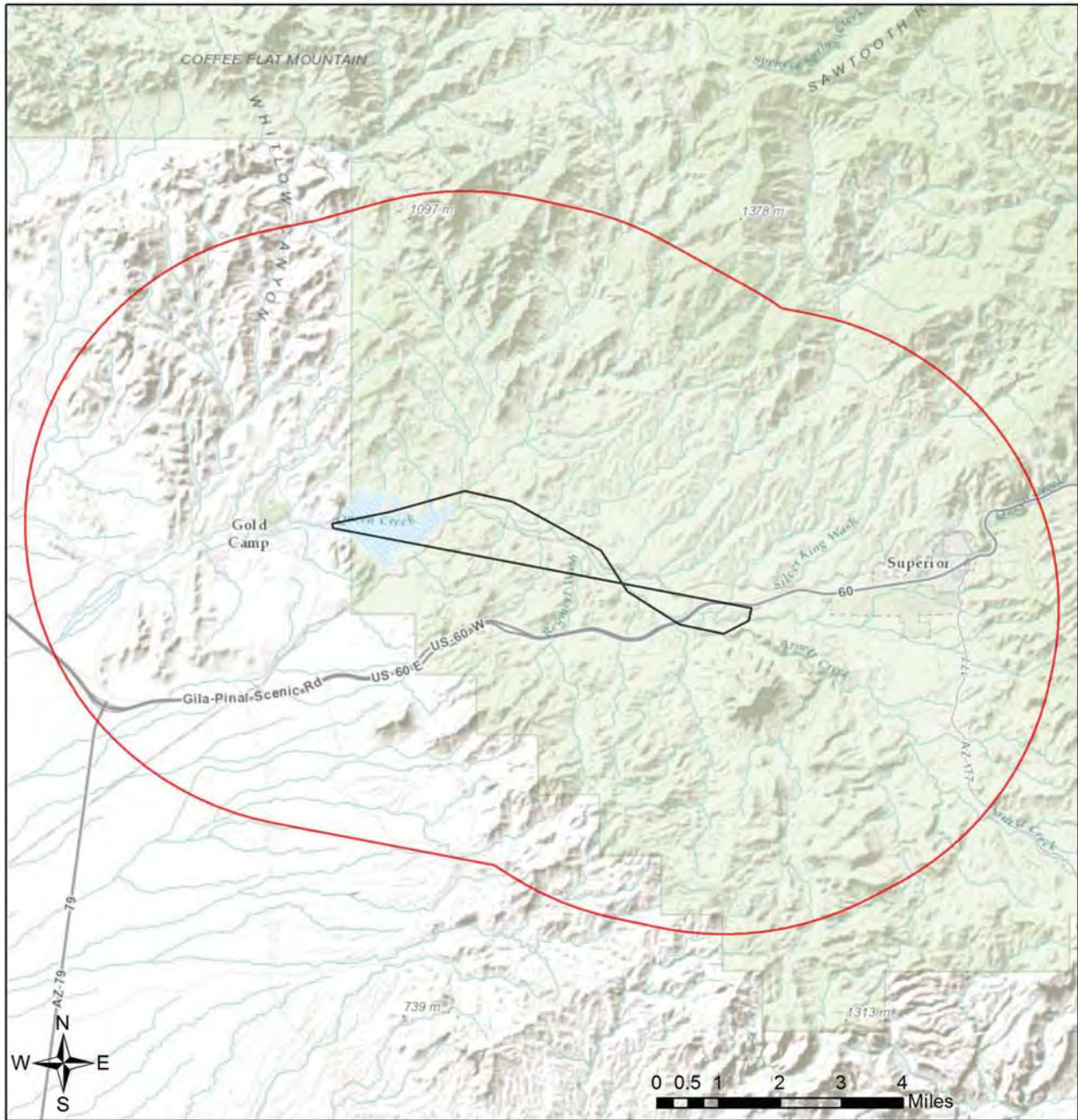
USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Lower Queen Creek

Web Map As Submitted By User



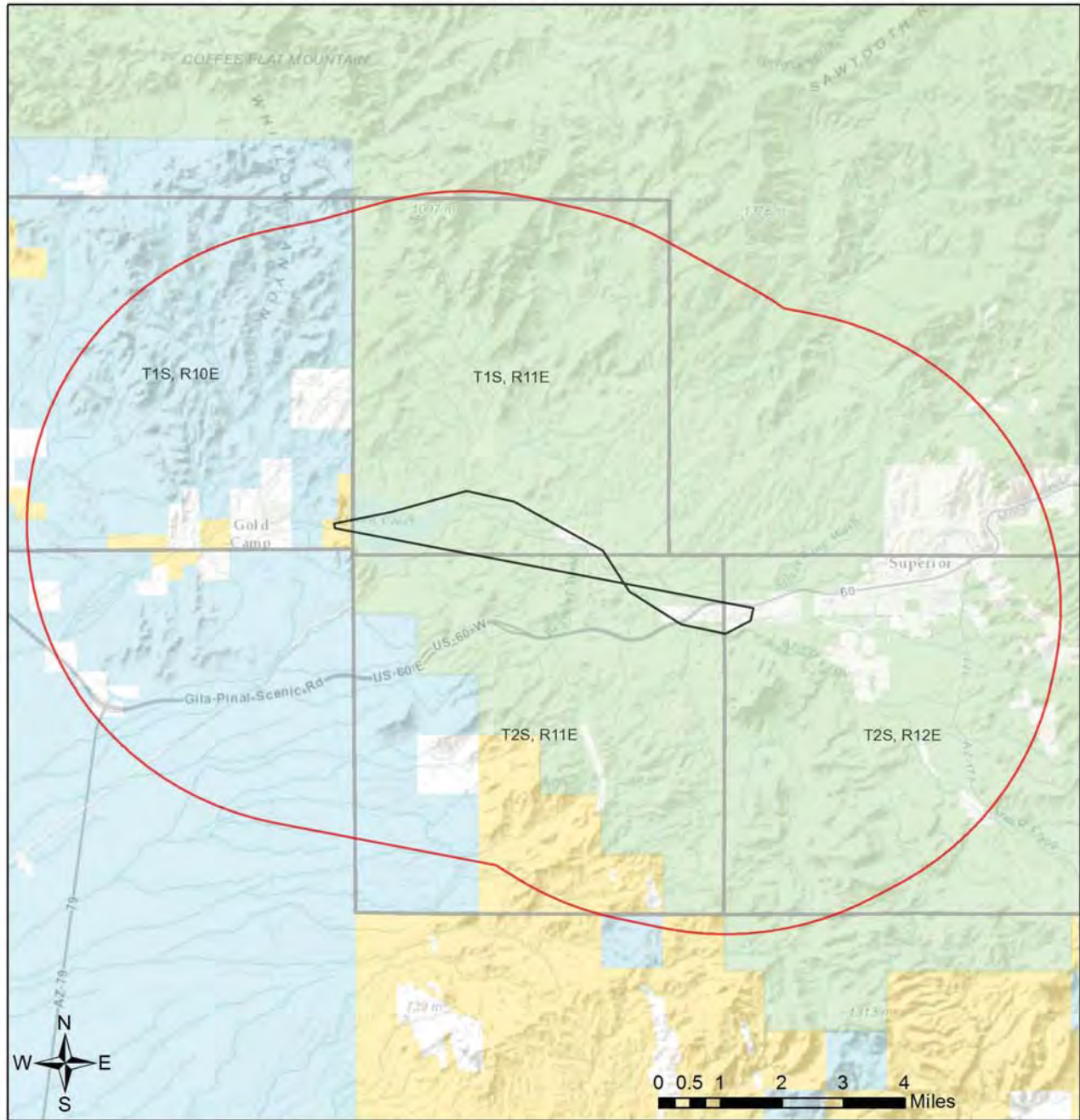
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,494.37
Lat/Long (DD): 33.2940 / -111.2191
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R10E; T1S, R11E; T2S, R11E +
USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Lower Queen Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,494.37
 Lat/Long (DD): 33.2940 / -111.2191
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R10E; T1S, R11E; T2S, R11E +
 USGS Quad(s): FLORENCE JUNCTION; PICKETPOST MOUNTAIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Lasiurus blossevillii	Western Red Bat		S			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mabrya acerifolia	Mapleleaf False Snapdragon		S			
Myotis yumanensis	Yuma Myotis	SC				1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Athene cucularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B
Crotalus tigris	Tiger Rattlesnake					1B
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gopherus morafkai	Sonoran Desert Tortoise	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Ictinia mississippiensis	Mississippi Kite					1B
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	LE				1A
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Meda fulgida	Spikedace	LE				1A
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolni	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis nelsoni	Desert Bighorn Sheep					1B
Panthera onca	Jaguar	LE				1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus amplus	Arizona Pocket Mouse					1B
Peucaea carpalis	Rufous-winged Sparrow					1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	Le Conte's Thrasher					1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox					1B
Xantusia bezyi	Bezy's Night Lizard		S			1B
Xyrauchen texanus	Razorback Sucker	LE				1A

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Odocoileus virginianus	White-tailed Deer					1B
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Patagioenas fasciata	Band-tailed Pigeon					1C
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml .

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.

