

**ECOLOGICAL OVERVIEW
DRIPPING SPRINGS PARCEL
GILA AND PINAL COUNTIES, ARIZONA**
Resolution Copper

Prepared for:



102 Magma Heights – Superior, Arizona 85173

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EXECUTIVE SUMMARY

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining, LLC (Resolution Copper) to prepare an Ecological Overview for approximately 160 acres (65 hectares) in Gila and Pinal counties, Arizona. The Dripping Springs parcel (“the Property”) is a private inholding within the Bureau of Land Management (BLM) lands (and adjacent to Arizona State Trust Lands), located along the Dripping Spring Mountains about 8 miles (13 kilometers [km]) north of the town of Hayden.

This ecological evaluation was conducted to:

- Identify the type and relative condition of the biological resources,
- Evaluate ecological characteristics of the Property to identify remarkable resource attributes, and
- Briefly assess their conservation values in reference to local and regional contexts.

The Property’s history is not well documented, but available information suggests that the site has seen minimal human use. There are no roads or trails to the Property. The site is not timbered and therefore not suitable for logging. Although the soils are considered suitable for rangeland, the Property has not recently been used for grazing. There is no evidence of homesteading on the Property. Two small mine workings were observed, both of which were adits (horizontal shafts) into steep slopes, with small waste rock piles on the slopes below them. Recreational use has likely been limited; a shotgun shell and a few pieces of trash were observed on the Property.

The relatively undisturbed condition of the Dripping Springs parcel offers the specific ecological values and opportunities described below.

Value #1: Potential Habitat for Special-Status Species

The Dripping Springs parcel lies within the known, current geographic range of, and provides potentially suitable habitat for, seven special-status species.¹ One species listed by the U.S. Forest Service (USFS) as sensitive with potential to occur is the Sonoran desert tortoise (*Gopherus morafkai*); the Sonoran desert tortoise is also listed as wildlife of special concern by the State of Arizona. The Dripping Springs parcel also lies within the known, current geographic range of, and displays potentially suitable habitat for several species identified by the BLM as sensitive, and for several species listed by the State of Arizona as wildlife of special concern or salvage restricted plants.

The four species identified as sensitive by the BLM include: golden eagle (*Aquila chrysaetos*), California leaf-nosed bat (*Macrotus californicus*), also listed by the State of Arizona as wildlife of special concern, pale Townsend’s big-eared bat (*Corynorhinus [= Plecotus] townsendii pallascens*), and Pima Indian mallow (*Abutilon parishii*). The Pima Indian mallow is also listed as salvage restricted under the Arizona Native

¹ In this document, special-status species are those currently listed by the USFWS as endangered, threatened, proposed for listing, or candidate for listing under the ESA, species identified as sensitive by the BLM, and species listed by the State of Arizona. Several of these species are listed by more than one of these entities.

Plant Law, along with the San Carlos wild-buckwheat (*Eriogonum capillare*) and varied fishhook cactus (*Mammillaria viridiflora*), both of which also have potential to occur.

Value #2: Inaccessible Inholding without Obvious Recreation or Resource Attraction

Access to the Property is only afforded by overland hiking across rugged terrain. The relatively remote location has effectively isolated the Property from human use for recreation or resource extraction. Accordingly, the Dripping Springs parcel has not been subjected to overuse by hikers, off-road vehicle enthusiasts, hunters, miners, or ranchers.

Opportunity #1: Protecting Special-Status Species

The seven special-status species that may occur on the Dripping Springs parcel would be protected by public land management policies that would not be present under private ownership. Species identified by the BLM are only protected on BLM-administered land. Species identified by the State of Arizona are protected under certain circumstances, depending in part on land ownership. If the Dripping Springs parcel were to transfer from private to public ownership, the special-status species would receive protection from the BLM as part of landscape-level management decisions.

Opportunity #2: Managing Public Lands

The Dripping Springs parcel would be managed by BLM rather than being managed under private ownership. The Dripping Springs parcel is relatively isolated from any other private inholding; therefore, BLM management of the Property would ease management issues by allowing the agency to include the Dripping Springs parcel in landscape-level management plans. Recreational and resource use activities generating significant noise, light, and dust disturbances would require permit and as such, the Property would be managed in a manner consistent with the adjacent land, all of which is administered by the BLM.

I. INTRODUCTION AND METHODS

I.1. PURPOSE AND ORGANIZATION OF REPORT

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining, LLC (Resolution Copper) to prepare an Ecological Overview for approximately 160 acres (65 hectares) in Gila and Pinal counties, Arizona. In this report, the site is referred to as the Dripping Springs parcel or “the Property.”

The Dripping Springs parcel is a private inholding within land administered by the U.S. Department of Interior Bureau of Land Management (BLM) (**Figure 1**). The Property occupies portions of Section 7 and 8 of Township 4 South, Range 15 East of the Gila and Salt River Baseline and Meridian. There is no direct road access to the Property.

This ecological overview was conducted to:

- Identify the types and condition of the biological resources,
- Evaluate ecological characteristics of the Property to identify remarkable resource attributes, and
- Briefly assess their current and potential conservation values in reference to local and regional contexts.

This report is presented in seven sections:

- Section 1 – Introduction and Methods (this section)
- Section 2 – Regional Setting
- Section 3 – Property and Adjacent Land Uses
- Section 4 – Physical Resources
- Section 5 – Biological Resources
- Section 6 – Conservation Value and Opportunities
- Section 7 – References

I.2. METHODS AND APPROACH

WestLand completed this evaluation by conducting background research of available natural history information and aerial photography of the Property and surrounding region, and through field reconnaissance to identify, map, and photograph vegetation and habitat types. WestLand obtained and reviewed available literature pertaining to biotic communities of the southwest, riparian ecosystems, and the Dripping Springs parcel area. Primary sources of information that were reviewed include *Biotic Communities of the Southwestern United States and Northwestern Mexico* (Brown 1994; a comprehensive reference of the desert southwest), wildlife abstracts from the U.S. Fish & Wildlife

Service (USFWS), and various documents and websites prepared and maintained by the BLM, Arizona Department of Water Resources (ADWR), and other agencies and conservation organizations. These references and aerial photographs were reviewed to identify potential and confirm observed vegetation communities on the Property.

WestLand biologists conducted field reconnaissance of the Property on May 7, 2015 to observe current site conditions, biological resources, and abiotic factors affecting biota distribution and relative habitat value within the Property. The reconnaissance consisted of a pedestrian survey that focused on accessible areas of interest identified during the background research phase of the evaluation. Inaccessible areas were scanned using binoculars to observe distant vegetation communities. Field observations were recorded and photographs taken to document the various physical and biological resources present on the Property. In particular, vegetation patterns were noted and observed species recorded. The general vegetation patterns were delineated on an aerial photograph and transcribed onto a vegetation map of the Property. Direct and indirect (tracks, scat, burrows, etc.) observation of wildlife were noted.

Specific attention was paid to the Property's potential to provide habitat for special-status species. Information such as the Property's elevation range, habitat type, water resources, climate, and other related information was compiled and compared to background research information. To identify special-status species with some potential to occur on the Property, we used the Information, Planning, and Conservation (IPaC) online environmental review tool maintained by USFWS and other federal agencies, and records of special-status species occurrences from the Arizona Game and Fish Department (AGFD) Heritage Data Management System (HDMS; **Appendix A**). The life history of each of these species was then reviewed to determine habitat requirements such as vegetation communities, elevation ranges, presence of surface water, and other landscape features. This information was used to eliminate those species that were unlikely to occur. Additional literature research was conducted and summarized for those species with known ranges and habitat requirements close to the Property or which have potential to occur there. The screening analysis resulted in a list of target species that have potential to occur on the Property (**Appendix A**).

2. REGIONAL SETTING

The Property lies within the Basin and Range physiographic province in the Dripping Spring Mountains (**Appendix B, Photograph 1**). The Basin and Range province is bounded on the north by the transition zone to the Colorado Plateau and on the east by the Mexican Highlands; lands south and west of the area are continuations of the Basin and Range province (Nations and Stump 1996). The Dripping Spring Mountains are oriented along a northwest-southeast alignment; Dripping Spring Wash lies on the northeast side and the Gila River on the southwest. The Property is situated generally along an east-west trending ridgeline of the Dripping Spring Mountains.

There are no substantive waterways on the Dripping Springs parcel. The western portion of the Property drops topographically into headwaters of unnamed ephemeral drainages on either side of the ridge. The drainage from the north side is tributary to Steamboat Wash, joining that drainage approximately 1 mile (1.6 kilometer [km]) west of the Dripping Springs parcel. Steamboat Wash is also ephemeral but flows south, eventually joining the Gila River some 3 miles (2 km) southwest of the Property. The drainage from the south side roughly parallels Steamboat Wash and also joins the Gila River approximately 3 miles (2 km) southwest of the Property.

Land surrounding the Dripping Springs parcel is publicly owned. The BLM administers the majority of the land in the area. The Arizona State Land Department (ASLD) manages various parcels of State Trust Land situated south of the Property, including one parcel adjoining a portion of the southern Property boundary. Other ASLD-administered parcels are irregularly placed in the vicinity of the Property. Other privately owned parcels are typically situated in the Dripping Spring Wash or Gila River bottom lands. Only a few other private inholdings lie within the mountain range, the nearest is about 0.5 mile (0.6 km) west.

The closest metropolitan area is Phoenix, Arizona (city population approximately 1.5 million; metropolitan area population approximately 4.3 million) approximately 72 miles (116 km) to the northwest. The small towns of Kearny (approximate population 2,200) and Hayden (approximate population 700) are the closest population centers; the economies of both communities are oriented toward the nearby ASARCO Ray mine and Hayden smelter.

3. PROPERTY AND ADJACENT LAND USES

The Dripping Springs parcel has been lightly used for recreation, grazing, and underground hardrock mining. Recreational use appears to have been limited to hunting (a shotgun shell casing was observed on site) and possibly rock climbing (vertical cliff faces with fractures and slots are present). There was no evidence of intense recreational use, such as off-highway vehicle (OHV) roads or campfire rings. The Property is surrounded by BLM-administered land subject to grazing uses; although no livestock was observed on- or off-site during our site visit, the Property is not delineated by fencing and any livestock on the BLM-administered land could wander onto the site. Vegetation on the Dripping Springs parcel, however, appears to be low value for grazing. Two small abandoned mine features (adits and associated waste rock piles) were observed on steep slopes. Although specific hardrock mining records for the two abandoned mine features on the Property are not available, mining in the quadrangle began as early as 1879 (Banks and Kreiger 1977). Mining in the general vicinity of the Property consisted of open and underground workings for gold, iron, copper, zinc, and other materials (Banks and Kreiger 1977). It is likely that the two features observed were small-scale exploration efforts, possibly in the late 1800s or early 1900s that did not yield economically recoverable concentrations of metals.

There is no designated access into the Property. The Dripping Springs parcel is accessible from Arizona State Route 177 in Kearny, Arizona, via Hammond Drive, a dirt road from Kearny, to the northeast approximately 3.4 miles (5.5 km) up Steamboat Wash, and then overland approximately 1.2 miles (2 km) to the Property.

The Property was purchased by Swift Current Land & Cattle LLC (a subsidiary of Resolution Copper) from Dripping Springs Ranch, LLC in July 2005 (Swift Current Land & Cattle Co 2005). Title records available online for Gila County are limited prior to 2005. An official Chain of Title Records search will be conducted as required for the transfer of private lands to federal ownership. Further historical land ownership information will be available as a result of this official records search.

The BLM administers the land that surrounds much of the Property; the ASLD administers State Trust Land parcels in the vicinity, including one parcel that adjoins a portion of the southern Property boundary. Although administrative practices and public use of the BLM and ASLD differ, the mountainous land surrounding the Dripping Springs parcel is used similarly to the Property: light recreational and grazing use, with some historical mining. Recreational use—in particular, off-road vehicle use—is likely more intense on BLM-administered land to west, where primitive roads and jeep trails are present (such as along Steamboat Wash). Mine sites, generally abandoned, are identified on U.S. Geological Survey (USGS) topographic maps of the area along the Dripping Spring Mountains northwest and southeast of the Property, more than 3 miles (5 km) from the Dripping Spring parcel. Land use intensifies in the low lands of the Dripping Spring Wash and Gila River valley northeast and southwest, respectively, of the Property. Mine sites, residential and commercial development (rural and urban), and transportation corridors (roads and railroads) are present in these areas, also more than 3 miles (5 km) from the Dripping Springs parcel.

4. PHYSICAL RESOURCES

4.1. LANDFORM AND TOPOGRAPHY

The Dripping Springs parcel is situated within the Dripping Spring Mountains north of Kearny, Arizona (**Figure 1**). The parcel is characterized by rugged terrain with considerable vertical relief, composed largely of exposed rock faces, boulders of various sizes, rocky slopes, and generally poor or little soil development (**Appendix B, Photograph 2**) (WestLand 2005). The Dripping Springs parcel elevation ranges from approximately 3,480 to 4,360 feet (ft) (1,061 to 1,32meters [m]) above mean sea level (amsl). The highest point is near the northeastern corner of the Property; the lowest point is near the southwestern corner. Notable peaks in the vicinity of the parcel include Steamboat Mountain (rising to 3,373 ft [1,028 m] amsl) immediately west of the parcel and Tam O'Shanter Peak (rising to 4,633 ft [1,412 m] amsl) southeast of the parcel.

Regionally, the Dripping Springs parcel is within the Basin and Range physiographic province. The province is characterized by elongated mountain ranges trending northwest-southeast, separated by broad alluvial valleys (**Appendix B, Photograph 3**). The Dripping Springs Wash Basin northeast of the Property is drained by Dripping Spring Wash, a tributary of the Gila River. The Gila River generally flows east to west; in this segment, the river flows southwest out of the Mescal Mountains, around the eastern end of the Dripping Spring Mountains (east of the Property), and then to the northwest along the southwestern flank of the Dripping Spring Mountains.