Phoenix, AZ 85007

Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103

Phoenix, AZ 85021

Phone: 602-242-0210

Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141

Tucson, AZ 85745

Phone: 520-670-6144

Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex

2500 S. Pine Knoll Dr.

Flagstaff, AZ 86001

Phone: 928-556-2157

Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Middle Queen Creek

Project Description:

AA Vicinity

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03093

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

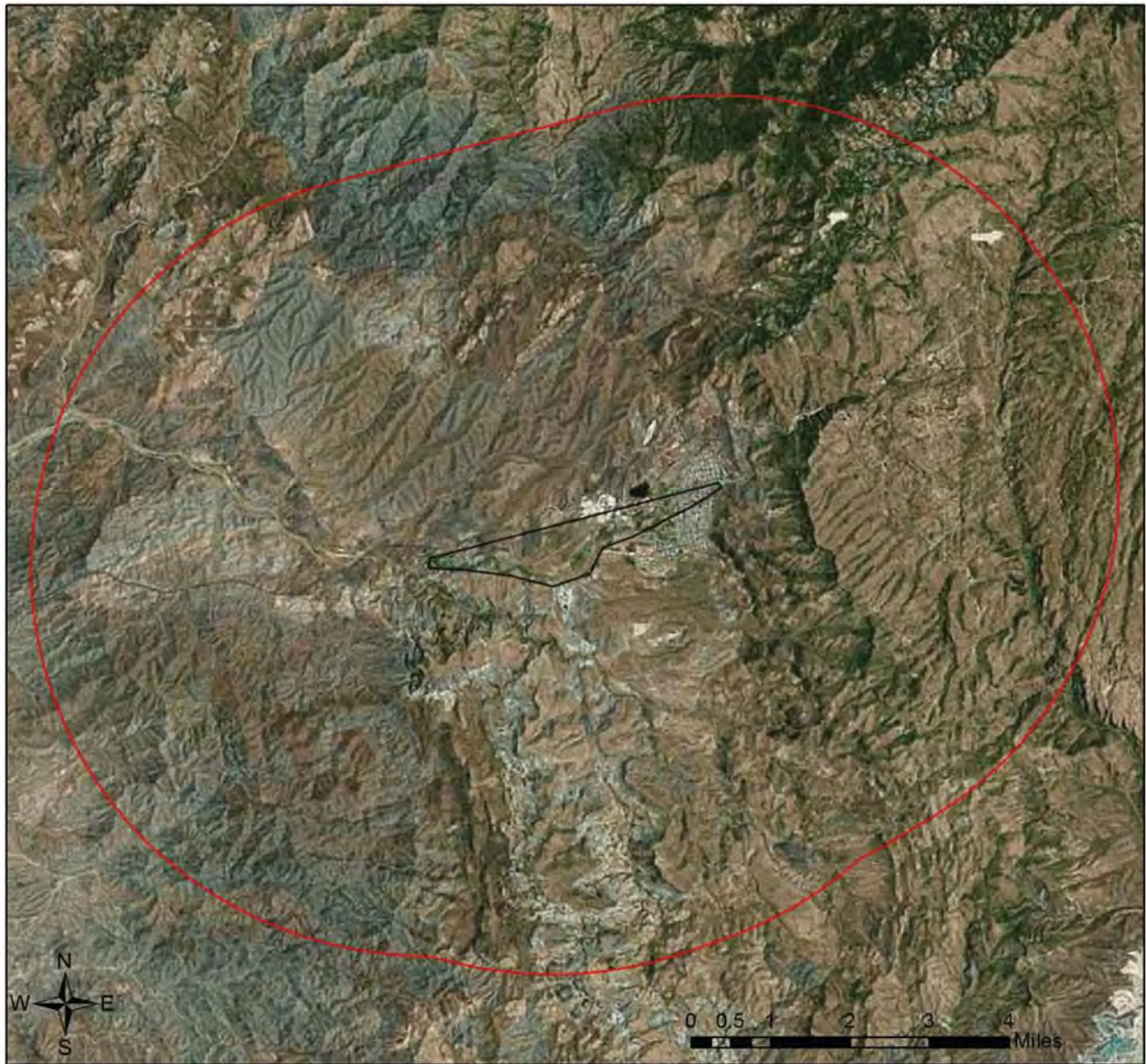
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Middle Queen Creek

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 984.69

Lat/Long (DD): 33.2815 / -111.1280

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R12E; T2S, R12E

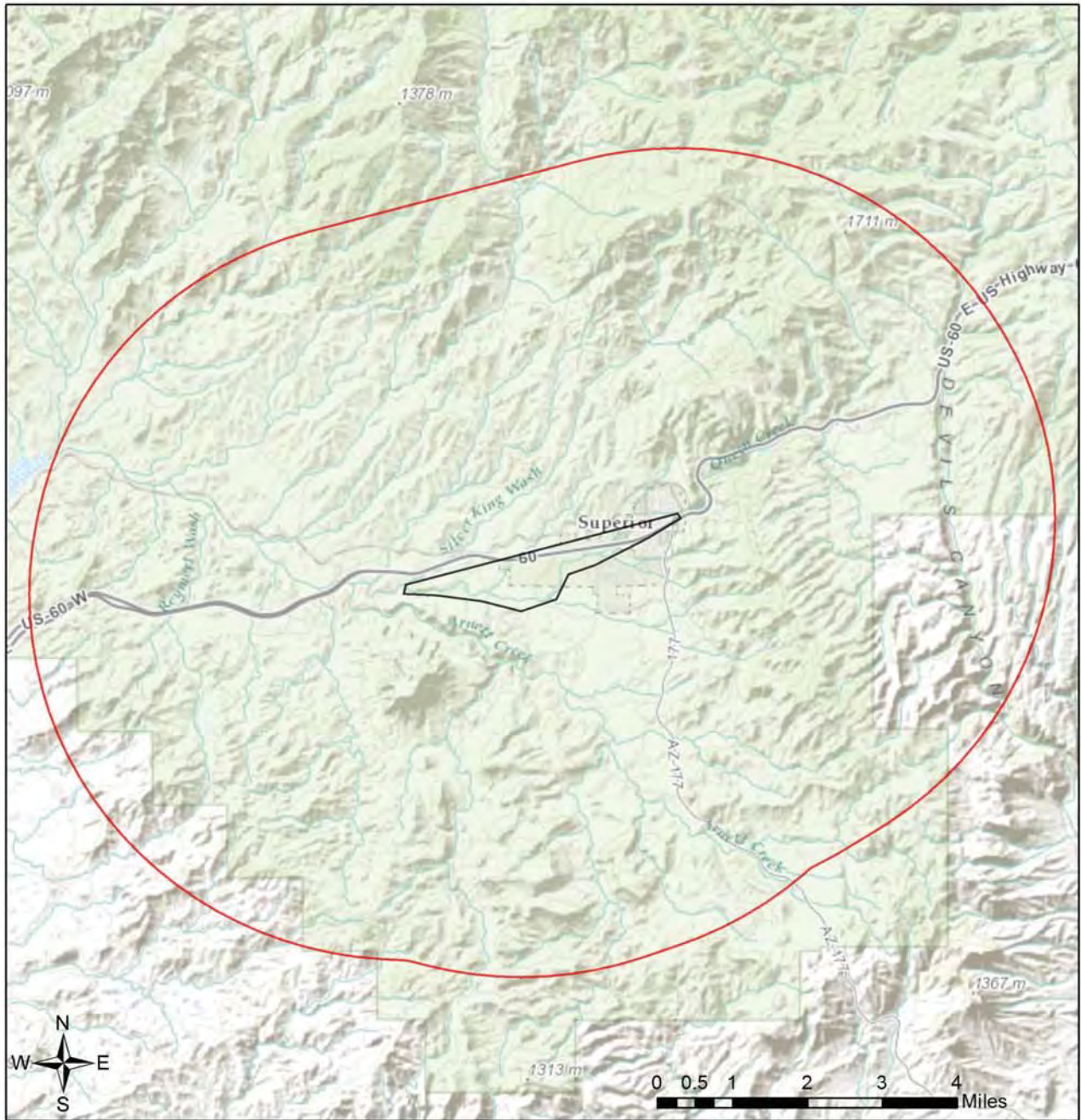
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Middle Queen Creek

Web Map As Submitted By User



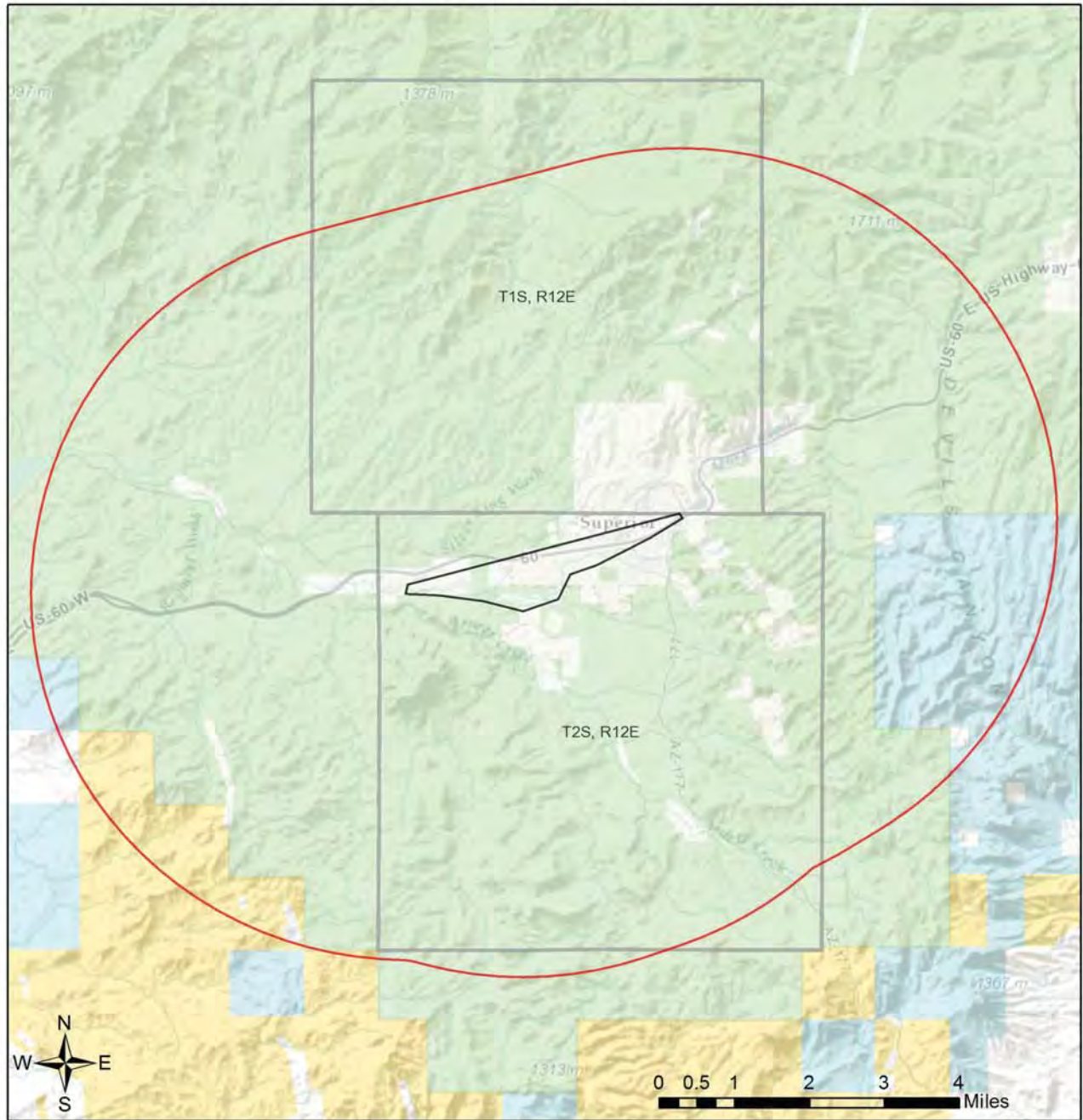
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 984.69
Lat/Long (DD): 33.2815 / -111.1280
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R12E; T2S, R12E
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Middle Queen Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 984.69
 Lat/Long (DD): 33.2815 / -111.1280
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R12E; T2S, R12E
 USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Abutilon parishii</i>	Pima Indian Mallow	SC	S	S	SR	
<i>Aquila chrysaetos</i>	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	Arizona Hedgehog Cactus	LE			HS	
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	CCA	S			1A
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Agosia chrysogaster</i>	Longfin Dace	SC		S		1B
<i>Aix sponsa</i>	Wood Duck					1B
<i>Ammodramus savannarum perpallidus</i>	Western Grasshopper Sparrow					1B
<i>Ammospermophilus harrisi</i>	Harris' Antelope Squirrel					1B
<i>Anaxyrus microscaphus</i>	Arizona Toad	SC				1B
<i>Anthus spragueii</i>	Sprague's Pipit	C*				1A
<i>Aquila chrysaetos</i>	Golden Eagle	BGA		S		1B
<i>Aspidoscelis flagellicauda</i>	Gila Spotted Whiptail					1B
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	SC	S	S		1B
<i>Botaurus lentiginosus</i>	American Bittern					1B
<i>Buteo regalis</i>	Ferruginous Hawk	SC		S		1B
<i>Catostomus clarkii</i>	Desert Sucker	SC	S	S		1B
<i>Catostomus insignis</i>	Sonora Sucker	SC	S	S		1B
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Toxostoma lecontei</i>	Le Conte's Thrasher					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Upper Queen Creek

Project Description:

AA Vicinity

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-03094

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

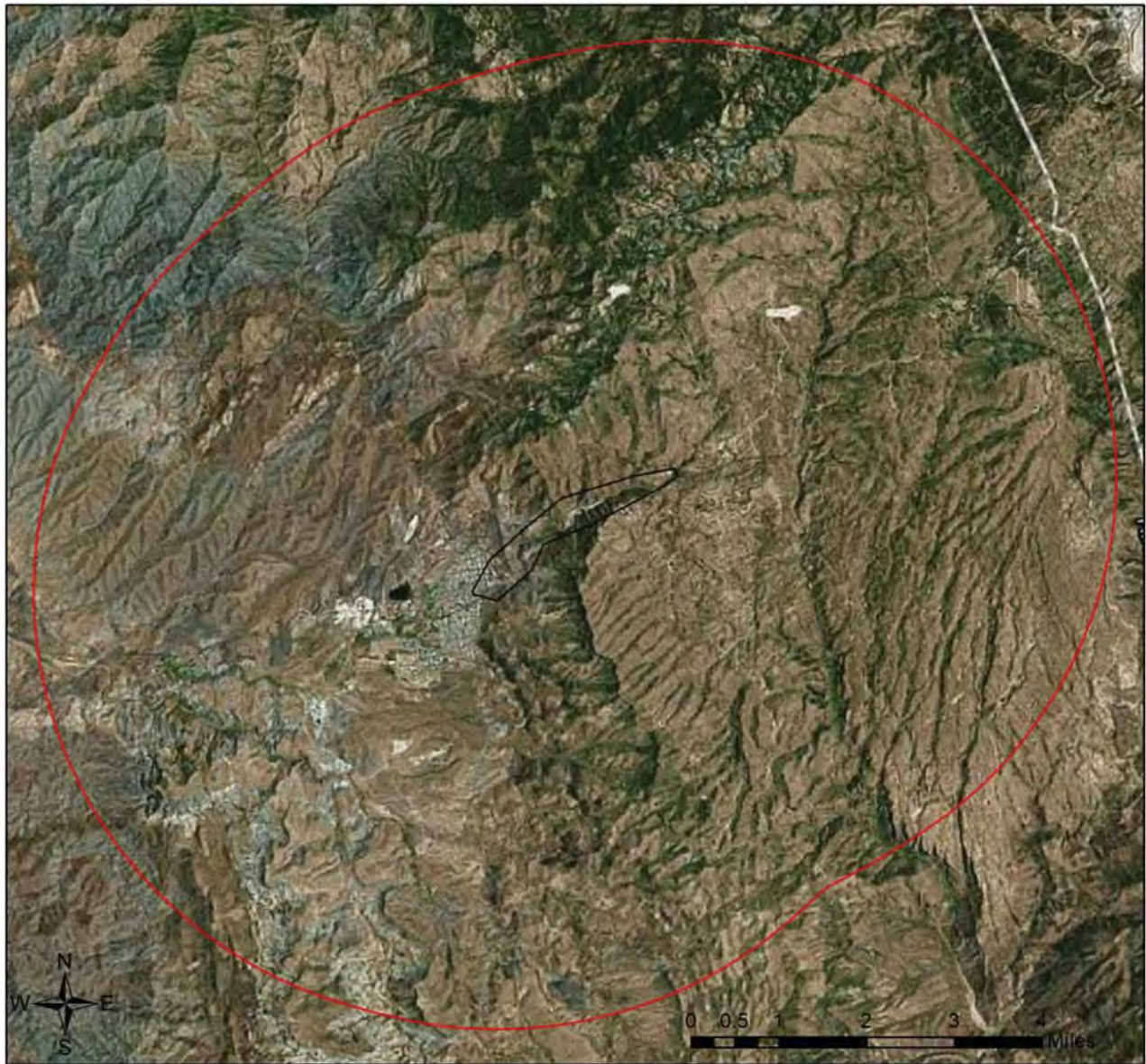
Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Upper Queen Creek Aerial Image Basemap With Locator Map