4.2. GEOLOGY AND GEOMORPHOLOGY

The Dripping Springs parcel is located within the USGS Hayden 7.5-minute topographic quadrangle which has been described in detail (1:24,000) by Banks and Krieger (1977). The Hayden quadrangle is dominated by the Dripping Spring Mountains that trend northwest-southeast through the center. The range is bounded by the Dripping Spring Valley to the northeast and the Gila River Valley to the southwest. These valleys were depositional basins for thick colluvial and lacustrine sediments of Miocene age (**Figure 4**). Faulting and erosion has exposed Oligocene sediments in the Gila River Valley. Precambrian rocks are found in the southwest corner of the quadrangle.

The land surface within this rugged quadrangle has been influenced by erosion, faulting, development, and then dissection of several pediment surfaces; deposition of several thin clastic units; deposition of travertine along some faults; and development of recent draining and accompanying older and younger alluvial deposits. A portion of the geologic map of the Hayden quadrangle that covers the Dripping Springs parcel is provided in **Figure 4**.

4.2.1. Surficial Deposits

Data provided by the National Cooperative Soil Survey through Web Soil Survey (Soil Survey Staff 2015) indicate that three soil complexes are present within the Dripping Springs parcel, as shown in **Figure 5**. The soil complexes are generally well drained and occur on mountains and fan terraces.

Chiricahua-Deloro-Leyte complex—constitutes about 92 percent of the parcel and consists of shallow, well-drained soils formed in alluvium. Soils are on pediments, hills and mountains. Slopes range from 10 to 50 percent. Permeability is very low to moderately low (**Appendix B, Photograph 4**).

Stagecoach-Delnorte complex—constitutes approximately 8 percent of the parcel and consists of the well-drained soils on fan terraces. This complex is approximately 55 percent Stagecoach soils and 35 percent Delnorte soils.

The Stagecoach series consists of very deep, well-drained soils formed in mixed alluvium with slopes of 0 to 60 percent (**Appendix B, Photograph 5**). Permeability is moderately rapid. The Delnorte series consists of soils that are very shallow and shallow to a petrocalcic horizon. They are well-drained soils that are moderately to rapidly permeable above and below a very slowly permeable petrocalcic horizon. They formed in calcareous loamy materials containing igneous gravel. These soils are on nearly level hilly uplands, fan piedmonts, and fan remnants. Slope ranges from 0 to 30 percent (Soil Survey Staff 2015).

Holguin-Rock Outcrop complex—comprises less than 1 percent of the Dripping Springs parcel. The Holguin series consists of very shallow and shallow, well-drained, low to moderately low permeability soils formed on mountains. Rock outcrop comprises 35 percent of this soil complex (Soil Survey Staff 2015).

4.2.2. Bedrock

Bedrock exposed on the Dripping Springs parcel consists of Middle Proterozoic Sedimentary Rock (Ys) with volcanic intrusions, and Mississippian, Devonian, and Cambrian Sedimentary Rocks (MCA) (**Figure 4**).

Middle Proterozoic Sedimentary Rocks (Ys)—the majority of the Dripping Springs parcel is underlain by this bedrock unit. The primary rock type in this unit is sandstone while the secondary rock type is limestone. The bedrock in this unit consists of red-brown shale and sandstone, buff to orange quartzite, limestone, basalt, black shale, and sparse conglomerate (**Photograph 6**). This unit includes the Grand Canyon Supergroup, Apache Group, and Troy Quartzite. These rocks were deposited in shallow marine, coastal non-marine, and fluvial settings (700-1300 million years ago [Ma]).

Mississippian, Devonian, and Cambrian Sedimentary Rocks (MCA)—this bedrock unit is found on the western portion of the parcel. The primary rock type in this unit is comprised of sandstone,

while the secondary rock type is siltstone (**Appendix B, Photograph 7**). The bedrock in this unit consists of brown to dark gray sandstone that grades upward into green and gray shale, overlain by light to medium or tan limestone and dolostone. This unit includes the Tapeats Sandstone, Bright Angel Shale, Muav Limestone, Temple Butte Formation, and Redwall Limestone in northern Arizona, and the Bolsa Quartzite, Abrigo Formation, Martin Formation, and Escabrosa Limestone in southern Arizona. Some conglomerates are included in this unit (**Appendix B, Photograph 8**). These rocks record intermittent sea-level rise and inundation in early Paleozoic time (330-540 Ma).

4.2.3. Structural Features

The Dripping Spring Mountains have extensive complex fault systems and are composed of tilted fault blocks (Banks and Krieger 1977) (**Appendix B, Photograph 9**). These mountains are dominated by intricately patterned fault mosaics that are superimposed on a gently dipping sequence of rocks that have been arched into a broad, open anticline, plunging to the southeast (**Appendix B, Photograph 4**).

Four major north-south fault systems (the Cowboy, Kelly Springs, Keystone, and O'Carroll faults) and two major northwest-southeast fault systems bound the Dripping Spring Mountains (Banks and Krieger 1977). One of these north-south facing faults, the Cowboy fault, bisects the parcel near the western quarter (**Figure 4**).

4.3. CLIMATE

The Dripping Spring Mountains receive roughly 18 inches (45.7 cm) of precipitation annually based on precipitation records in the 1950s, while the entire basin received an average of 14 inches (35.6 cm) per year (USGS 1955). The nearest active weather station is the Winkelman 6S station, approximately 14 miles [22.5 km] south and at an elevation of 2,080 ft (634 m) amsl. The average annual temperatures there range from 47 to 82 degrees Fahrenheit (8.3 to 27.8 degrees Celsius) with an annual mean temperature of 65 degrees Fahrenheit (18.3 degrees Celsius). Average precipitation at the Winkelman 6S station is approximately 13.58 inches (34.5 cm) per year (WRCC 2015). Actual onsite temperature ranges are expected to be lower and precipitation may be higher, given that the parcel is at a higher elevation (1,400 ft [427 m]) than the weather station.

4.4. WATER RESOURCES

4.4.1. General Considerations of Water Resources

There are no surface water features in the Dripping Springs parcel, but the ridgetop location includes headwaters for two unnamed drainages that report to the Gila River (**Appendix B, Photograph 10**).

4.4.2. Surface Water Resources

There appear to be no perennial or intermittent surface water features within the Dripping Springs parcel based on review of recent aerial photography and topographic mapping, as well as observations during a field visit on May 7, 2015. A few minor ephemeral headwater drainage features that are tributaries to the Gila River exist within the parcel. The National Wetlands Inventory (NWI) map identifies no wetlands within the parcel (USFWS 2015).

Regionally, the majority of the Dripping Springs parcel has been mapped by the Federal Emergency Management Agency (FEMA) as Zone D (**Figure 6**), denoting areas where FEMA has not conducted flood hazard analysis and the potential flood hazard has not been determined. A small area in the extreme southwestern portion of the parcel is mapped as Zone X (**Figure 6**), denoting areas of minimal flood hazards. The parcel lies within two USGS Hydrologic Unit Codes including the Mineral Creek-Gila River (HUC 10) and Steamboat Wash-Gila River units (HUC 12) (**Figure 6**).

The Dripping Springs Wash Basin has two major (10 gpm [gallons-per-minute] or greater) springs (ADWR 2014). The nearest is Mescal Warm Spring, roughly 13 miles (21 km) east of the Property with a measured discharge of 200 gpm (12.6 liters per second [L/sec]) in 1985 (ADWR 2014). Coolidge Dam Warm Spring is roughly 20 miles (32 km) east of the Property and discharged 165 gpm (10.4 L/sec) in 1985 (ADWR 2014). There are no minor springs, reservoirs, or lakes identified in this basin; however, a total of 79 stock ponds with up to 15 acre-feet capacity are present (ADWR 2014).

4.4.3. Groundwater Resources

Site-specific groundwater studies have not been conducted for the Dripping Springs parcel; the following account is based on regional information.

The Dripping Springs parcel is located within the Mammoth sub-basin of the Lower San Pedro groundwater basin. In this basin, the groundwater flow direction is from the mountains south toward the valley floor of the Gila River and then north. The Dripping Springs Wash Basin, within the Lower San Pedro groundwater basin, is the largest valley north of the Gila River and occupies 378 square miles (979 square kilometers [km²]). The wash basin is estimated to have groundwater recharge of between 3,000 to 9,000 acre-feet per year and has an estimated groundwater storage of less than 1 million acre-feet (ADWR 2014).

The aquifer in the Mammoth sub-basin is made up of four water-bearing units: the floodplain aquifer, unconfined basin-fill, confined basin-fill, and the fractured and faulted portions of hard rock. The most productive of these is the floodplain aquifer, which parallels the major waterways and is composed of gravel, sand, silt, and clay. An artesian aquifer may be encountered in wells drilled deeper than 500 ft (152 m). The primary recharge in the area occurs from mountain front recharge and streambed infiltration (ADEQ 2002).

Historically, water quality in the Dripping Springs Wash Basin was classified as “excellent to good” for irrigation use with the exception of two sources containing high sulfates (USGS 1955). According to a baseline study conducted by ADEQ in 2000, the water from the artesian aquifers is suitable for domestic and irrigation purposes in the southern portion of the basin. The groundwater collected from the unconfined basin-fill and hard rock aquifers has the fewest water quality standard exceedances (ADEQ 2002).

The ADWR Well Registry database identifies two wells within a 1-mile (1.6-km) radius of the parcel (ADWR 2013) (**Figure 6**). The nearest well is located just north of the parcel boundary at an elevation of roughly 3,860 ft (1,176 m) and is drilled to a depth of 82 ft (25 m) (ADWR 2013). The second well is located approximately 1 mile (1.6 km) east of the parcel at an elevation of roughly 4,230 ft (1,289 m) and is reportedly drilled to a depth of 3 ft (0.9 m) (ADWR 2013)². The water level trends in these wells show that the groundwater is relatively shallow at less than 30 ft (9.1 m) below the ground surface. Water quality data for these wells were not available. They are likely completed in the bedrock or unconfined basin fill aquifers mentioned above, thus groundwater in these wells is likely good quality.

² WestLand doubts this specification, and suspect that there is a typographical error in the Well Registry. It is not possible to accurately guess what the actual well depth is.

5. BIOLOGICAL RESOURCES

5.1. VEGETATION AND HABITAT DESCRIPTION

The Dripping Springs parcel lies within two biotic communities as mapped by Brown and Lowe (1980) and described by Brown (1994a): the Arizona Upland subdivision of Sonoran Desertscrub and Semidesert Grassland (**Figure 7**). Vegetation within the Dripping Springs parcel is best described as an ecotone of the two communities. In this section, we provide a brief description of each community. The following descriptions are synoptic, based on field observations made on May 7, 2015, and on the general outlines provided by Brown (1994a).

5.1.1. Arizona Upland Subdivision of Sonoran Desertscrub

The Arizona Upland subdivision is best represented on slopes that are generally south-facing, in the western portion of the Property (**Figure 7; Appendix B, Photograph 13**). The Arizona Upland subdivision typically consists of shrubs, cacti, and leguminous trees including paloverde (*Parkinsonia* spp.), ironwood (*Olneya tesota*), and mesquites (*Prosopis* spp.) (Turner and Brown 1994). Within the Dripping Springs parcel, this vegetation type is characterized by saguaro (*Carnegiea gigantea*), foothill paloverde (*Parkinsonia microphyllum*), pricklypear (*Opuntia* spp.), and jojoba (*Simmondsia chinensis*). Additional species common to this biotic community that were also observed within the Property include fairyduster (*Calliandra eriophylla*), brittlebush (*Encelia farinosa*), agave (*Agave* spp.), velvet mesquite (*Prosopis velutina*), catclaw mimosa (*Mimosa aculeaticarpa*), ocotillo (*Fouquieria splendens*), a variety of cholla (*Cylindropuntia* spp.), hedgehogs (*Echinocereus* spp.) (**Appendix B, Photograph 14**), and pincushions (*Mammillaria* spp.).

Drainages within the Dripping Springs parcel are xeric, and do not support riparian vegetation. Instead these areas contain a greater density of species that are also present in the adjacent uplands, including foothill paloverde and catclaw mimosa.

5.1.2. Semidesert Grassland

Vegetation in the eastern portion of the Property, and on generally north-facing slopes in the western portion of the Property, is representative of the Semidesert Grassland biotic community (**Figure 7**). Vegetation typical of this community includes numerous species of grass, often with a scrub-shrub component and a variety of cactus species (**Appendix B, Photograph 15**). Except for mesquite and one-seed juniper (*Juniperus monosperma*), trees are uncommon and usually restricted to drainages (Brown 1994b). Within the Dripping Springs parcel this biotic community is characterized by the following species: three-awn grasses (*Aristida* spp.), grama grasses (*Bouteloua* spp.), curly mesquite grass (*Hilaria belangeri*), desert spoon (*Dasyllirion wheeleri*), agave, and broom snakeweed (*Gutierrezia sarothrae*). Other species observed include globemallow (*Sphaeralcea* spp.), hopbush (*Dodonaea viscosa*), desert

hackberry (*Celtis pallida*), barberry (*Berberis* spp.), barrel cactus (*Ferocactus wislizenii*), one-seed juniper, and velvet mesquite.

Several plant species frequently found on calcareous substrate including sandpaper bush (*Mortonia scabrella*; **Appendix B, Photograph 16**), mariola (*Parthenium incanum*), crucifixion thorn (*Canotia holocantha*), desert zinnia (*Zinnia acerosa*), and beebush (*Aloysia wrightii*), were also noted.

5.1.3. Human Altered Aspects of Vegetation on the Dripping Springs Parcel

WestLand reviewed available information including aerial photography and USGS topographic maps to estimate the amount and type of human disturbance present within the Property. Results of this review, as well as observations made during the field reconnaissance, indicate minimal human disturbance of vegetation on the Property. Two mine adits are located near the center of the Property and include small waste rock piles downslope of the adits. Disturbed vegetation resulting from the excavation of these features is estimated to be less than 0.5 acres. There is no evidence of vegetation alteration from recreation or grazing within the property.

5.2. WILDLIFE

As described above and identified by Brown and Lowe (1980), the biotic communities found within the Dripping Springs parcel are:

- Arizona Upland Subdivision of Sonoran Desertscrub and
- Semidesert Grassland.