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 562.84

Lat/Long (DD): 33.3021 / -111.0806

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E

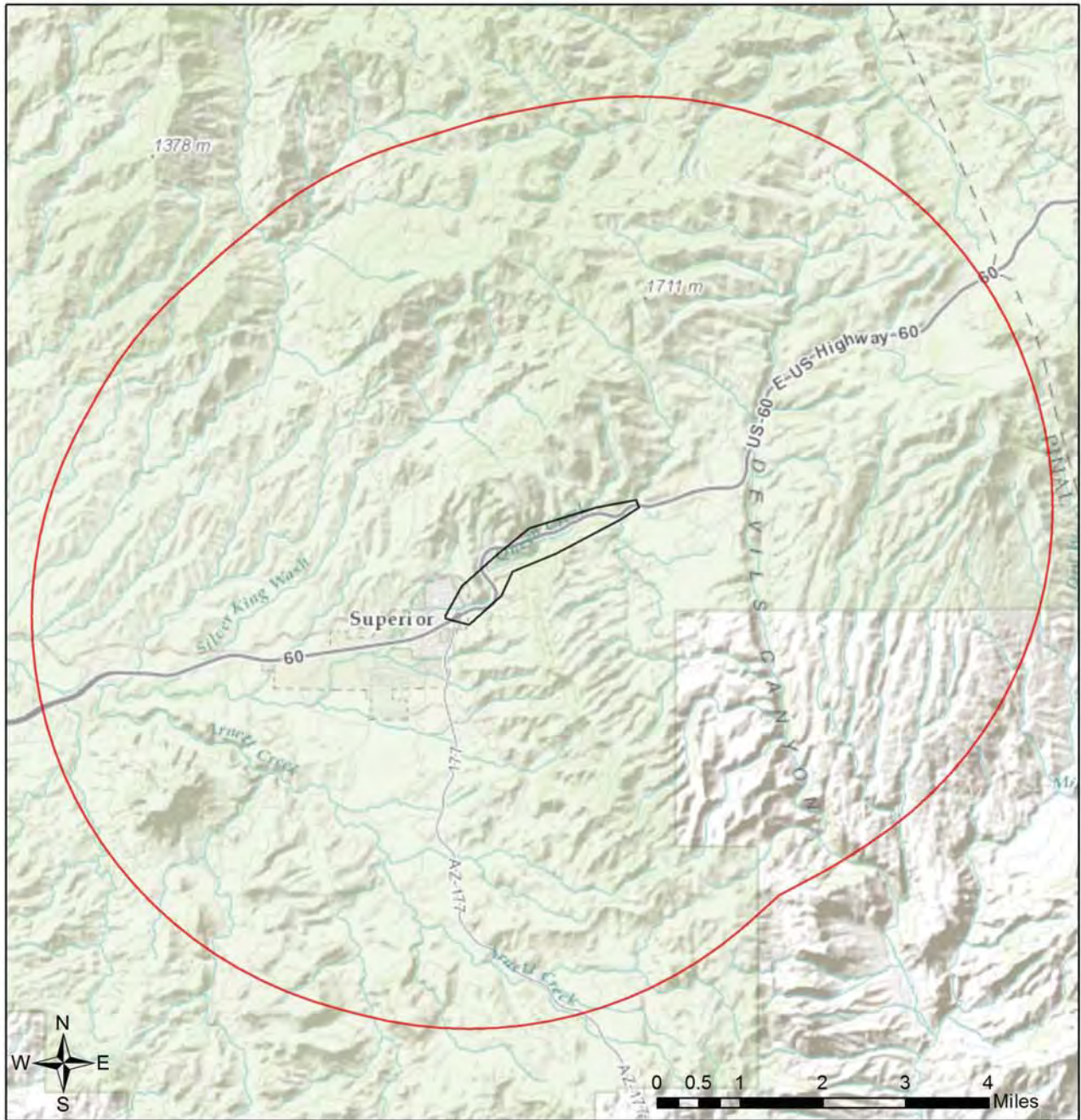
USGS Quad(s): SUPERIOR



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Upper Queen Creek

Web Map As Submitted By User



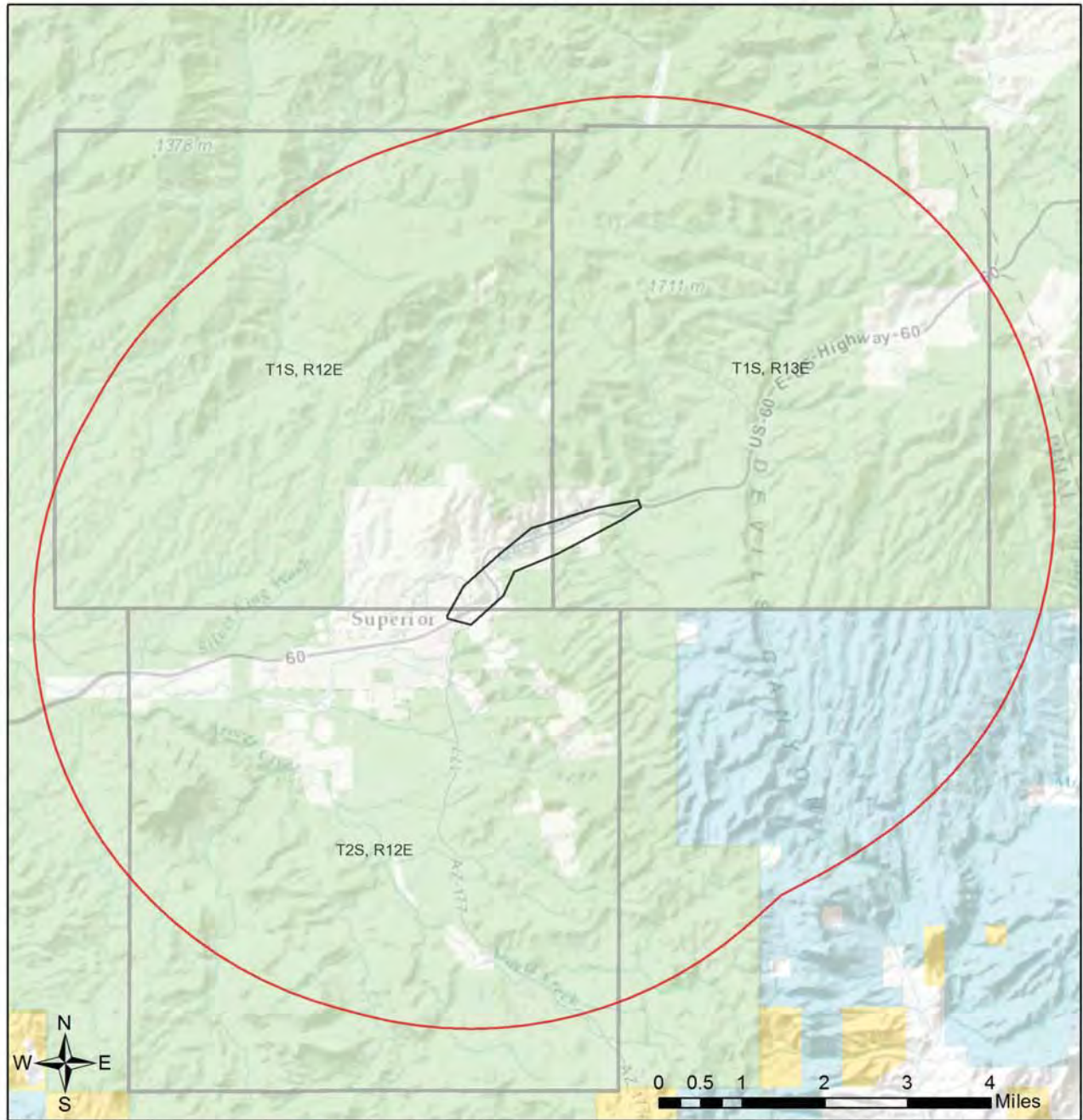
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 562.84
Lat/Long (DD): 33.3021 / -111.0806
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E
USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Upper Queen Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 562.84
 Lat/Long (DD): 33.3021 / -111.0806
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R13E; T1S, R12E; T2S, R12E
 USGS Quad(s): SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis ciliolabrum	Western Small-footed Myotis	SC				
Myotis yumanensis	Yuma Myotis	SC				1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Lontra canadensis sonora</i>	Southwestern River Otter	SC				1B
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Ursus americanus</i>	American Black Bear					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Tangle Creek

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02998

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

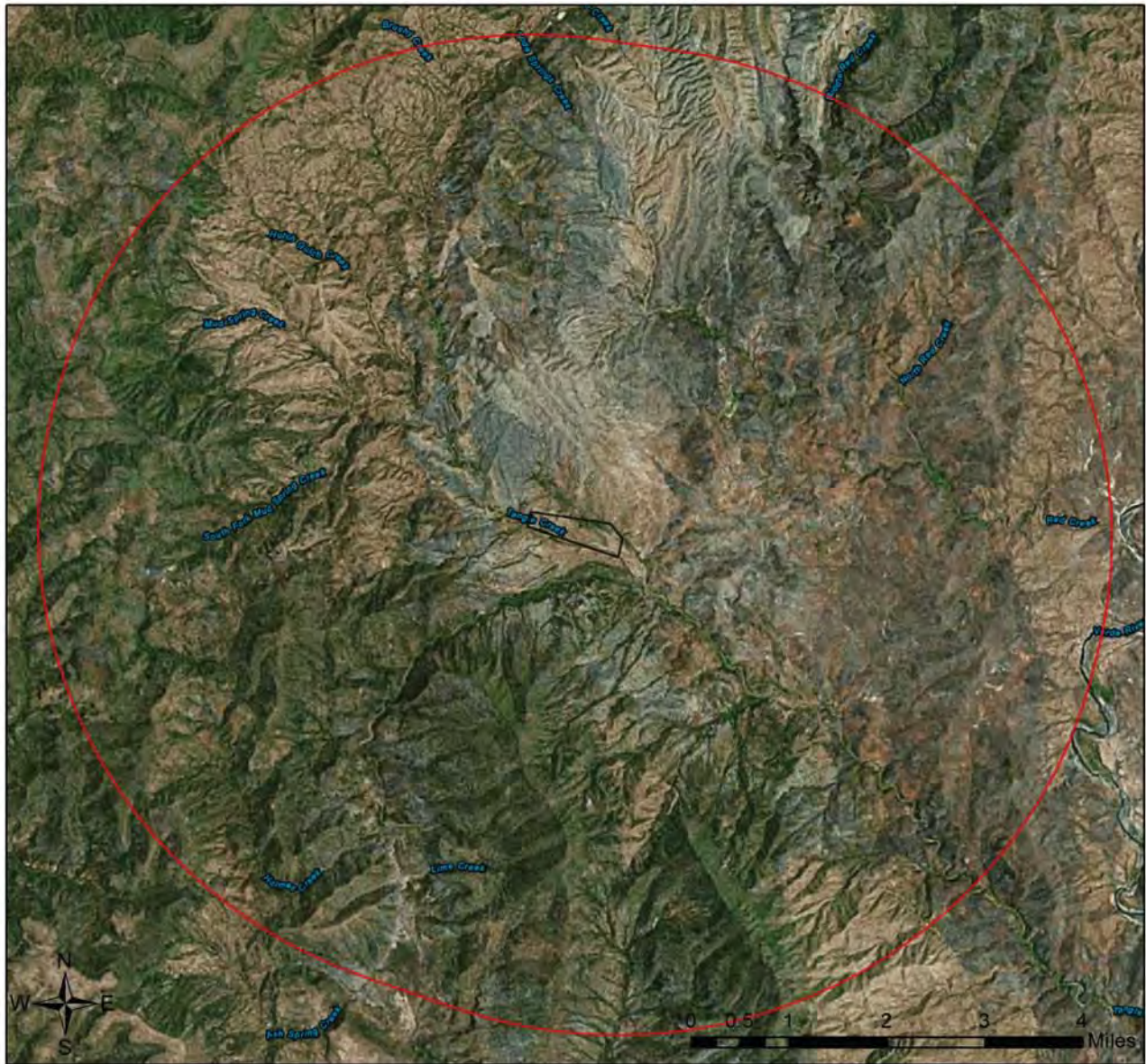
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Tangle Creek

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 147.94

Lat/Long (DD): 34.1596 / -111.8169

County(s): Yavapai

AGFD Region(s): Mesa

Township/Range(s): T9.5N, R5E; T9N, R5E

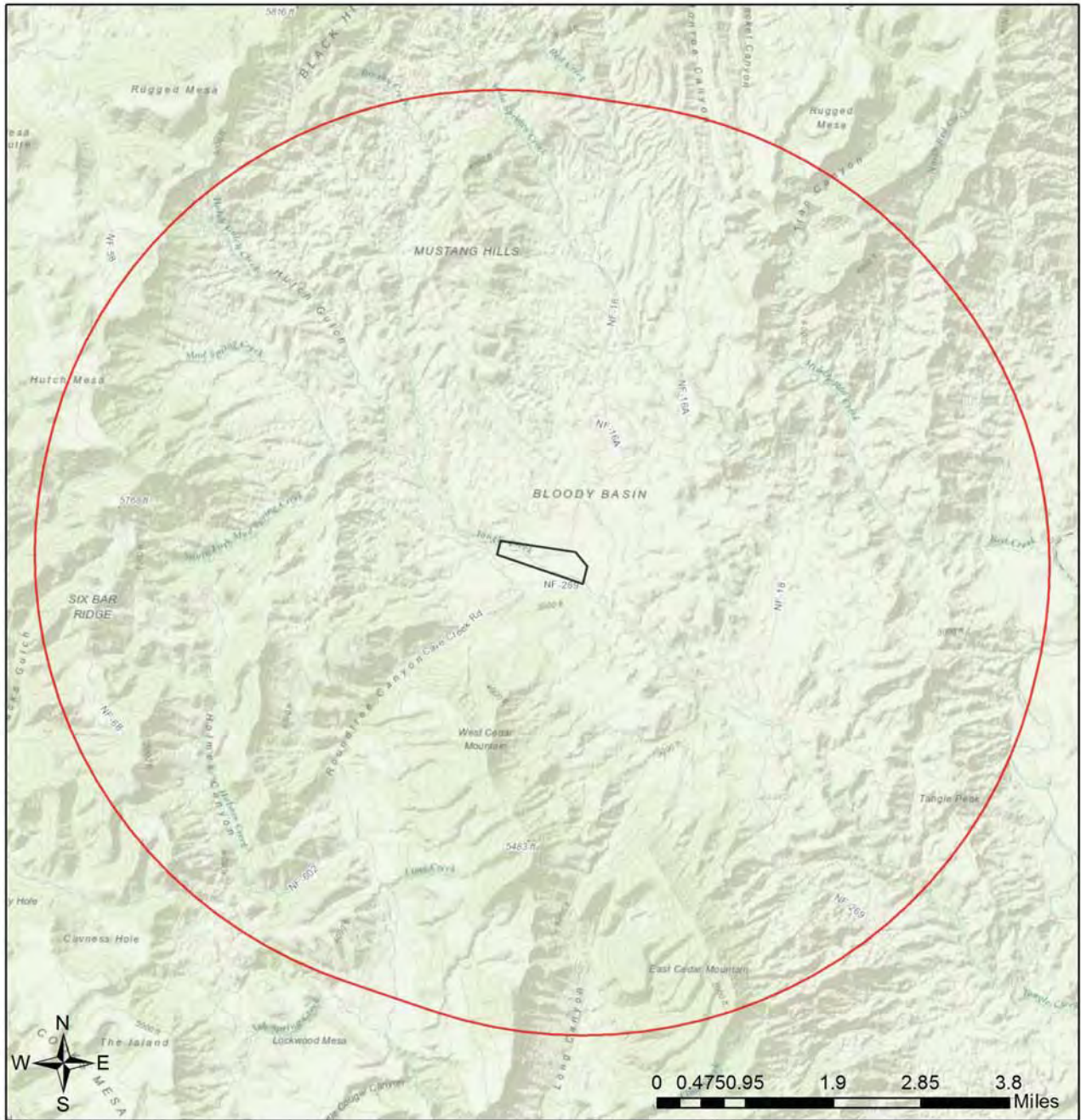
USGS Quad(s): BLOODY BASIN

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - Tangle Creek

Web Map As Submitted By User



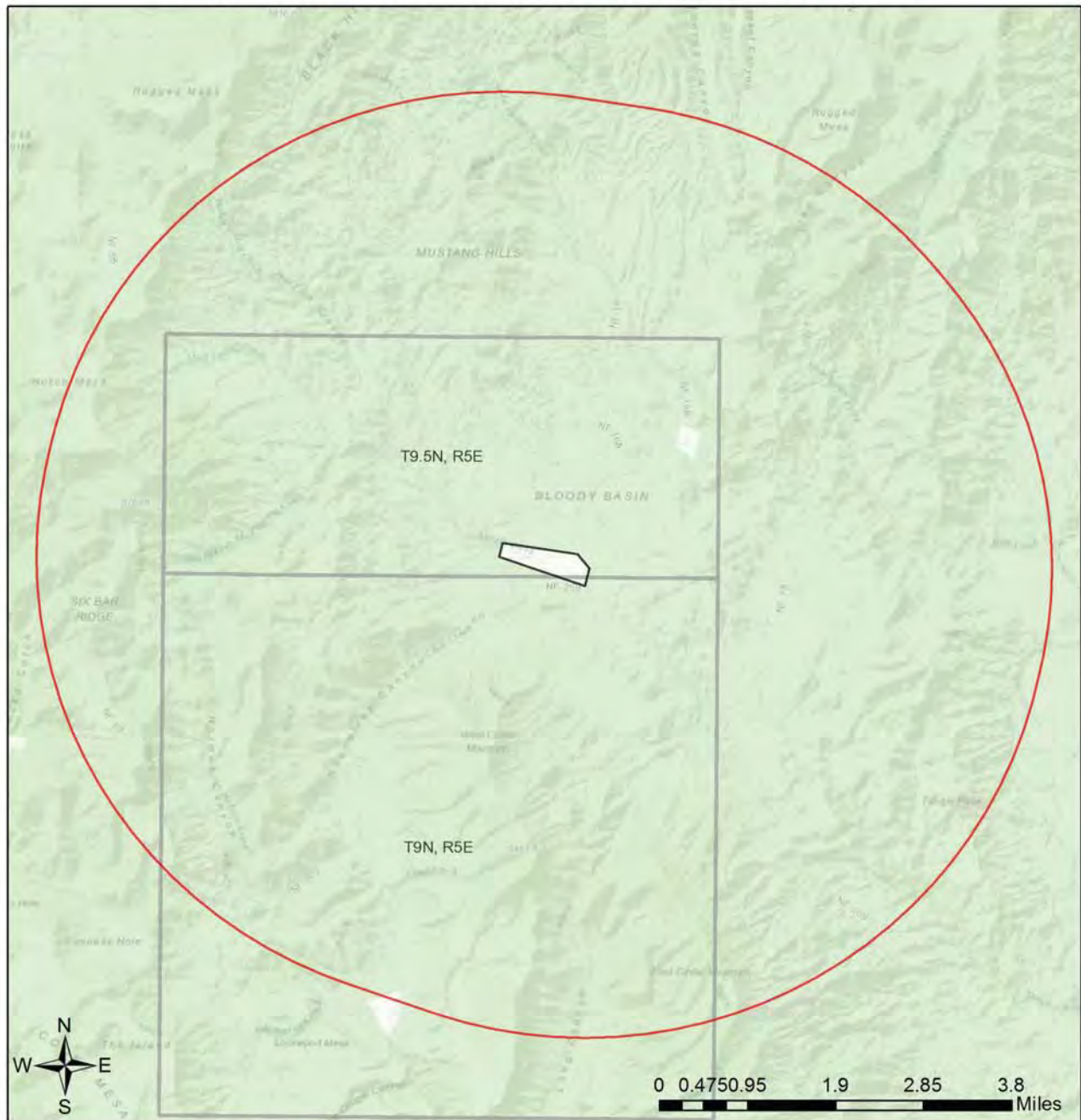
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 147.94
Lat/Long (DD): 34.1596 / -111.8169
County(s): Yavapai
AGFD Region(s): Mesa
Township/Range(s): T9.5N, R5E; T9N, R5E
USGS Quad(s): BLOODY BASIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Tangle Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 147.94
 Lat/Long (DD): 34.1596 / -111.8169
 County(s): Yavapai
 AGFD Region(s): Mesa
 Township/Range(s): T9.5N, R5E; T9N, R5E
 USGS Quad(s): BLOODY BASIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agave toumeyana var. bella	Toumey Agave				SR	
Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
CH for Empidonax traillii extimus	Southwestern willow flycatcher Designated Critical Habitat					
CH for Xyrauchen texanus	Razorback sucker Designated Critical Habitat					
Carex ultra	Arizona Giant Sedge		S	S		
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cylloepus parkeri	Parker's Cylloepus Riffle Beetle	SC	S			
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC,BG A	S	S		1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BG A	S	S		1A
Heuchera eastwoodiae	Senator Mine Alumroot		S			
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
PCH for Thamnophis eques megalops	Northern Mexican gartersnake Proposed Critical Habitat					
PCH for Thamnophis rufipunctatus	Narrow-headed gartersnake Proposed Critical Habitat					
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Salt and Verde Riparian Ecosystem	Important Bird Area					

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Antilocapra americana americana	America Pronghorn					1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B
Crotalus tigris	Tiger Rattlesnake					1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila intermedia	Gila Chub	LE				1A
Gila nigra	Headwater Chub	C*	S			1A
Gila robusta	Roundtail Chub	C*	S			1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Idionycteris phyllotis	Allen's Lappet-browed Bat	SC	S	S		1B
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Lontra canadensis lataxina	Southeastern River Otter					1B
Lontra canadensis sonora	Southwestern River Otter	SC				1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolni	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Microtus mexicanus	Mexican Vole					1B
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Ptychocheilus lucius</i>	Colorado Pikeminnow	LE,XN				1A
<i>Rhinichthys osculus</i>	Speckled Dace	SC		S		1B
<i>Sciurus arizonensis</i>	Arizona Gray Squirrel					1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xyrauchen texanus</i>	Razorback Sucker	LE				1A

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Cervus elaphus</i>	Elk					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Sciurus nayaritensis</i>	Mexican Fox Squirrel					
<i>Ursus americanus</i>	American Black Bear					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

TSF

Project Description:

TSF

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Sarah Richman

Organization:

WestLand Resources

On Behalf Of:

CONSULTING

Project ID:

HGIS-04093

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

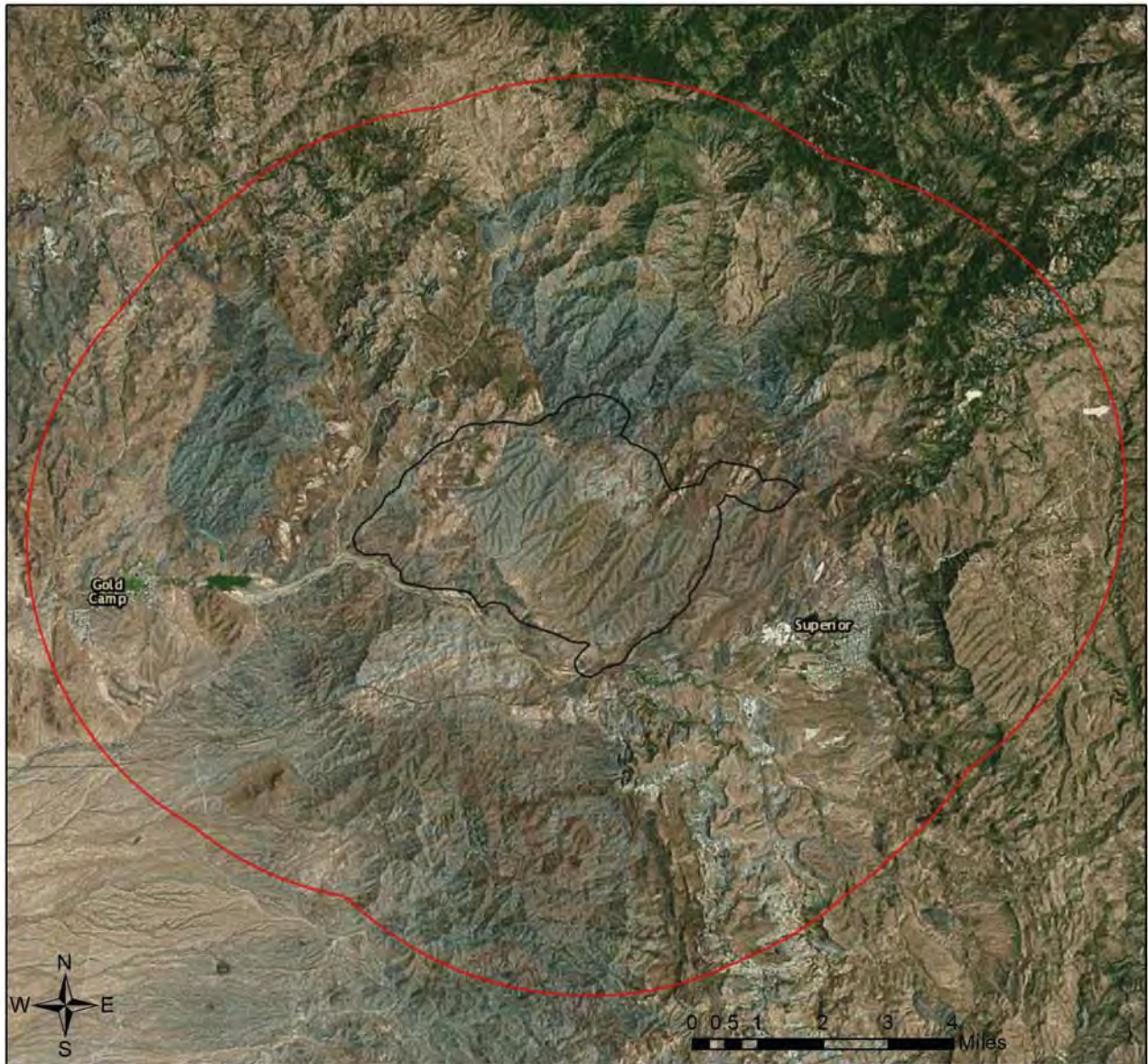
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