Mammal and reptile species that can be expected to occur in these biotic communities on or adjacent to the Property include black-tailed jackrabbit (*Lepus californicus*), cottontail rabbit (*Sylvilagus* spp.), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), javelina (*Pecari tajacu*), cotton rats (*Sigmodon* spp.), white-throated wood rat (*Neotoma albigula*), pocket mouse (*Perognathus* spp.), kangaroo rat (*Dipodomys* spp.), California leaf-nosed bat (*Macrotus californicus*), California myotis (*Myotis californicus*), Sonoran desert tortoise (*Gopherus morafkai*), western diamondback rattlesnake (*Crotalus atrox*), desert spiny lizard (*Sceloporus magister*), whiptail lizards (*Cnemidophorus* spp.), and Gila monster (*Heloderma suspectum*) (Brown 1994a).

Common bird species expected to occur on or adjacent to the Property include American kestrel (*Falco sparverius*), mourning dove (*Zenaida macroura*), greater roadrunner (*Geococcyx californianus*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*), common poorwill (*Phalaenoptilus nuttallii*), Harris's hawk (*Parabuteo unicinctus*), Swainson's hawk (*Buteo swainsoni*), white-winged dove (*Zenaida asiatica*), elf owl (*Micrathene whitneyi*), pyrrhuloxia (*Cardinalis sinuatus*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), ladder-backed woodpecker (*Picoides scalaris*), curve-billed thrasher (*Toxostoma curvirostre*), western kingbird (*Tyrannus verticalis*), ash-throated flycatcher

(*Myiarchus cinerascens*), northern mockingbird (*Mimus polyglottos*), black-tailed gnatcatcher (*Poliophtila melanura*), loggerhead shrike (*Lanius ludovicianus*), house finch (*Haemorhous mexicanus*), Scott's oriole (*Icterus parisorum*), and brown headed cowbird (*Molothrus ater*) (Brown 1994a).

Wildlife species observed³ by WestLand within the Dripping Springs parcel include javelina, white-throated woodrat, ornate tree lizard (*Urosaurus ornatus*; **Appendix B, Photograph 17**), cactus wren, black-throated sparrow (*Amphispiza bilineata*), turkey vulture (*Cathartes aura*), Anna's hummingbird (*Calypte anna*), Costa's hummingbird (*Calypte costae*), gilded flicker, common raven (*Corvus corax*; **Appendix B, Photograph 5-6**), Gila woodpecker, canyon wren (*Catherpes mexicanus*), verdin, phainopepla (*Phainopepla nitens*), curve-billed thrasher, mourning dove, greater roadrunner, Scott's oriole, northern cardinal (*Cardinalis cardinalis*), ash-throated flycatcher, American kestrel, and Gambel's quail (*Callipepla gambelii*). Sonoran desert tortoise scat was observed northwest of the Property, approximately 600 ft (200 m) outside of the Property boundary.

5.3. SPECIAL-STATUS SPECIES

A preliminary screening analysis was conducted to determine the potential for occurrence of special-status species in the Dripping Springs parcel. For the purpose of this screening, special-status species are those currently listed by the USFWS as endangered, threatened, proposed for listing, or candidate for listing under the ESA, species identified as sensitive by the BLM, and species listed by the State of Arizona. BLM and State-listed species were included as part of this analysis due to the proximity of BLM and State Trust Lands to the Property.

Federally listed special-status species included in this evaluation were obtained using the IPaC online environmental review tool maintained by USFWS and other federal agencies (**Appendix A**). State-listed species and BLM sensitive species were taken from the AGFD HDMS Online Environmental Review Tool (**Appendix A**). The presence of proposed or designated critical habitat for special-status species in the Dripping Springs parcel was also evaluated. No specific surveys for special-status species were conducted as part of this effort.

Determinations of the potential for special-status species to be present and to utilize habitats within the Dripping Springs parcel were based upon:

- Field observations;
- Review of the natural history of the special-status species;
- Evaluation of known range and distribution for the special-status species;
- Comparisons of this information with habitats present in the Dripping Springs parcel;
- Review of records of occurrences in published or gray literature; and

³ Wildlife observations included direct visual/aural observations and the observation of tracks and scat.

- Review of the results of the USFWS IPaC and AGFD HDMS on-line environmental review tool query (**Appendix A**).

The criteria used to determine the potential of occurrence of the species included in this screening analysis in the Property are defined as follows:

Present – The species has been observed in the Property during site visits or has been documented in the Property based on records from recent, reliable sources (e.g., AGFD, USFWS, museum records), and habitats required by the species are known to be currently present.

Possible – The species has not been documented in the Property, but the known, current geographic and elevational range of the species includes the Property, and habitat required by the species appear to be present in the Property.

Unlikely – Generally, the known, current geographic range of the species does not include the Property, but the range of the species is close enough such that the Property may be within the dispersal distance of the species. The required habitat characteristics of the species may be present in the Property, however, the potential for occurrence of these species is insignificant, and detailed discussion in this screening analysis was not deemed warranted.

None – The Property is outside the known geographic and/or elevational range of the species and the habitat required by the species is not present.

Table 1 includes the species' common and scientific name, federal listing status, and WestLand's evaluation of the likelihood of occurrence within the Dripping Springs parcel.

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
Bald eagle (Sonoran Desert population) (<i>Haliaeetus leucocephalus</i>)	SC, BGA	S	WSC	Unlikely: The Property is within the known, current geographic range, but provides only marginal habitat for this species. Bald eagles inhabit lakes, reservoirs, and perennial rivers throughout central Arizona where they are known to nest 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 (Corman and Wise-Gervais 2005). In Arizona this eagle feeds primarily on fish, but waterfowl, small mammals, and carrion also constitute a portion of the diet (USFWS 2011). The HDMS has records of this species within 5 miles (8 km) of the Property (Appendix A); which contains tall cliffs that may be suitable for roosting and/or nesting. These cliffs however, do not overlook areas with abundant prey; and are located several miles from the nearest water body.
California leaf-nosed bat (<i>Macrotus californicus</i>)	SC	S	WSC	Possible: The Property occurs within the known, current geographic and elevational range (AGFD 2015g), and contains potentially suitable habitat for this species. California leaf-nosed bat is primarily found in Sonoran desertscrub vegetation. It prefers roost sites with large areas of ceiling and flying space including abandoned underground mines, caves, rock shelters, and a variety of manmade structures (AGFD 2001). The Property contains two mine adits that could provide potentially suitable habitat for this species. There are also records of the species within 5 miles (8 km) of the Property (Appendix A).

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
Desert box turtle (<i>Terrapene ornata luteola</i>)	--	S	--	Unlikely: The Property is not within the known, current geographic range, but contains potentially suitable habitat for this species. In Arizona this species typically occurs in Semidesert Grassland, but has also been found in Madrean Evergreen Woodland, and in Chihuahuan and Sonoran desertscrub vegetation. Its known Arizona distribution includes the southeastern portion of the state; however, little is known about the historical or current populations due to the species' secretive nature (AGFD 2013). There are records of the species within 5 miles (8 km) of the Property (Appendix A).
Golden eagle (<i>Aquila chrysaetos</i>)	BGA	S	--	Possible: The Property is within the known, current geographic and elevational range (AGFD 2015a) and contains potentially suitable habitat for the species. Golden eagles can be found nesting in a variety of Arizona habitats including pinyon pine-juniper woodlands, Sonoran desertscrub, Madrean 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). The Property contains tall cliffs that may be suitable for roosting and/or nesting. The HDMS also has records of this species within 5 miles (8 km) of the Property (Appendix A).
Headwater chub (<i>Gila nigra</i>)	C	--	--	None: The Property is outside of the known, current geographic range and does not include any suitable aquatic environments required by this species. Headwater chub occupy deep pools in cool to warm water mid-sized streams (AGFD 2010a).

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuenaë</i>)	E	--	--	Unlikely. The Property is not within the known, current geographic range. This species forages in desert grassland or shrubland on saguaros and other cacti and agaves (AGFD 2011). Though the Property contains numerous saguaros, it is not within the species' known late spring- summer range in Arizona, when saguaro would be in bloom. The Property is also outside the species' known late summer- fall range, when agave is its main forage resource (Cockrum and Petryszyn 1991). Lesser long-nosed bats are known to fly up to 18.5 miles (30 km) to forage (AGFD 2011). Therefore, the Property is outside the foraging range of the nearest known lesser long-nosed bat roosts (WestLand 2014). The AGFD HDMS also reports no records of this species within 5 miles (8 km) of the Property (Appendix A).
Mississippi kite (<i>Ictinia mississippiensis</i>)	--	--	WSC	None: The HDMS has records of this species within 5 miles (8 km) (Appendix A); however, the Property is outside of the known, current geographic range (AGFD 2015f) and does not contain suitable nesting or foraging habitat for this species. The Arizona population of this species is primarily restricted to lowland riparian woodlands. It is strongly associated with cottonwood-dominated habitats often surrounded by dense thickets of tamarisk and velvet mesquite. The Mississippi kite's principle prey species is the Apache cicada, which is especially abundant in these habitats (Corman and Wise-Gervais 2005).
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	T	--	--	None: The Property is outside of the currently recognized geographic range (Brennan and Holycross 2006) and lacks suitable habitat for this species. Northern Mexican gartersnake is strongly associated with perennial aquatic environments (e.g., streams, cienegas, and occasionally stock tanks) that support dense riparian or wetland vegetation (USFWS 2014a).

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
Ocelot (<i>Leopardus pardalis</i>)	E	--	--	None: The Property is outside of the known, current geographic range and does not contain potentially suitable habitat for this species. In Arizona this species is typically found in desertscrub vegetation communities in areas of dense cover or vegetation and high prey populations; avoiding open country. It has been documented in southeastern Arizona (Cochise County), along Highway 60 between Superior and Globe, and in the Huachuca Mountains (AGFD 2010b).
Pale Townsend's big-eared bat (<i>Corynorhinus townsendii pallescens</i>)	SC	S	--	Possible. The Property is within the known, current geographic (AGFD 2015c) and elevational range and contains potentially suitable habitat for this species. Pale Townsend's big-eared bat occurs throughout Arizona in a wide range of biotic communities from 1,200 to 5,600 ft elevation. The species roosts in caves and abandoned underground mine workings (TNF 2000). The Property contains two mine adits that could provide potentially suitable habitat for this species. There are also records of the species within 5 miles (8 km) of the Property (Appendix A).
Pima Indian mallow (<i>Abutilon parishii</i>)	SC	S	SR	Possible: The Property is within the known, current geographic and elevational range and contains potentially suitable habitat for Pima Indian mallow. The species prefers rocky substrates in mesic environments with full sun from 1,720 to 4,900 ft (524 to 1,484 m) elevation. It is often found on rocky hillsides, cliff bases, canyon bottoms, lower side slopes and ledges of canyons among rocks and boulders. The species has been documented in several mountain ranges including the Dripping Spring Mountains in Pinal County (AGFD 2000). There are also records of the species within 5 miles (8 km) of the Property (Appendix A).
Roundtail chub (<i>Gila robusta</i>)	C	--	--	None: The Property is outside of the known, current geographic range and does not include any suitable aquatic environments required by this species. Roundtail chub occupy open areas of deep pools and eddies within cool to warm rivers and streams where it is often found associated with cover (USFWS 2010a).

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
San Carlos wild-buckwheat (<i>Eriogonum capillare</i>)	SC	--	SR	Possible: The Property is within the known, current geographic and elevational range and contains potentially suitable habitat for this species. The species prefers unstable substrates including sandy and gravelly alluvium along washes and weathered limestone gravels on lower slopes of neighboring hills; though it is not always found near washes (AGFD 2003). There are records of this species in the Dripping Spring Mountains from 1,960 to 4,400 ft (597 to 1,341 m) elevation. There are also records of the species within 5 miles (8 km) of the Property (Appendix A).
Sonoran desert tortoise (<i>Gopherus morafkai</i>)	--	--	WSC	Possible: The Property is within the known, current geographic (AGFD 2015e) and elevational range and contains potentially suitable habitat for Sonoran desert tortoise. This species occurs on rocky, steep slopes and bajadas and inter-mountain washes in Sonoran desertscrub (USFWS 2010b). WestLand biologists observed Sonoran desert tortoise scat approximately [REDACTED] [REDACTED] of the Property. There are also records of Sonoran desert tortoise within 5 miles (8 km) of the Property (Appendix A).
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E	--	WSC	None: HDMS has records of yellow-billed cuckoo within 5 miles (8 km) of the Property (Appendix A); however, however, the Property is not within the known current geographic range (AGFD 2015d) and lacks suitable habitat for this species. Southwestern willow flycatchers are dependent on cottonwood/willow and/or tamarisk riparian communities along rivers and streams. These riparian areas often have dense under- and mid-story vegetation, are with or without canopy cover, and are in close proximity to surface water (USFWS 2013). These conditions do not exist on the Property.

Table I. Screening Analysis for the Dripping Springs Parcel

Species	Status			Potential Occurrence Within the Dripping Springs Parcel and Basis for Potential Occurrence Determination
	USFWS	BLM	State	
Varied fishhook cactus (<i>Mammillaria viridiflora</i>)	--	--	SR	Possible: Though not within the typical elevational range, the Property is within the known, current geographic range and may contain potentially suitable habitat for the species. Varied fishhook cactus occurs on gravelly igneous substrates in crevices, boulders, and canyon sides under grasses and shrubs within semidesert grasslands, interior chaparral, pinyon-juniper and oak woodlands from 4,600 to 6,560 ft (1,400 to 2,000 m) (SEINet 2015). The known, current Arizona range includes Hualapai Mountain, Mohave County, and from the eastern tip of Maricopa County to northeast Pima, south Graham, central Greenlee, and north Cochise Counties (Natureserve 2015). The HDMS also has records of this species within 5 miles (8 km) of the Property (Appendix A).
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	T	--	WSC	None: HDMS has records of yellow-billed cuckoo within 5 miles (8 km) of the Property (Appendix A); however, the Property is not within the known, current geographic range (AGFD 2015b) and lacks suitable habitat for this species. Yellow-billed cuckoo is typically associated with dense riparian forest and woodland environments including cottonwood-willow galleries and mesquite bosques (USFWS 2014b).

USFWS: E = Endangered, T = Threatened, C = Candidate, SC = Species of Concern, BGA = Bald and Golden Eagle Protection Act

BLM: S = Sensitive

State: WSC = Wildlife of Special Concern, SR = Salvage Restricted

The screening analysis conducted by WestLand indicates that seven special-status species have potential to occur within the Property. This includes several species identified as sensitive by the BLM, and by the State of Arizona as wildlife of special concern or salvage restricted plants.