TSF

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 9,594.14

Lat/Long (DD): 33.3124 / -111.1785

County(s): Pinal

AGFD Region(s): Mesa

Township/Range(s): T1S, R11E; T1S, R12E; T2S, R11E +

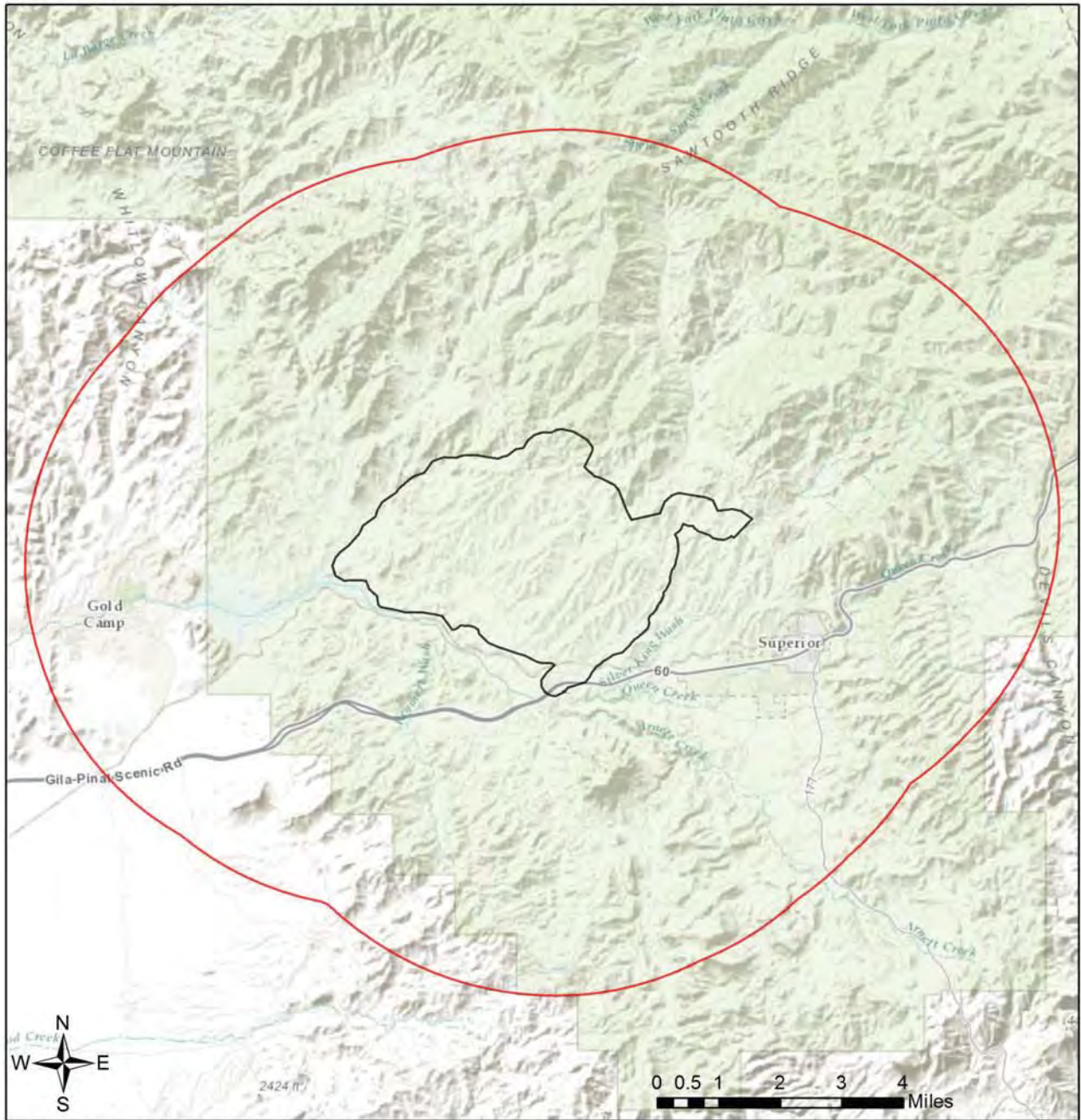
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



TSF

Web Map As Submitted By User



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 9,594.14
Lat/Long (DD): 33.3124 / -111.1785
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R11E; T1S, R12E; T2S, R11E +
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

TSF

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 9,594.14
 Lat/Long (DD): 33.3124 / -111.1785
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R11E; T1S, R12E; T2S, R11E +
 USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Lasiurus blossevillii	Western Red Bat		S			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mabrya acerifolia	Mapleleaf False Snapdragon		S			
Mammillaria viridiflora	Varied Fishhook Cactus				SR	
Myotis yumanensis	Yuma Myotis	SC				1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B
<i>Chionactis occipitalis klauberi</i>	Tucson Shovel-nosed Snake	SC				1A
<i>Chordeiles minor</i>	Common Nighthawk					1B
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Toxostoma lecontei</i>	Le Conte's Thrasher					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B
<i>Xyrauchen texanus</i>	Razorback Sucker	LE				1A

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtm>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, <https://www.azgfd.com/agency/offices> or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.



Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Land Exchange - Turkey Creek

Project Description:

Land Exchange

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Margaret Blais

Organization:

Environmental Consultant

On Behalf Of:

CONSULTING

Project ID:

HGIS-02999

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Land Exchange - Turkey Creek Aerial Image Basemap With Locator Map



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 146.78

Lat/Long (DD): 33.9782 / -111.1155

County(s): Gila

AGFD Region(s): Mesa

Township/Range(s): T7N, R12E

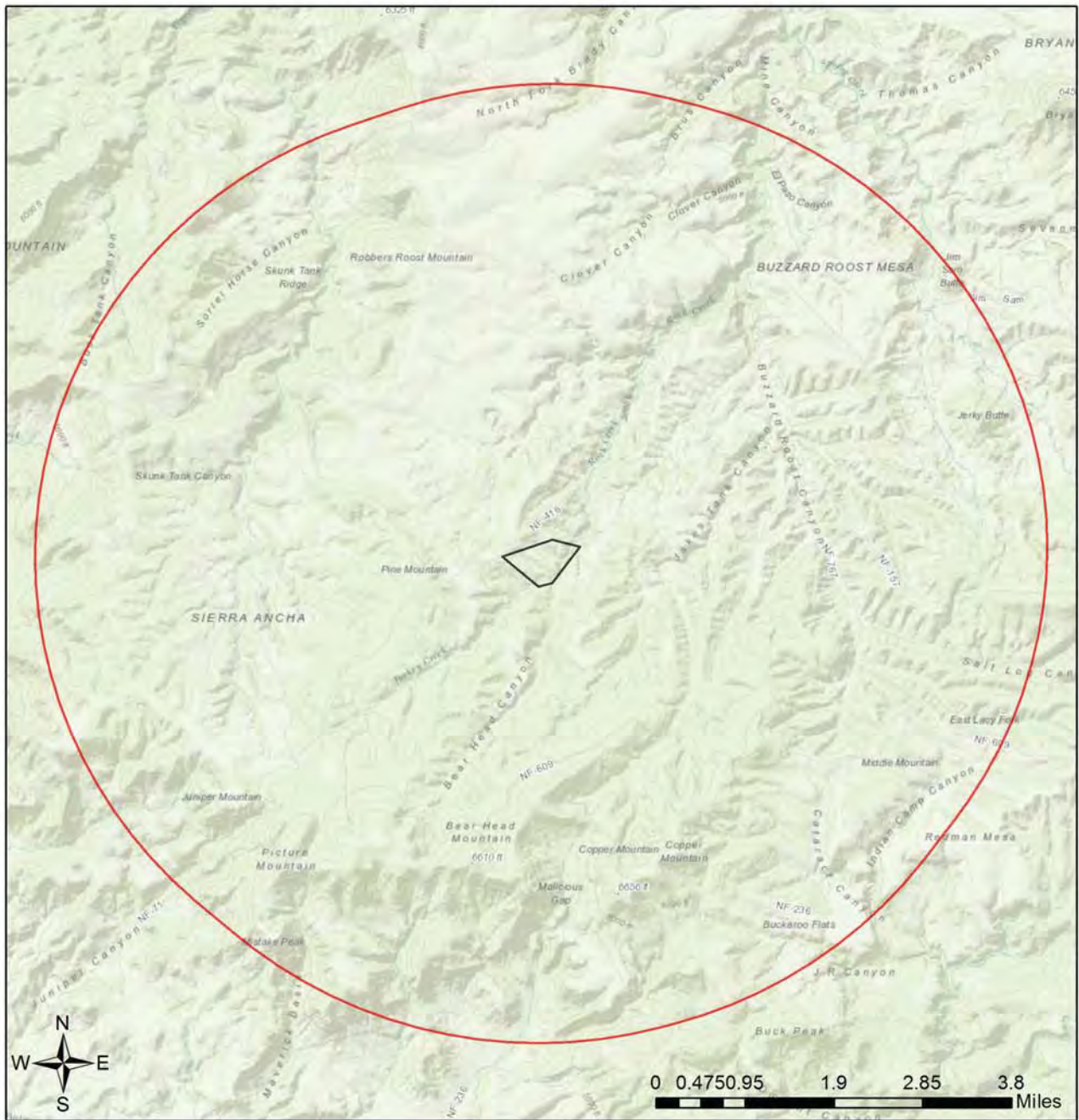
USGS Quad(s): COPPER MOUNTAIN



Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



Land Exchange - Turkey Creek

Web Map As Submitted By User



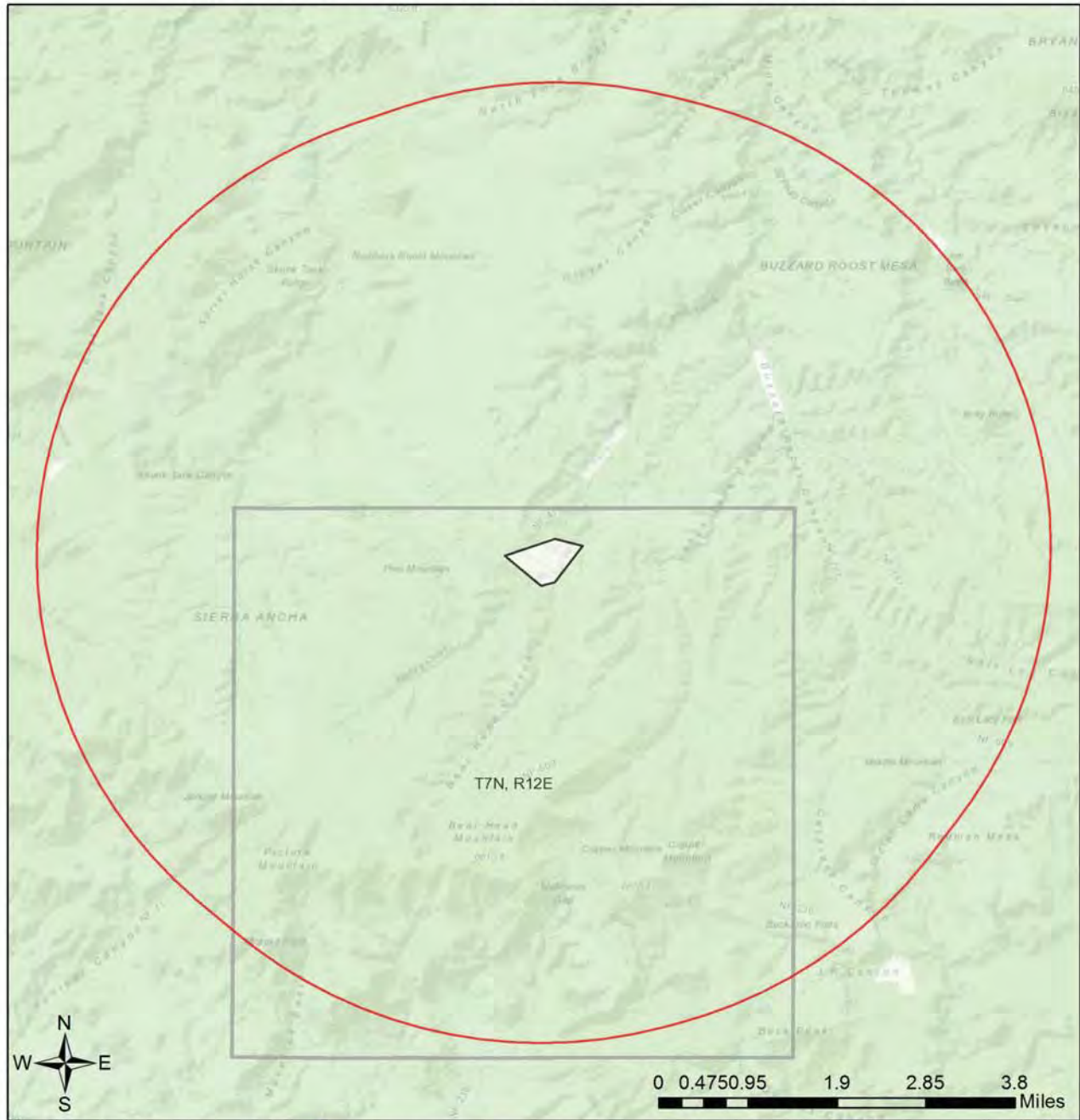
-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 146.78
Lat/Long (DD): 33.9782 / -111.1155
County(s): Gila
AGFD Region(s): Mesa
Township/Range(s): T7N, R12E
USGS Quad(s): COPPER MOUNTAIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Land Exchange - Turkey Creek

Topo Basemap With Township/Ranges and Land Ownership



- | | | | |
|--|---------------------------|--|--------------------------|
| | Project Boundary | | Mixed/Other |
| | Buffered Project Boundary | | National Park/Mon. |
| | Township/Ranges | | Private |
| | AZ Game and Fish Dept. | | State and Regional Parks |
| | BLM | | State Trust |
| | BOR | | US Forest Service |
| | Indian Res. | | Wildlife Area/Refuge |
| | Military | | |

Project Size (acres): 146.78
 Lat/Long (DD): 33.9782 / -111.1155
 County(s): Gila
 AGFD Region(s): Mesa
 Township/Range(s): T7N, R12E
 USGS Quad(s): COPPER MOUNTAIN

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Accipiter gentilis	Northern Goshawk	SC	S	S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
CH for Meda fulgida	Spikedace Designated Critical Habitat					
CH for Strix occidentalis lucida	Mexican spotted owl Designated Critical Habitat					
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Gila nigra	Headwater Chub	PT	S			1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BG A	S	S		1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis thysanodes	Fringed Myotis	SC				
Rhinichthys osculus	Speckled Dace	SC		S		1B
Strix occidentalis lucida	Mexican Spotted Owl	LT				1A

Note: Status code definitions can be found at http://www.azgfd.gov/w_c/edits/hdms_status_definitions.shtml.

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Accipiter gentilis atricapillus	Northern Goshawk	SC	S			1B
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ambystoma mavortium nebulosum	Arizona Tiger Salamander					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus cerberus	Arizona Black Rattlesnake					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila nigra</i>	Headwater Chub	C*	S			1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay			S		1B
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Lontra canadensis sonora</i>	Southwestern River Otter	SC				1B
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher					1B
<i>Myiodynastes luteiventris</i>	Sulphur-bellied Flycatcher		S			1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Rhinichthys osculus</i>	Speckled Dace	SC		S		1B
<i>Sciurus arizonensis</i>	Arizona Gray Squirrel					1B
<i>Setophaga petechia</i>	Yellow Warbler					1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Thamnophis eques megalops</i>	Northern Mexican Gartersnake	PT	S			1A
<i>Thamnophis rufipunctatus</i>	Narrow-headed Gartersnake	PT	S			1A
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Cervus elaphus</i>	Elk					
<i>Meleagris gallopavo</i>	Wild Turkey					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Sciurus aberti</i>	Abert's Squirrel					
<i>Sciurus nayaritensis</i>	Mexican Fox Squirrel					
<i>Ursus americanus</i>	American Black Bear					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on the home page of this application at <http://www.azgfd.gov/hgis/guidelines.aspx>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Bat Coordinator at the Main Office in Nongame Branch, http://www.azgfd.gov/inside_azgfd/agency_directory.shtml .

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

WPS

Project Description:

WPS

Project Type:

Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Contact Person:

Sarah Richman

Organization:

WestLand Resources

On Behalf Of:

CONSULTING

Project ID:

HGIS-04095

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

WPS

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

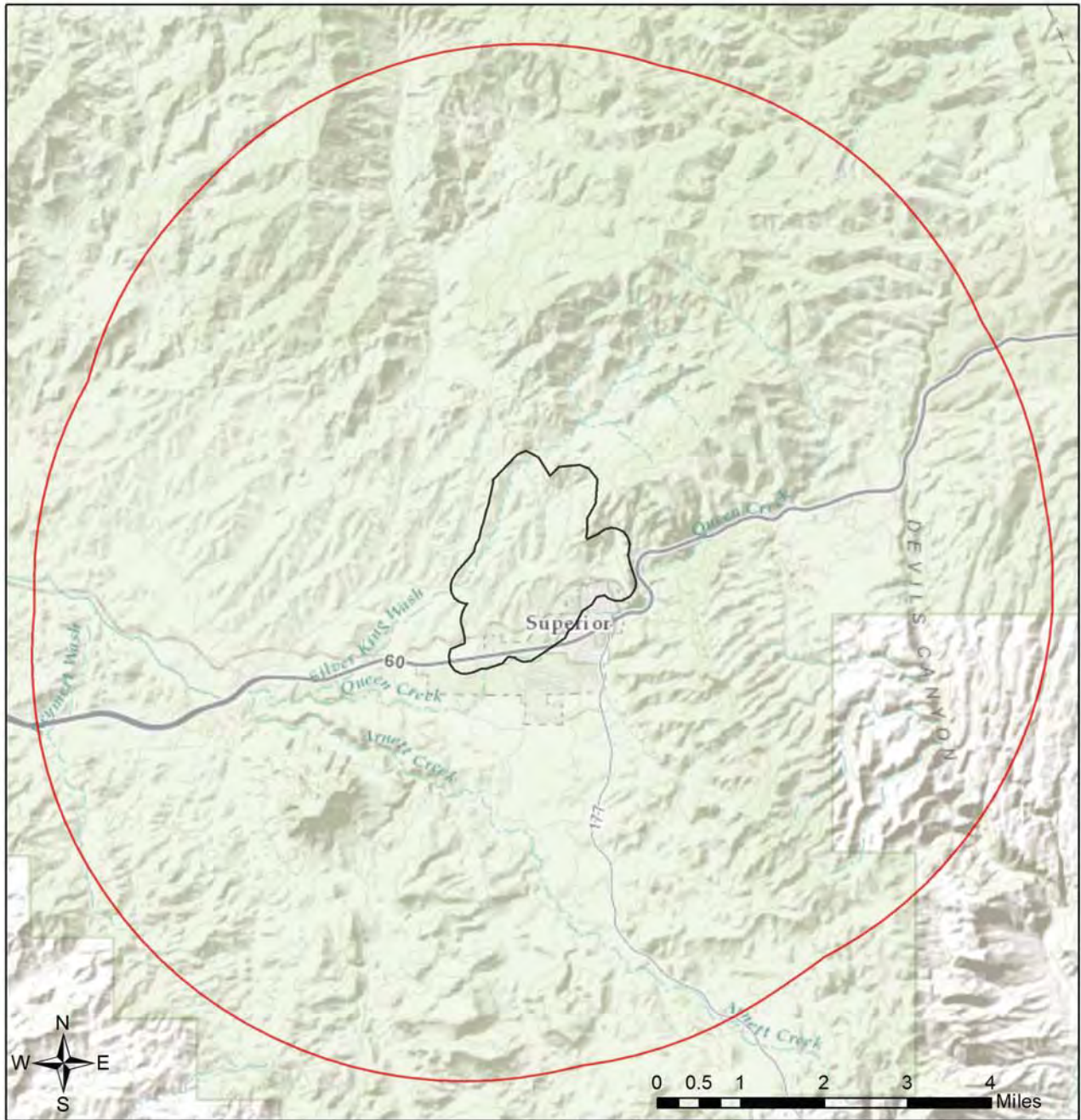
Project Size (acres): 2,388.84
Lat/Long (DD): 33.3011 / -111.1119
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R12E; T2S, R12E
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),