Four species identified as sensitive by the BLM include: California leaf-nosed bat, also listed by the State of Arizona as wildlife of special Concern, golden eagle, pale Townsend's big-eared bat, and Pima Indian mallow. The Pima Indian mallow is also listed by the State of Arizona as salvage restricted under the Arizona Native Plant Law, along with the San Carlos wild-buckwheat and varied fishhook cactus; both of which also have potential to occur. The Sonoran desert tortoise is listed as wildlife of special concern by the State of Arizona and has potential to occur. There is no proposed or designated critical habitat for special-status species located in the Property.

6. CONSERVATION VALUES AND OPPORTUNITIES

6.1. VALUES

Value #1: Potential Habitat for Special-Status Species

The Dripping Springs parcel lies within the known, current geographic range of, and contains potentially suitable habitat for seven special status species. These species include several species identified by the BLM as sensitive and by the State of Arizona as wildlife of special concern or salvage restricted plants.

The Sonoran desert tortoise (*Gopherus morafkai*) is identified by the State of Arizona as wildlife of special concern. The Sonoran desert tortoise occurs on rocky, steep slopes and bajadas and intermountain washes in Sonoran desert scrub. The Dripping Springs parcel is within the known, current geographic and elevational range and contains potentially suitable habitat for this species. WestLand biologists observed Sonoran desert tortoise scat approximately [REDACTED] of the Property. There are also records of Sonoran desert tortoise within 5 miles (8 km) of the Property.

The California leaf-nosed bat (*Macrotus californicus*) is identified by the BLM as a sensitive species and by the State of Arizona as wildlife of special concern. This species is primarily found in Sonoran desert scrub vegetation. It prefers roost sites with large areas of ceiling and flying space including abandoned underground mines, caves, rock shelters, and a variety of manmade structures. There are records of the species within 5 miles (8 km) of the Property. The Dripping Springs parcel occurs within the known, current geographic and elevational range and contains potentially suitable habitat for this species. The abandoned underground mine adits on the Dripping Springs parcel may be roost sites for this species.

The golden eagle (*Aquila chrysaetos*) is also identified by the BLM as a sensitive species and is further federally protected by the Bald and Golden Eagle Act. This species is identified by the State of Arizona as wildlife of special concern. Golden eagles can be found nesting in a variety of Arizona habitats including pinyon pine-juniper woodlands, Sonoran desert scrub, Madrean 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. There are records of this species within 5 miles (8 km) of the Property. The Dripping Springs parcel is within the known, current geographic and elevational range for this species and contains potentially suitable habitat. The Dripping Springs parcel contains tall cliffs that may be suitable for roosting and/or nesting.

The pale Townsend's big-eared bat (*Corynorhinus [= Plecotus] townsendii pallescens*) is also identified by the BLM as a sensitive species. This species occurs throughout Arizona in a wide range of biotic communities from 1,200 to 5,600 ft (366 to 1,707 m) elevation, and roosts in caves and abandoned underground mine workings. There are records of the species within 5 miles (8 km) of the Property.

The Dripping Springs parcel is within the known, current geographic and elevational range for this species and contains potentially suitable roosting habitat. The abandoned underground mine adits on the Dripping Springs parcel may be roost sites for this species.

The Pima Indian mallow (*Abutilon parishii*) is identified by the USFWS as a species of concern, by the U.S. Forest Service as a sensitive species, and by the State of Arizona as salvage restricted. This species is often found on rocky hillsides, cliff bases, canyon bottoms, lower side slopes and ledges of canyons among rocks and boulders. The species prefers rocky substrates in mesic environments with full sun from 1,720 to 4,900 ft (524 to 1,484 m) elevation. The species has been documented in several mountain ranges including the Dripping Spring Mountains in Pinal County. There are records of the species within 5 miles (8 km) of the Property. The Dripping Springs parcel is within the known, current geographic and elevational range, and includes suitable substrate for this species.

The San Carlos wild-buckwheat (*Eriogonum capillare*) is identified by the USFWS as a species of concern and by the State of Arizona as salvage restricted. The species prefers unstable substrates including sandy and gravelly alluvium along washes and weathered limestone gravels on lower slopes of neighboring hills, though it is not always found near washes. There are records of this species in the Dripping Spring Mountains from 1,960 to 4,400 ft (597 to 1,341 m) elevation and within 5 miles (8 km) of the Property. The Dripping Springs parcel is within the known, current geographic and elevational range, and contains potentially suitable habitat for this species.

The varied fishhook cactus (*Mammillaria viridiflora*) is identified by the State of Arizona as salvage restricted. Varied fishhook cactus occurs on gravelly igneous substrates in crevices, boulders, and canyon sides under grasses and shrubs within semidesert grasslands, interior chaparral, pinyon-juniper and oak woodlands from 4,600 to 6,560 ft (1,400 to 2,000 m). The Arizona range includes Hualapai Mountain, Mohave County, and from the eastern tip of Maricopa County to northeast Pima, south Graham, central Greenlee, and north Cochise Counties. There are records of this species within 5 miles (8 km) of the Property. The Dripping Springs parcel is located within the known, current geographic range and may contain potentially suitable habitat for this species.

Value #2: Inaccessible Inholding without Obvious Recreation or Resource Attraction

The Dripping Springs parcel displays a nearly pristine example of the Arizona Upland subdivision of Sonoran Desertscrub biotic community. The Property is a 160-acre (65-hectare) private inholding not serviced by any roads or trails; access to the Property is only afforded by overland hiking across rugged terrain. The relatively remote location has effectively isolated the Property from human use for recreation or resource extraction. Accordingly, the Dripping Springs parcel has not been subjected to overuse by hikers, off-road vehicle enthusiasts, hunters, miners, or ranchers.

The physical and biological resources of the Property are similar to surrounding land and thus the Dripping Springs parcel has not been a destination for recreational or extractive resources. There are no alluring camp sites, and although there are opportunities for rock-climbing, none of these would

be considered exceptional. The landform is largely unaltered by human activity. With the exception of two small abandoned mine features (adits with associated waste rock piles), there is no evidence of human impact to the land, not even primitive roads. The Property is not forested; there has been no logging on the Dripping Springs parcel. Although grasses are present, they are sparse and do not represent a substantive forage source for ungulates; any grazing that has occurred by stray livestock has minimally affected the vegetation.

6.2. OPPORTUNITIES

Opportunity #1: Protecting Special-Status Species

The seven special-status species that may occur on the Dripping Springs parcel would be protected by public land management policies that would not be present under private ownership. Species identified by the BLM are only protected on BLM-administered land. Species identified by the State of Arizona are protected under certain circumstances, depending in part on land ownership. If the Dripping Springs parcel were to transfer from private to public ownership, the special-status species would receive protection from the BLM as part of landscape-level management decisions.

Opportunity #2: Managing Public Lands

The Dripping Springs parcel would be managed by BLM rather than being managed under private ownership. The Dripping Springs parcel is relatively isolated from any other private inholding; therefore, BLM management of the Property would ease management issues by allowing the agency to include the Dripping Springs parcel in landscape-level management plans. Recreational and resource use activities generating significant noise, light, and dust disturbances would require permit and as such, the Property would be managed in a manner consistent with the adjacent land, all of which is administered by the BLM.

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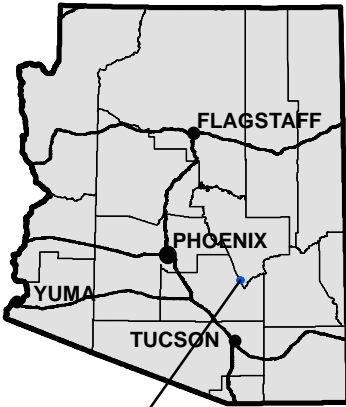
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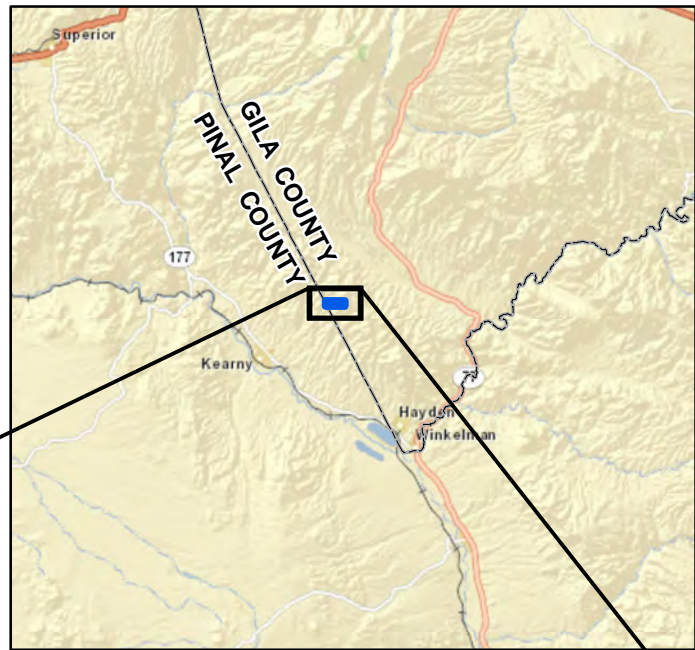
FIGURES

ARIZONA



PROJECT LOCATION

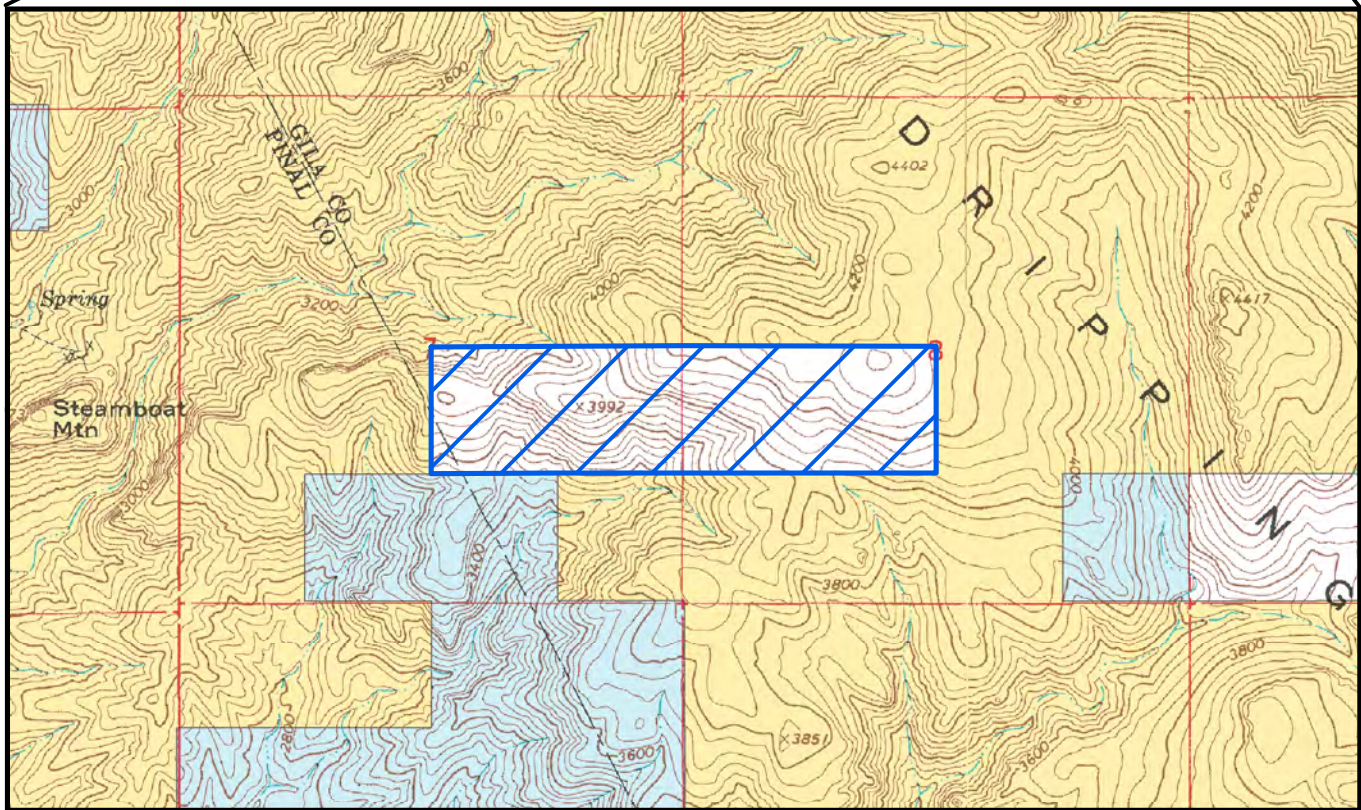
PINAL AND GILA COUNTIES



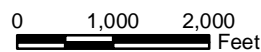
Approximate Scale 1 Inch = 10 Miles

Legend

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



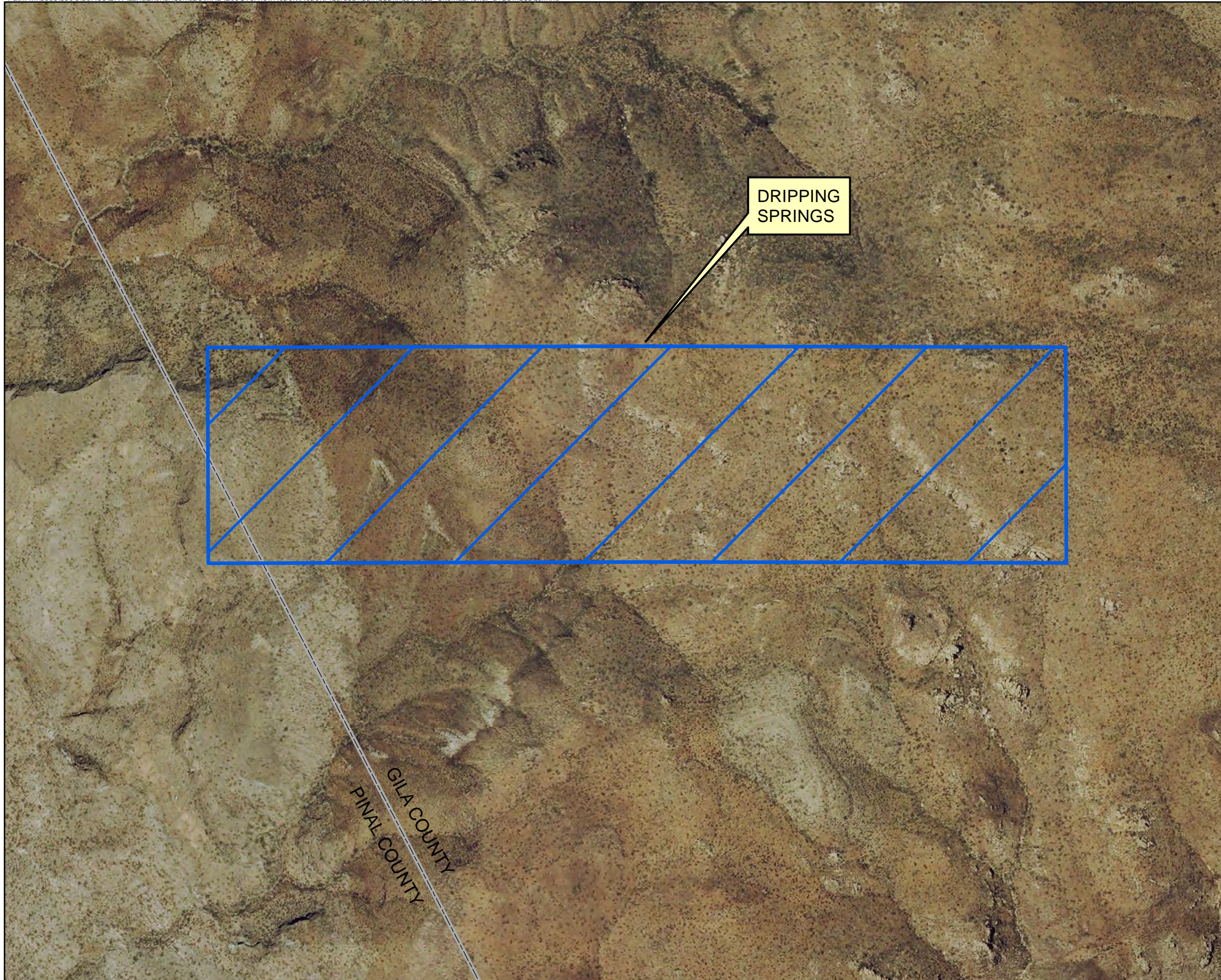
T4S, R15E, Portion of Sections 7 & 8,
Pinal and Gila Counties, Arizona,
Hayden USGS 7.5' Quadrangle
Data Source: BLM Surface Management 2012



RESOLUTION COPPER
Ecological Overview


VICINITY MAP
DRIPPING SPRINGS PARCEL

Figure 1



Dripping Springs:
160 Acres of Resolution Copper Property offered to the BLM,
T4S, R15E, Portion of Sections 7 & 8,
Pinal and Gila Counties, Arizona.
Image Source: NAIP Imagery, 2013
Disclaimer: Map boundaries are based on best available data.
Legal descriptions pending field verification by professional
surveyors.

Legend

 Offered Lands

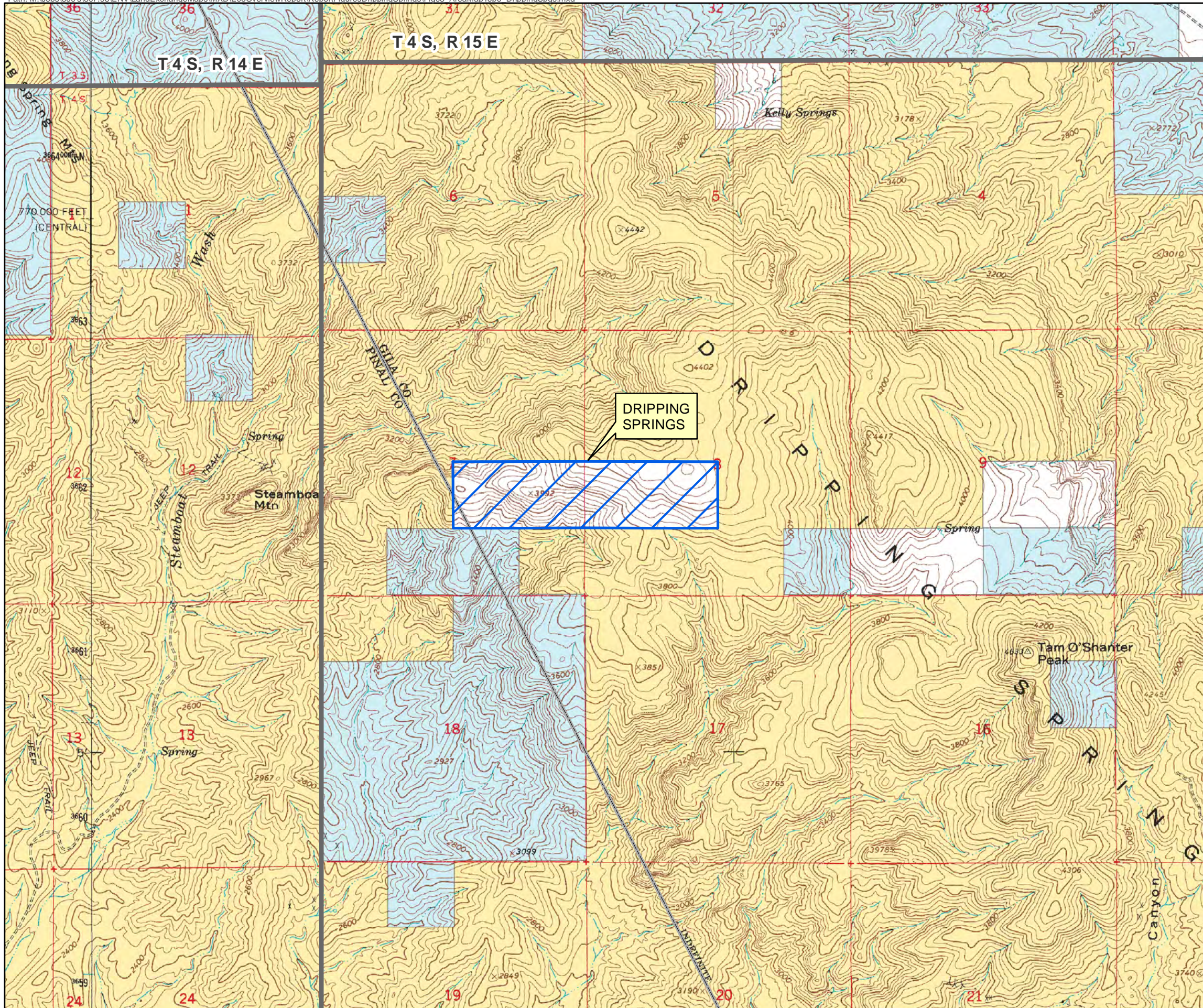


0 300 600
Feet

0 100 200
Meters

RESOLUTION COPPER
Ecological Overview

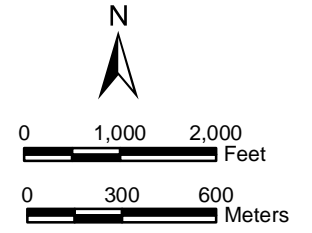
SITE MAP
DRIPPING SPRINGS PARCEL
Figure 2



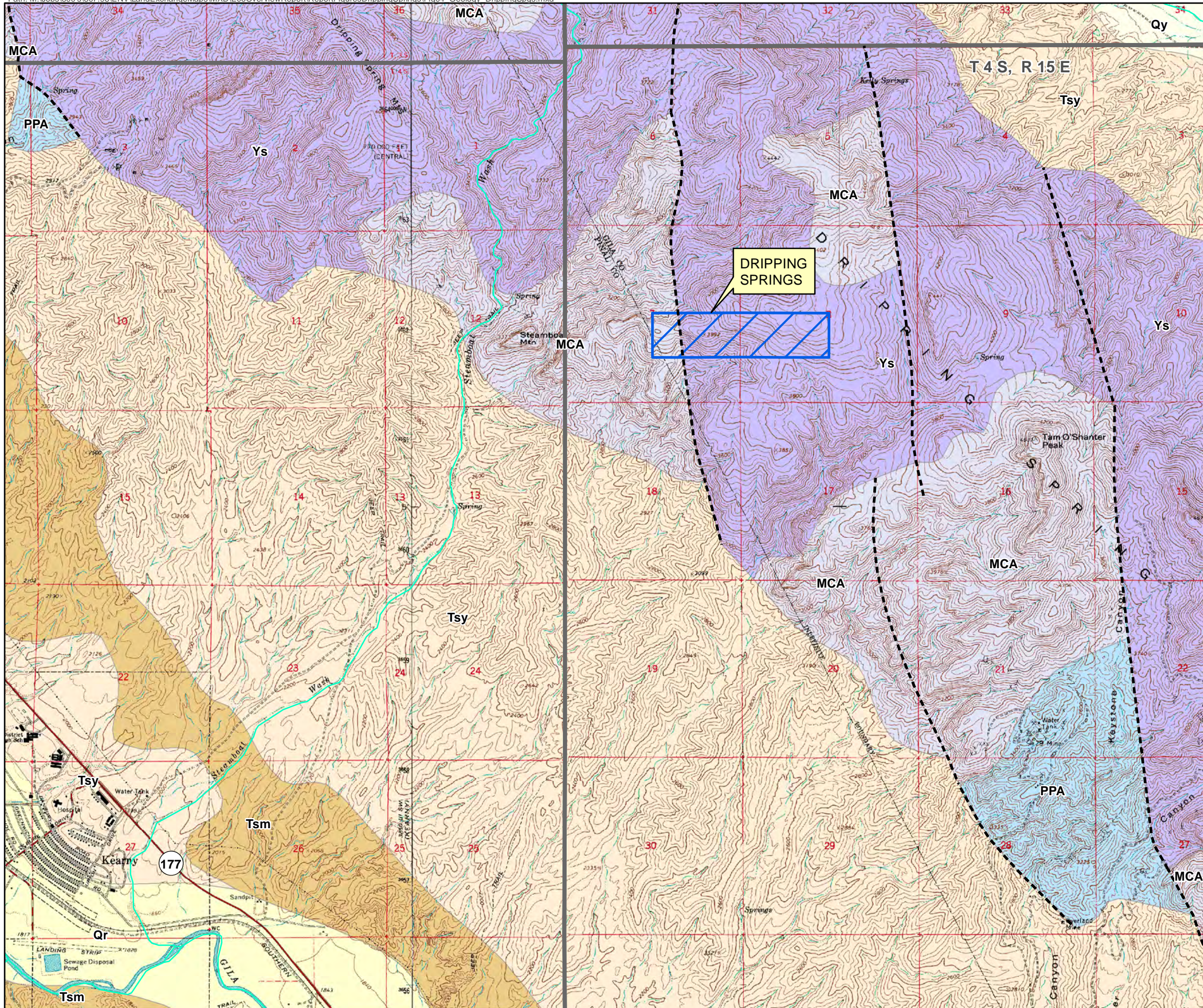
Dripping Springs:
160 Acres of Resolution Copper Property offered to the BLM,
T4S, R15E, Portion of Sections 7 & 8,
Pinal and Gila Counties, Arizona.
Image Source: Kearny & Hayden 1:24,000 USGS Quadrangles,
Data Source: BLM Surface Management 2012
Disclaimer: Map boundaries are based on best available data.
Legal descriptions pending field verification by professional surveyors.

Legend

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



RESOLUTION COPPER
Ecological Overview
TOPOGRAPHICAL OVERVIEW
DRIPPING SPRINGS PARCEL
Figure 3





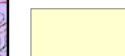





Dripping Springs:
 160 Acres of Resolution Copper Property offered to the BLM,
 T4S, R15E, Portion of Sections 7 & 8,
 Pinal and Gila Counties, Arizona.
 Image Source: Kearny & Hayden 1:24,000 USGS Quadrangles,
 Data Source: Arizona Geological Survey 2011.
http://www.azgs.az.gov/services_azgeomap.shtml
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

Legend

 Offered Lands

Arizona Geological Survey, 2011

Description

-  MCA - Mississippian, Devonian, And Cambrian Sedimentary Rocks (330-540 Ma)
-  PPA - Permian to Pennsylvanian Sedimentary Rocks (280-310 Ma)
-  Qr - Holocene River Alluvium (0-10)
-  Qy - Holocene Surficial Deposits (0-10 ka)
-  Tsm - Middle Miocene to Oligocene Sedimentary Rocks (11-32 Ma)
-  Tsy - Pliocene to Middle Miocene Deposits (2-16 Ma)
-  Ys - Middle Proterozoic Sedimentary Rocks (700-1300 Ma)
-  AZ Faults