WPS

Web Map As Submitted By User



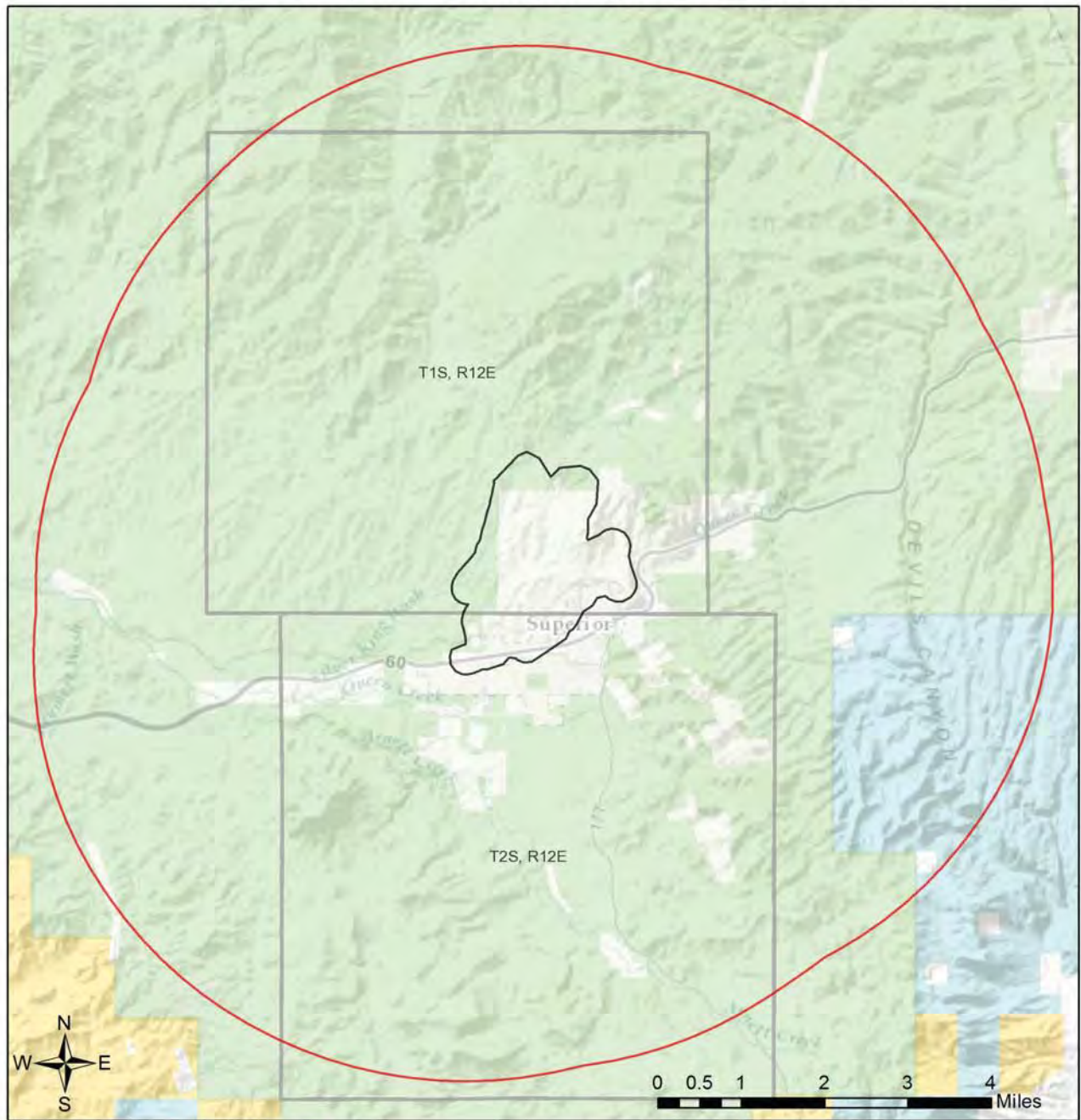
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 2,388.84
Lat/Long (DD): 33.3011 / -111.1119
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T1S, R12E; T2S, R12E
USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

WPS

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Mixed/Other |
| Buffered Project Boundary | National Park/Mon. |
| Township/Ranges | Private |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |
| Military | |

Project Size (acres): 2,388.84
 Lat/Long (DD): 33.3011 / -111.1119
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T1S, R12E; T2S, R12E
 USGS Quad(s): PICKETPOST MOUNTAIN; SUPERIOR

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Abutilon parishii	Pima Indian Mallow	SC	S	S	SR	
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Bat Colony						
Boyce Thompson Arboretum and Arnett -Queen Creeks	Important Bird Area					
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Cyprinodon macularius	Desert Pupfish	LE				1A
Echinocereus triglochidiatus var. arizonicus	Arizona Hedgehog Cactus	LE			HS	
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S			1A
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Myotis yumanensis	Yuma Myotis	SC				1B
Xantusia bezyi	Bezy's Night Lizard		S			1B

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Agosia chrysogaster	Longfin Dace	SC		S		1B
Aix sponsa	Wood Duck					1B
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC				1B
Anthus spragueii	Sprague's Pipit	C*				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis flagellicauda	Gila Spotted Whiptail					1B
Athene cucularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Castor canadensis	American Beaver					1B
Catostomus clarkii	Desert Sucker	SC	S	S		1B
Catostomus insignis	Sonora Sucker	SC	S	S		1B
Chilomeniscus stramineus	Variable Sandsnake					1B
Chordeiles minor	Common Nighthawk					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus cerberus</i>	Arizona Black Rattlesnake					1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE				1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eugenes fulgens</i>	Magnificent Hummingbird					1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Gila intermedia</i>	Gila Chub	LE				1A
<i>Gila robusta</i>	Roundtail Chub	C*	S			1A
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	C*	S			1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite					1B
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat	SC	S	S		1B
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Junco phaeonotus</i>	Yellow-eyed Junco		S			1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus blossevillii</i>	Western Red Bat		S			1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	LE				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Meda fulgida</i>	Spikedace	LE				1A
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Microtus mexicanus</i>	Mexican Vole					1B
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B

**Species of Greatest Conservation Need
 Predicted within Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep					1B
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Passerculus sandwichensis</i>	Savannah Sparrow					1B
<i>Perognathus amplus</i>	Arizona Pocket Mouse					1B
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B
<i>Phrynosoma solare</i>	Regal Horned Lizard					1B
<i>Phyllorhynchus browni</i>	Saddled Leaf-nosed Snake					1B
<i>Poeciliopsis occidentalis occidentalis</i>	Gila Topminnow	LE				1A
<i>Progne subis hesperia</i>	Desert Purple Martin			S		1B
<i>Setophaga petechia</i>	Yellow Warbler					1B
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	LT				1A
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat					1B
<i>Terrapene ornata</i>	Ornate Box Turtle					1A
<i>Toxostoma lecontei</i>	Le Conte's Thrasher					1B
<i>Troglodytes pacificus</i>	Pacific Wren					1B
<i>Vireo bellii arizonae</i>	Arizona Bell's Vireo					1B
<i>Vulpes macrotis</i>	Kit Fox					1B
<i>Xantusia bezyi</i>	Bezy's Night Lizard		S			1B

Species of Economic and Recreation Importance Predicted within Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Callipepla gambelii</i>	Gambel's Quail					
<i>Odocoileus hemionus</i>	Mule Deer					
<i>Odocoileus virginianus</i>	White-tailed Deer					1B
<i>Ovis canadensis mexicana</i>	Mexicana Desert Bighorn Sheep					1B
<i>Patagioenas fasciata</i>	Band-tailed Pigeon					1C
<i>Pecari tajacu</i>	Javelina					
<i>Puma concolor</i>	Mountain Lion					
<i>Zenaida asiatica</i>	White-winged Dove					
<i>Zenaida macroura</i>	Mourning Dove					

Project Type: Mining, Extraction Other minerals (copper, limestone, cinders, shale, salt), Other minerals (copper, limestone, cinders, shale, salt)

Project Type Recommendations:

Fence recommendations will be dependant upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, cantered, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with the Office of Surface Mining may be required (<http://www.osmre.gov/index.shtml>).

Based on the project type entered, coordination with the Environmental Protection Agency may be required (<http://www.epa.gov/>).

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Pre- and post-survey/monitoring should be conducted to determine alternative access/exits to mines and to identify and/or minimize potential impacts to bat species. For further information when developing alternatives to mine closures, contact the Arizona Game and Fish Department Nongame Bat Coordinator at the Main Office in Terrestrial Branch, <https://www.azgfd.com/agency/offices> or (602) 942-3000.

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered, coordination with Arizona Department of Water Resources may be required (<http://www.azwater.gov/azdwr/default.aspx>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Avoid/minimize wildlife impacts related to contacting hazardous and other human-made substances in facility water collection/storage basins, evaporation or settling ponds and/or facility storage yards. Design slopes to discourage wading birds and use fencing, netting, hazing or other measures to exclude wildlife.

Project Location and/or Species Recommendations:

HDMS records indicate that one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area. Please contact:

Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373

<https://agriculture.az.gov/environmental-services/np1>

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf>

The analysis has detected one or more Important Bird Areas within your project vicinity. Please see http://aziba.org/?page_id=38 for details about the Important Bird Area(s) identified in the report.