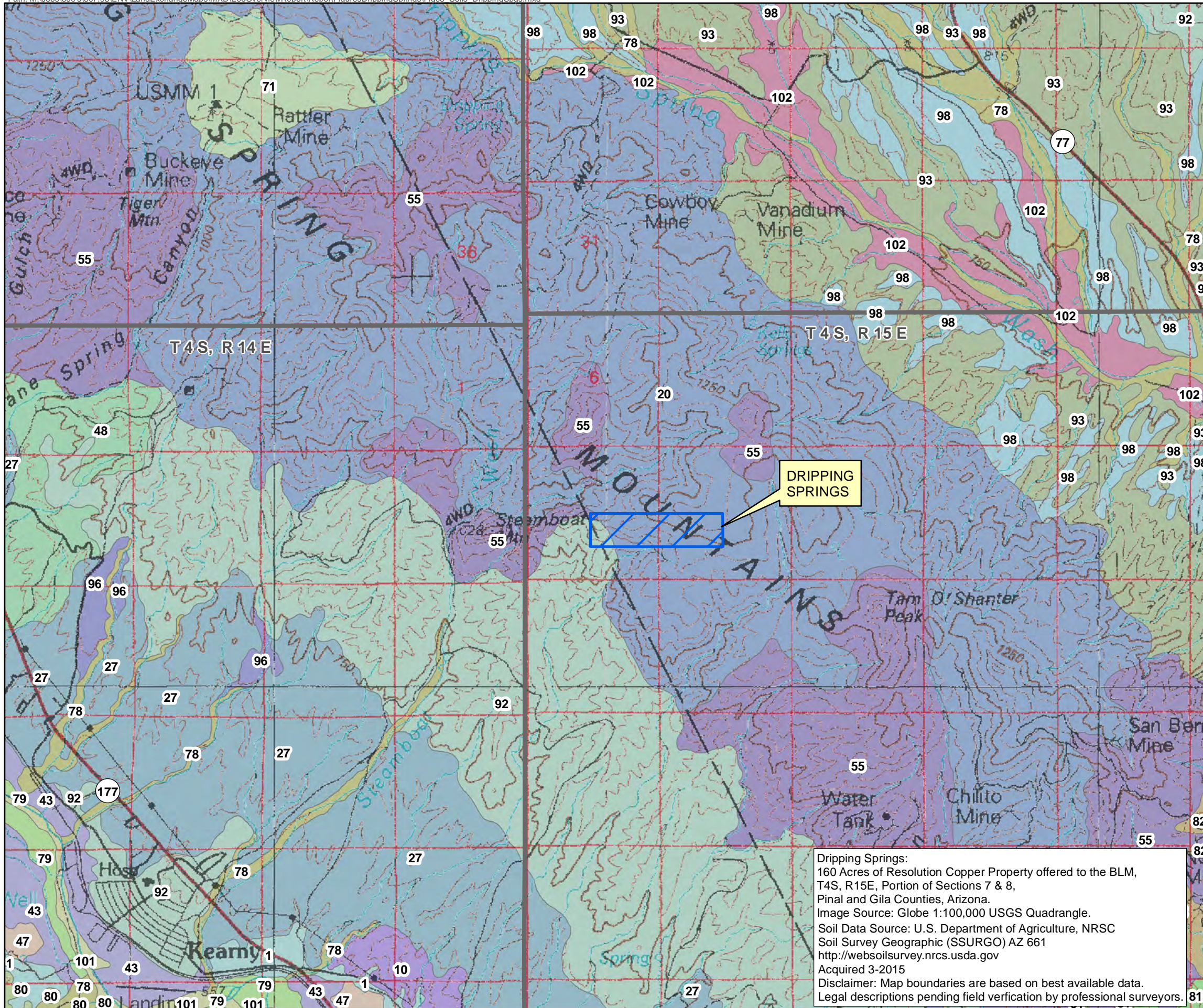























0 1,500 3,000 Feet

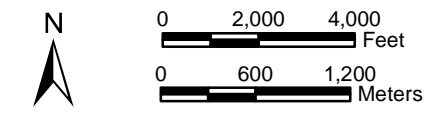
0 500 1,000 Meters

RESOLUTION COPPER Ecological Overview

GEOLOGIC MAP
 DRIPPING SPRINGS PARCEL
 Figure 4

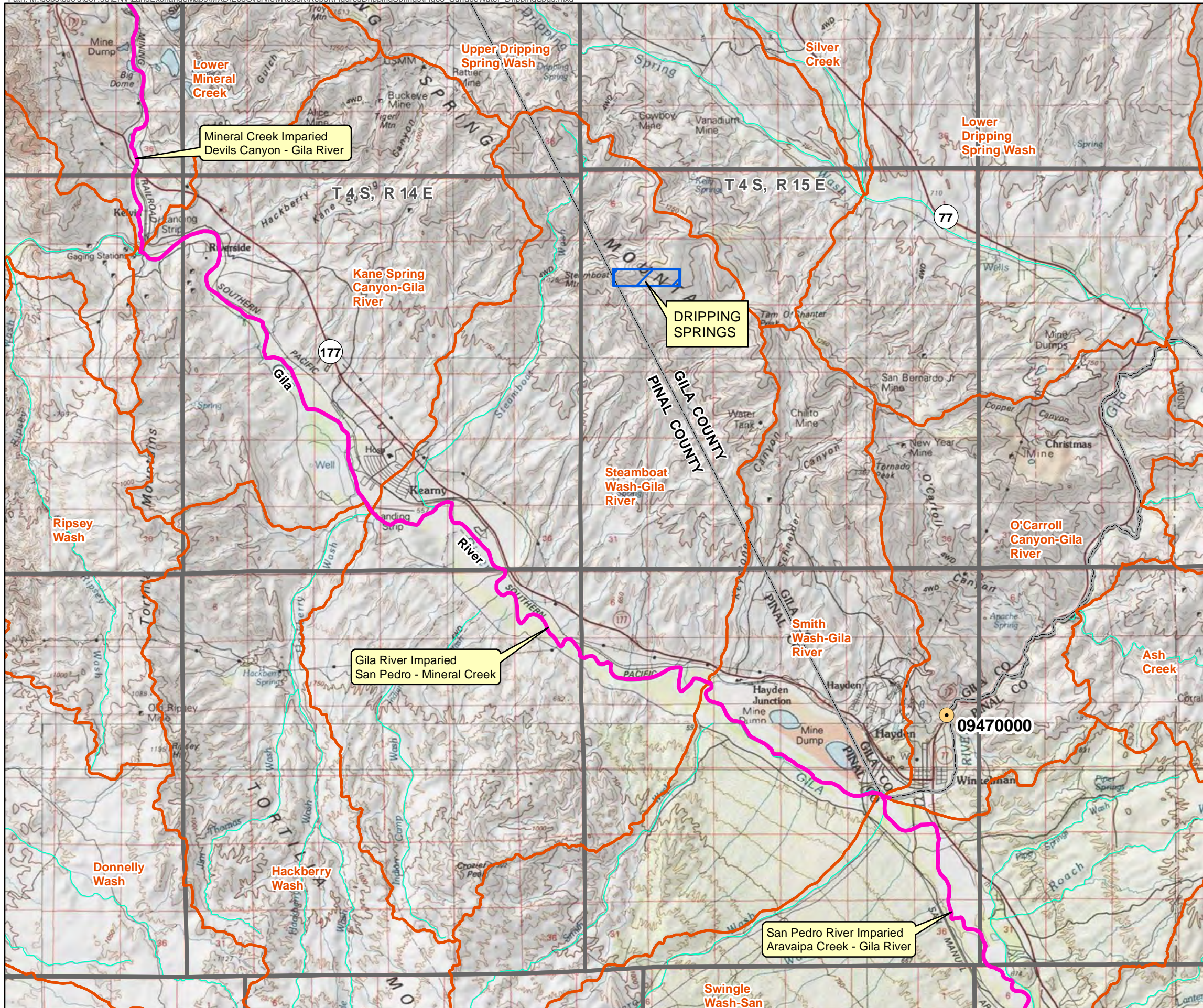


-  Offered Lands
- USDA, NRCS Soil Data
-  1-Agustin-Kokan-Queen creek complex, 1 to 8 percent slopes
 -  10-Caracara-Delthorny complex, 3 to 45 percent slopes
 -  101-Typic Fluvaquents, wetrock soils, and water, 0 to 3 percent slopes
 -  102-Ugyp-Whitecliff complex, eroded, 1 to 5 percent slopes
 -  20-Chiricahua-deloro-leyte soils, 10 to 50 percent slopes
 -  27-Delnorte-Nahda complex, 3 to 20 percent slopes
 -  43-Gila-Vinton complex, 0 to 5 percent slopes
 -  47-Glendale-Hantz complex, 0 to 5 percent slopes
 -  48-Gran-Rock outcrop-Pantano complex, 20 to 60 percent slopes
 -  55-Holguin-Rock outcrop complex, 15 to 60 percent slopes
 -  71-Oracle-Romero-Combate complex, 1 to 20 percent slopes
 -  78-Queen creek soils and riverwash, 0 to 5 percent slopes
 -  79-Quiburi-Gila complex, 0 to 3 percent slopes
 -  80-Ripsey-Rock outcrop complex, 15 to 70 percent slopes
 -  81-Rock outcrop-Garzona family complex, 15 to 70 percent slopes
 -  82-Rock outcrop-Lajitas complex, 5 to 60 percent slopes
 -  92-Stagecoach-Delnorte complex, 5 to 45 percent slopes
 -  93-Stagecoach-Haplogypsids-Delnorte complex, 5 to 80 percent slopes
 -  96-Topawa very gravelly sandy loam, 5 to 20 percent slopes
 -  98-Tubac-Rillino complex, 3 to 25 percent slopes



Dripping Springs:
 160 Acres of Resolution Copper Property offered to the BLM,
 T4S, R15E, Portion of Sections 7 & 8,
 Pinal and Gila Counties, Arizona.
 Image Source: Globe 1:100,000 USGS Quadrangle.
 Soil Data Source: U.S. Department of Agriculture, NRCS
 Soil Survey Geographic (SSURGO) AZ 661
<http://websoilsurvey.nrcs.usda.gov>
 Acquired 3-2015
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

RESOLUTION COPPER
Ecological Overview
 SOILS MAP
 DRIPPING SPRINGS PARCEL
 Figure 5

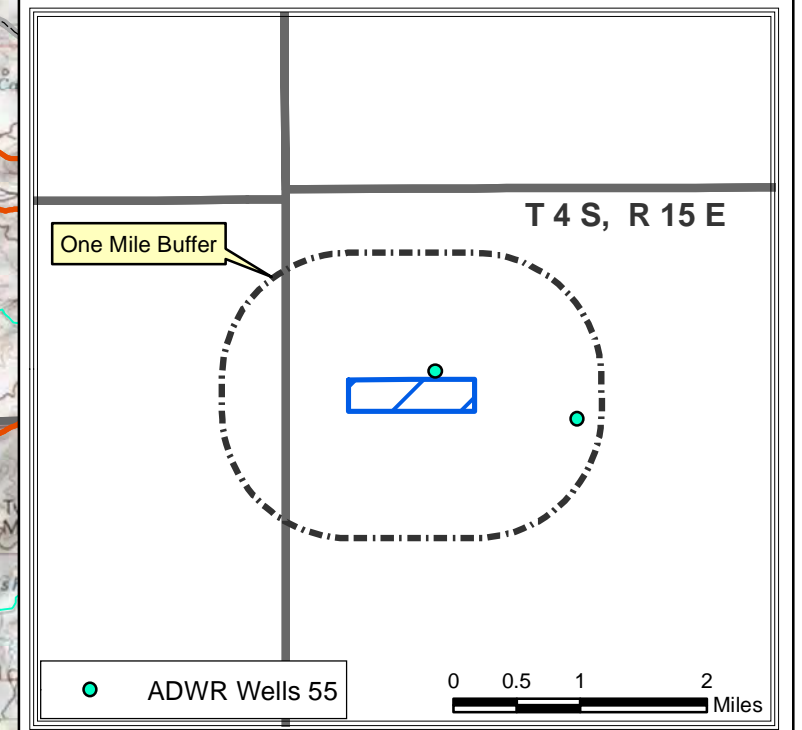


Dripping Springs:
 160 Acres of Resolution Copper Property offered to the BLM,
 T4S, R15E, Portion of Sections 7 & 8,
 Pinal and Gila Counties, Arizona.
 Image Source: ESRI Online USA Topo Maps
 Data Source: ADWR, USGS, NHDH HUC 12, ADEQ
 Disclaimer: Map boundaries are based on best available data.
 Legal descriptions pending field verification by professional surveyors.

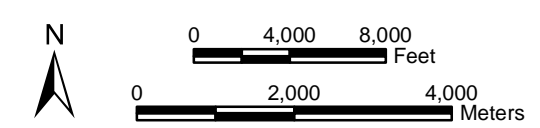
Legend

-  Offered Lands
-  ADEQ Impaired Stream 2010
-  USGS Gage Sept 30, 2011
-  HUC 12 Watershed

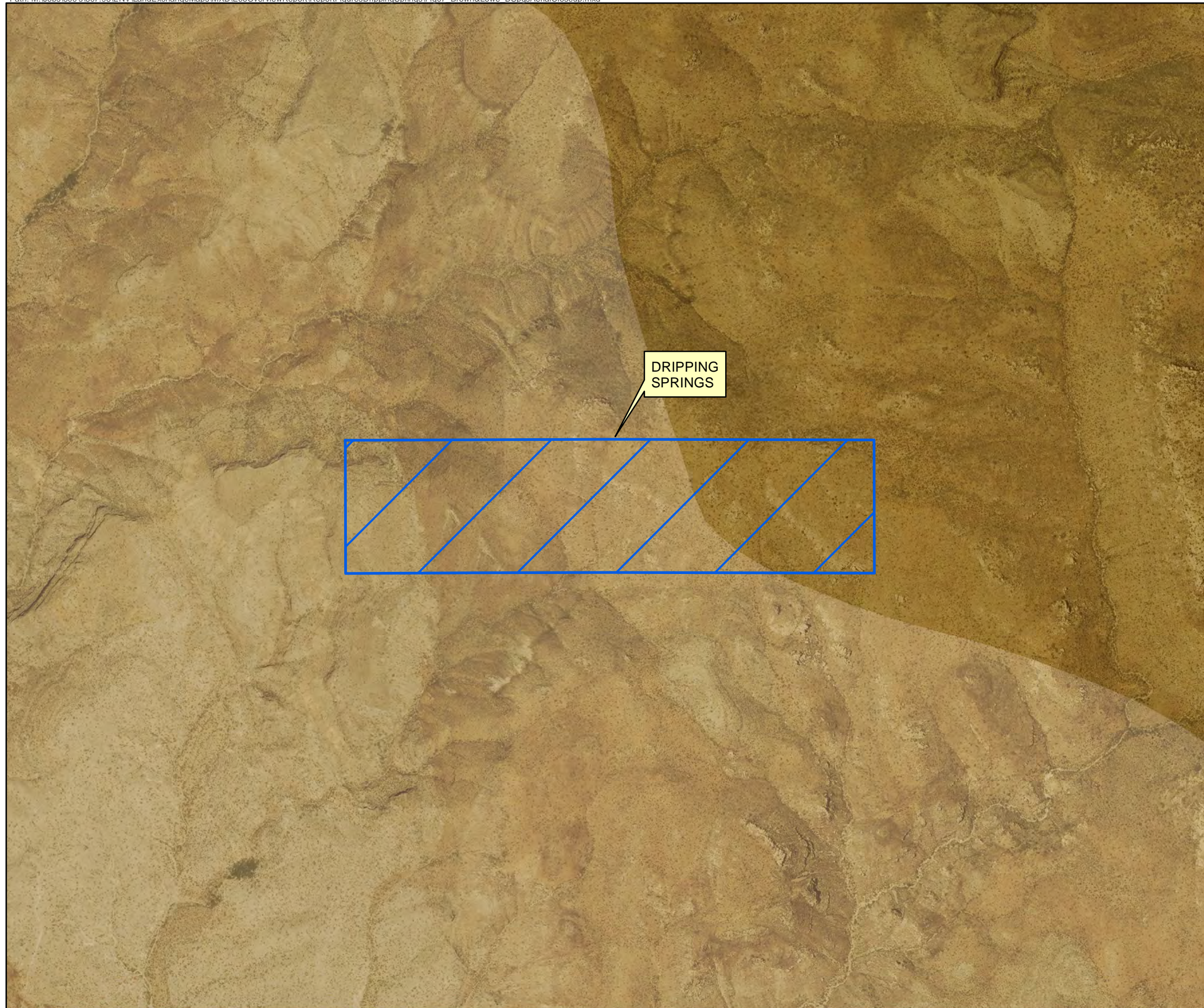
ADWR Well Locations
 Within a 1-Mile Buffer of Parcel



The ADWR Wells 55 Registry contains all wells registered in the state.
 Downloaded from ADWR Website 4/2/2013 -<http://www.azwater.gov/azdwr/gis/>



**RESOLUTION COPPER
 Ecological Overview**
 SURFACE WATER RESOURCES AND WELLS
 DRIPPING SPRINGS PARCEL
 Figure 6



Dripping Springs:
160 Acres of Resolution Copper Property offered to the BLM,
T4S, R15E, Portion of Sections 7 & 8,
Pinal and Gila Counties, Arizona.
Image Source: NAIP Imagery, 2013
Data Source: Vegetation Communities based on Biotic
Communities of the Southwest, Brown & Lowe Classifications,
August 1980. Vegetation found within the Dripping Springs parcel is best
described as an ecotone or transitional zone between two biotic
communities: the Arizona Upland Subdivision of Sonoran Desertscrub,
and Semidesert Grassland. Slopes that are generally south-facing in the
western portion of the parcel typically display characteristics of the
Arizona Upland Subdivision. The eastern portion of the parcel, and
generally north-facing slopes in the western portion, typically display
characteristics of the Semidesert Grassland biotic community.
Disclaimer: Map boundaries are based on best available data.
Legal descriptions pending field verification by professional surveyors.

Legend

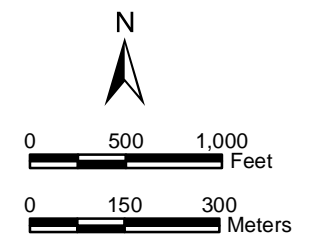
 Offered Lands

Biotic Communities

DESCRIPTION

 AZ UPLAND SUBDIVISION - SONORAN DESERTSCRUB

 SEMIDESERT GRASSLAND



RESOLUTION COPPER Ecological Overview

BIOTIC COMMUNITIES
DRIPPING SPRINGS PARCEL

Figure 7

APPENDIX A

**AGFD HDMS and
USFWS IPaC
System Special
Status Species
Records
Online Query**

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:

Jessica Gilligan

Organization:

WestLand Resources, Inc.

On Behalf Of:

CONSULTING

Project ID:

HGIS-00727

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.

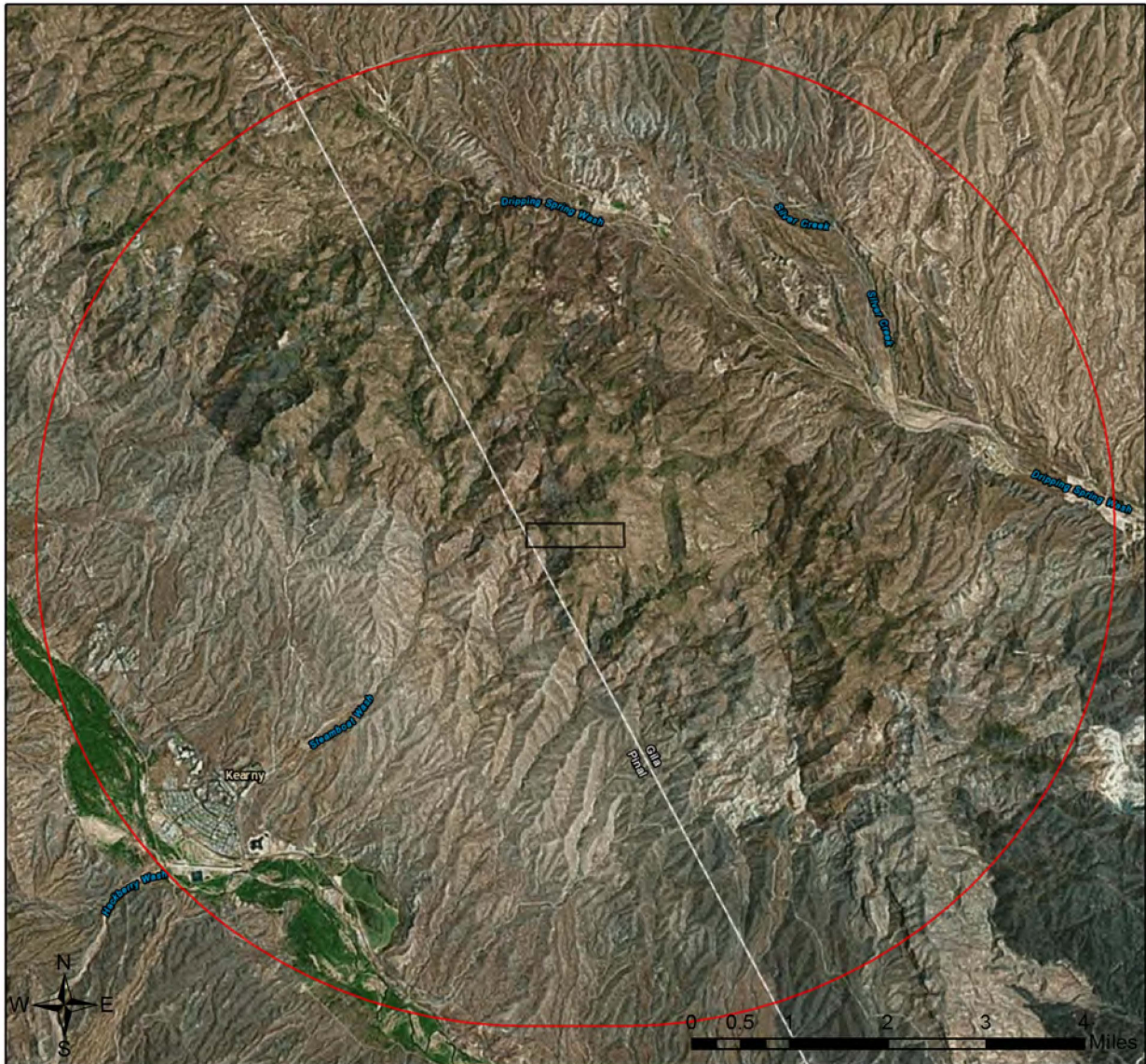
Locations Accuracy Disclaimer:

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

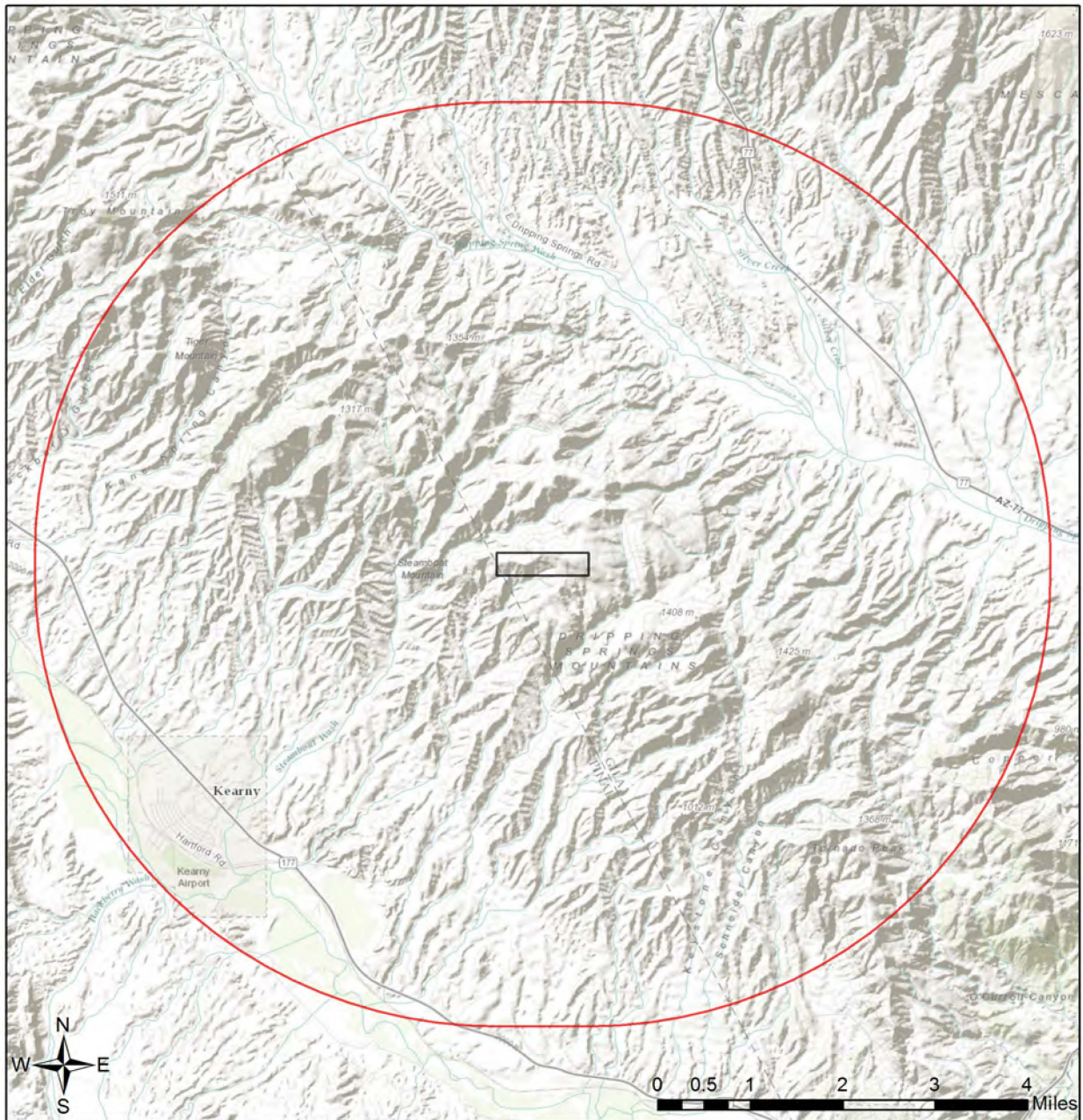
Township/Range(s): T4S, R15E



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

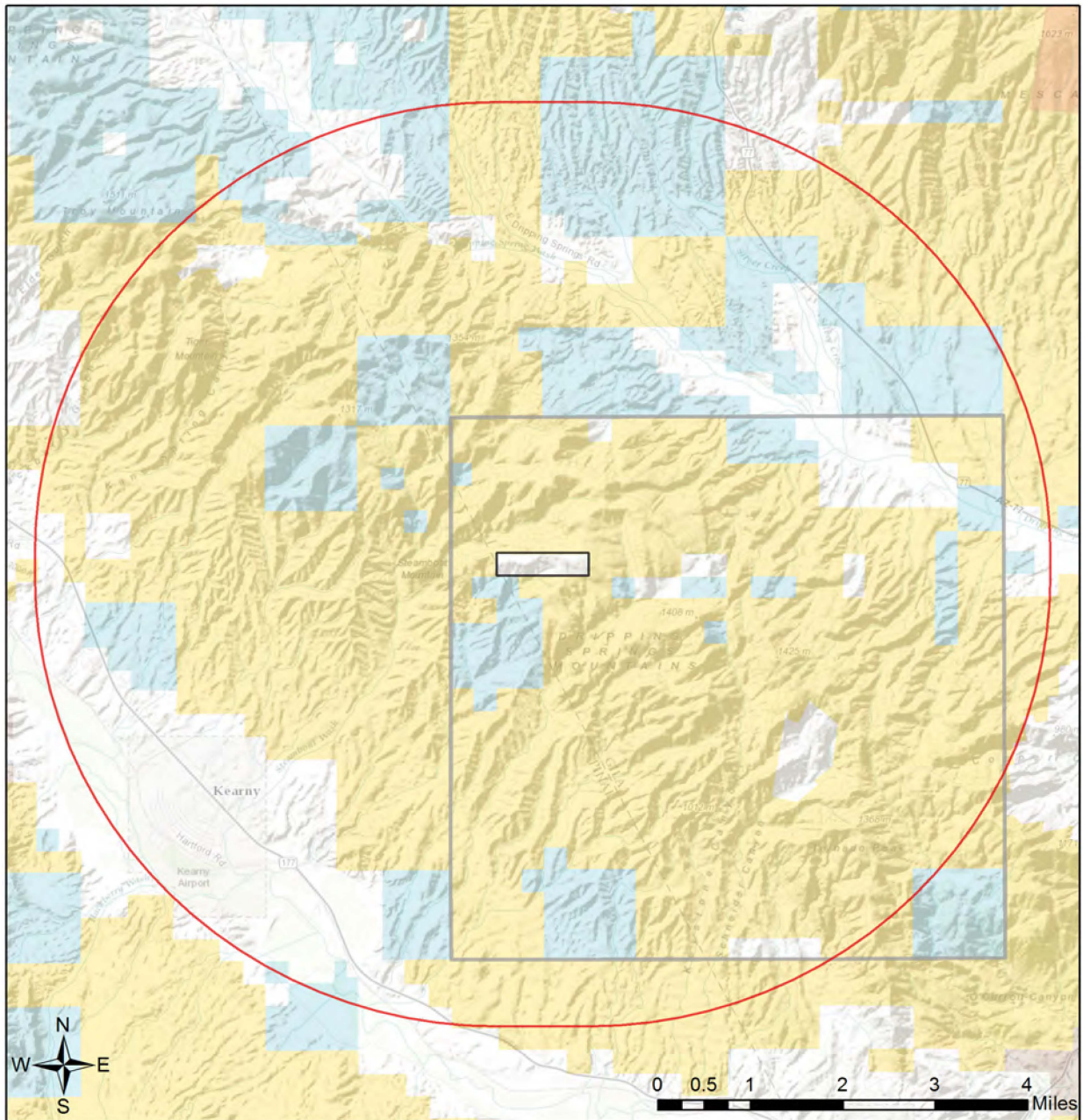


-  Project Boundary
-  Buffered Project Boundary

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, TomTom, 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/Range | 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, TomTom, 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	State	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		WSC	1A
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE			WSC	1A
Eriogonum capillare	San Carlos Wild-buckwheat	SC			SR	
Gopherus morafkai	Sonoran Desert Tortoise	C*	S		WSC	1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BG A	S	S	WSC	1A
Ictinia mississippiensis	Mississippi Kite				WSC	1B
Macrotus californicus	California Leaf-nosed Bat	SC		S	WSC	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	State	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
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				WSC	1B
Buteo regalis	Ferruginous Hawk	SC		S	WSC	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
Coccythraustes vespertinus	Evening Grosbeak					1B
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S		WSC	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	State	SGCN
<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			WSC	1A
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S	WSC	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	WSC	1A
<i>Gila intermedia</i>	Gila Chub	LE			WSC	1A
<i>Gila robusta</i>	Roundtail Chub	C*	S		WSC	1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S	WSC	1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Ictinia mississippiensis</i>	Mississippi Kite				WSC	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		WSC	1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S		WSC	1B
<i>Leopardus pardalis</i>	Ocelot	LE			WSC	1A
<i>Leptonycteris curasoae yerbabuenae</i>	Lesser Long-nosed Bat	LE			WSC	1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S	WSC	1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S	WSC	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			WSC	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>Progne subis hesperia</i>	Desert Purple Martin			S		1B

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

Scientific Name	Common Name	FWS	USFS	BLM	State	SGCN
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		WSC	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	State	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					
Zenaidura macroura	White-winged 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

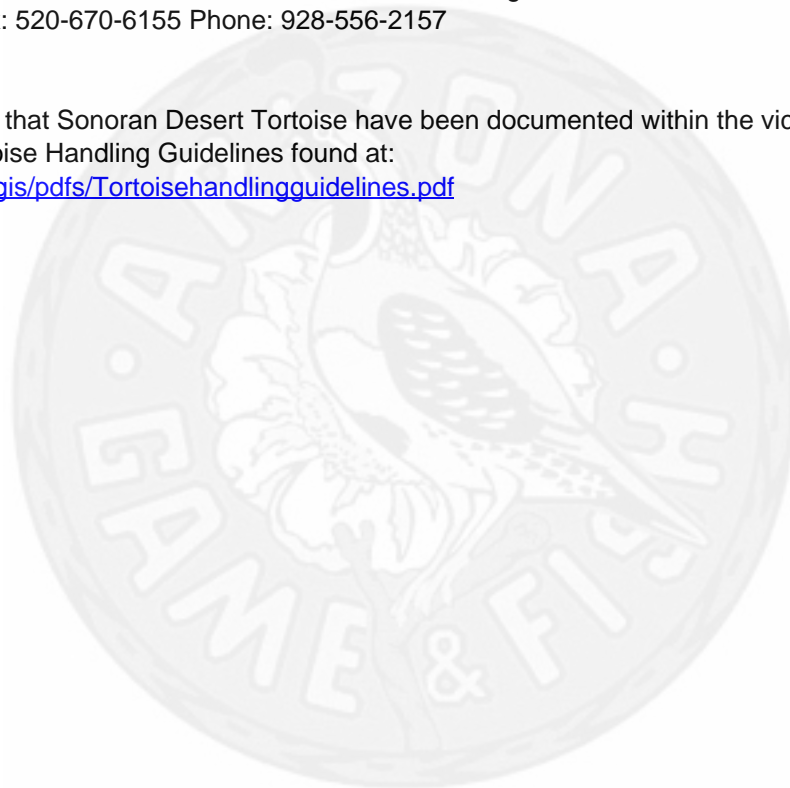
<https://agriculture.az.gov/environmental-services/np1>

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 Tucson Sub-Office Flagstaff Sub-Office
2321 W. Royal Palm Rd, Suite 103 201 N. Bonita Suite 141 SW Forest Science Complex
Phoenix, AZ 85021 Tucson, AZ 85745 2500 S. Pine Knoll Dr.
Phone: 602-242-0210 Phone: 520-670-6144 Flagstaff, AZ 86001
Fax: 602-242-2513 Fax: 520-670-6155 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>





United States Department of the Interior



FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
2321 WEST ROYAL PALM ROAD, SUITE 103
PHOENIX, AZ 85021
PHONE: (602)242-0210 FAX: (602)242-2513
URL: www.fws.gov/southwest/es/arizona/;
www.fws.gov/southwest/es/EndangeredSpecies/lists/

Consultation Code: 02EAAZ00-2015-SLI-0340

March 05, 2015

Event Code: 02EAAZ00-2015-E-00345

Project Name: Land Exchange - Dripping Springs

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that *may* occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. Please refer to the species information links found at http://www.fws.gov/southwest/es/arizona/Docs_Species.htm or <http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf> for a quick reference, to determine if suitable habitat for the species on your list occurs in your project area.

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to determine whether projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat *may be affected* by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. An effect exists even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint" (e.g., downstream). If the Federal action agency determines that the action may jeopardize a *proposed* species or adversely modify *proposed* critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.

Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend that they be considered in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

In addition to species listed under the Act, we advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 *et seq.*). Both laws prohibit the take of covered species. The list of MBTA-protected birds is in 50 CFR 10.13 (for an alphabetical list see <http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/MBTANDX.HTML>). The Service's Division of Migratory Birds is the lead for consultations under these laws (Southwest Regional Office phone number: 505/248-7882). For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following web site:

<http://www.fws.gov/migratorybirds/mbpermits.html>. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:

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

Although bald eagles (*Haliaeetus leucocephalus*) are no longer listed under the Act, they are protected under both the BGEPA and the MBTA. If a bald eagle nest occurs in or near the proposed project area, our office should be contacted. An evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles (see <http://www.fws.gov/southeast/es/baldeagle/>) and the Division of Migratory Birds consulted if necessary. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles (see <http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf>).

Activities that involve streams and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.

If your action is on Indian land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential

tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated. For more information, please contact our tribal coordinator, John Nystedt, at (928) 556-2160 or John_Nystedt@fws.gov.

The State of Arizona protects some species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department (AGFD) for animals and Arizona Department of Agriculture for plants to determine if species protected by or of concern to the State may occur in your action area. The AGFD has an Environmental Review On-Line Tool that can be accessed at <http://www.azgfd.gov/hgis/>. We also recommend that you coordinate with the AGFD regarding your project.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact Brenda Smith at 928/556-2157 for projects in Northern Arizona, our general Phoenix number (602/242-0210) for central Arizona, or Jean Calhoun at 520/670-6150 (x223) for projects in southern Arizona.

Sincerely,

/s/

Steven L. Spangle

Field Supervisor

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: Land Exchange - Dripping Springs

Official Species List

Provided by:

Arizona Ecological Services Field Office

2321 WEST ROYAL PALM ROAD, SUITE 103

PHOENIX, AZ 85021

(602) 242-0210

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

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>

Consultation Code: 02EAAZ00-2015-SLI-0340

Event Code: 02EAAZ00-2015-E-00345

Project Type: Mining

Project Name: Land Exchange - Dripping Springs

Project Description: Land Exchange

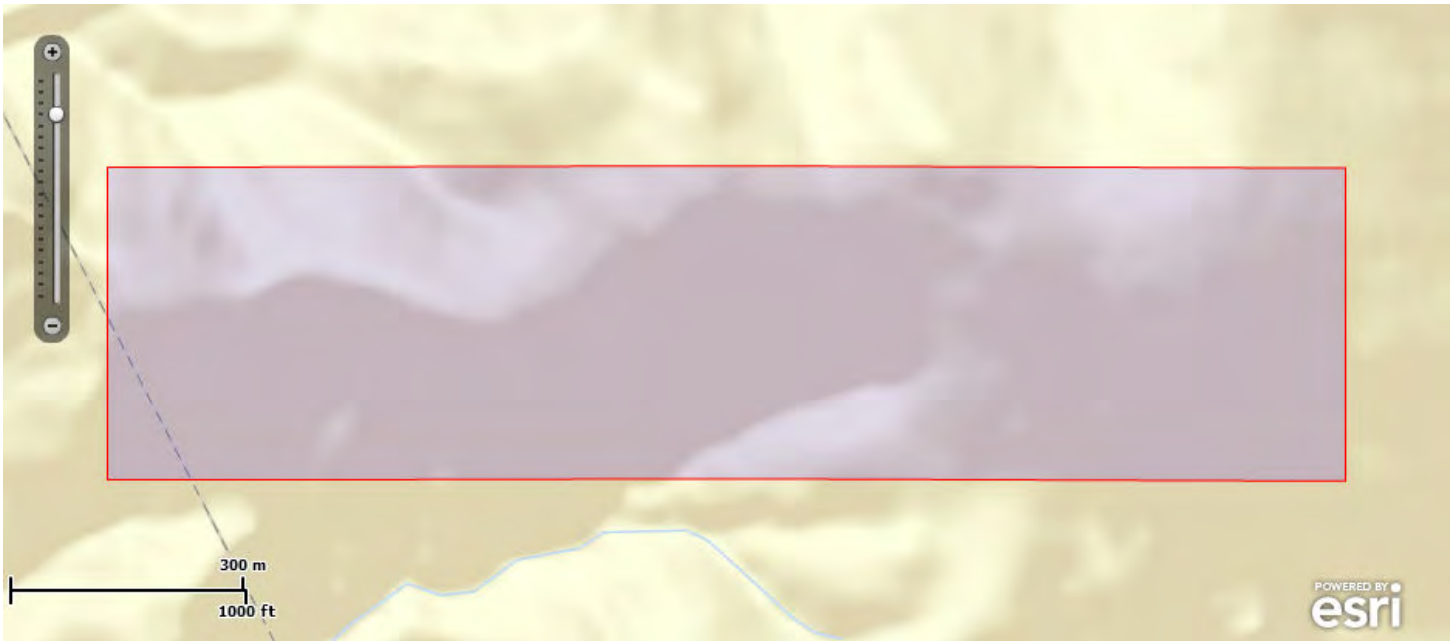
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: Land Exchange - Dripping Springs

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-110.8522192 33.0992512, -110.843639 33.0992666, -110.8350435 33.0992387, -110.8350405 33.095603, -110.8522176 33.0956179, -110.8522192 33.0992512)))

Project Counties: Gila, AZ | Pinal, AZ



United States Department of Interior
Fish and Wildlife Service

Project name: Land Exchange - Dripping Springs

Endangered Species Act Species List

There are a total of 8 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)
Southwestern Willow flycatcher <i>(Empidonax traillii extimus)</i> Population: Entire	Endangered	Final designated	
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Threatened	Proposed	
Fishes			
Headwater chub (<i>Gila nigra</i>)	Candidate		
Roundtail chub (<i>Gila robusta</i>) Population: Lower Colorado River Basin DPS	Candidate		
Mammals			
Lesser Long-Nosed bat (<i>Leptonycteris curasoae yerbabuena</i>) Population: Entire	Endangered		
ocelot (<i>Leopardus (=felis) pardalis</i>) Population: U.S.A.(AZ, TX) to Central and South America	Endangered		



United States Department of Interior
Fish and Wildlife Service

Project name: Land Exchange - Dripping Springs

Reptiles			
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	Threatened	Proposed	
Sonoran desert tortoise (<i>Gopherus morafkai</i>)	Candidate		



United States Department of Interior
Fish and Wildlife Service

Project name: Land Exchange - Dripping Springs

Critical habitats that lie within your project area

There are no critical habitats within your project area.

APPENDIX B

**Dripping Springs
Representative
Photographs**



Photograph 1. View within Dripping Springs parcel.



Photograph 3. Overview of the Dripping Springs parcel looking southwest. Bedrock exposed in the right foreground while talus located at left. Notice broad valleys and elongated mountains in distance.



Photograph 2. Rocky slopes typical in the Dripping Springs parcel. Tam O'Shanter Peak is located in the distance.



Photograph 4. View facing southwest of Dripping Springs parcel. Soils are consistent with the Chiricahua-Deloro-Leyete complex description. Note anticline in background.



Photograph 5. View of rocky soils within Dripping Springs parcel. Notice several outcrops of varying depths including igneous, sedimentary, and limestone soils.



Photograph 7. Boulders found below a rock outcrop within Dripping Springs parcel. Characteristics suggest these boulders are Mississippian, Devonian, and Cambrian Sedimentary rocks.



Photograph 6. Dark and light strata of exposed bedrock within Dripping Springs parcel. Bedrock is consistent with limestone and basalt depositions.



Photograph 8. Conglomerate boulder found below a rock outcrop within Dripping Springs parcel.



Photograph 9. Mescal limestone cliff face approximately 20 to 30 ft (6 to 9 m) tall located within Dripping Springs parcel.



Photograph 11. View of watershed looking south in Dripping Springs parcel. Notice broad valley and elongated mountains in vicinity.



Photograph 10. View of large drainage that runs northeast to southwest within Dripping Springs parcel. Notice broad valleys in distance.



Photograph 12. View of rock outcrop within Dripping Springs parcel; watershed headwaters in background are just off site.



Photograph 13. Arizona Upland vegetation within the Dripping Springs parcel.



Photograph 15. Semidesert grassland vegetation in the eastern portion of the Dripping Springs parcel.



Photograph 14. Hedgehog cactus (*Echinocereus apachensis*).



Photograph 16. Sandpaper bush on north-facing slope in the western portion of the Property.



Photograph 17. Ornate tree lizard.



Photograph 18. Common raven nest on cliff face observed in the Dripping Springs parcel.