

**United States Department of the Interior
Bureau of Land Management**

**Environmental Assessment
DOI-BLM-AZ-C010-2021-0029-EA**

**Big Sandy Inc.
Sandy Valley Exploration Project (Phase 3)
AZA-37913**

U.S. Department of the Interior
Bureau of Land Management
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CHAPTER 1 INTRODUCTION

1.1 Identifying Information

1.1.1 Title, EA Number and type of Project

Title: Big Sandy Inc., Sandy Valley Exploration Project (Phase 3)

Document Number: DOI-BLM-AZ-C010-2021-0029-EA

Type of Project: Lithium and poly-metal minerals exploration

1.1.2 Location of Proposed Action:

The proposed Sandy Valley Exploration Project is located west of the Aquarius Mountains approximately two miles east of Wikieup, Mohave County, Arizona. The general project location is shown on Figure 1 in Appendix C. The exploration area is divided between a northern area (NM and NZ prospecting core holes) and a southern area (SM and SZ core holes), as shown on Figures 2 and 3 in Appendix C.

The Sandy Valley Exploration Project Area (Project Area) is approximately 613-acres and is located on public lands administered by the Bureau of Land Management (BLM) Colorado River District, Kingman Field Office (KFO) and is located within portions of Townships 16 and 15 North, Ranges 12 and 13 West, sections 18, 25, and 36.

1.1.3 Name and Location of Preparing Office:

Bureau of Land Management - Kingman Field Office

1.1.4 Applicant Name:

Big Sandy Inc.

1.2 Background

Big Sandy Inc. (Big Sandy) has submitted an exploration plan (Plan) to the BLM KFO to conduct lithium exploration drilling activities near Wikieup, Arizona. Big Sandy has previously conducted two phases of prospecting core hole exploration for lithium resources within the Project Area. Phase 1 of the Sandy Valley Exploration Project consisted of drilling 16 proposed holes. Twelve of these proposed drill holes were accessed, drilled and reclaimed. Phase 2 of the Sandy Valley Exploration Project consisted of drilling 37 proposed holes. All of which were accessed, drilled, and reclaimed.

These two successful exploration phases (AZA-037487) have helped to better define the areas where lithium resources exist in this area. The Plan submitted to the BLM provides for a detailed exploration plan to better define the extent of the lithium resources. The Plan provides for further detailed exploration focused on a concentrated array drilling pattern while focusing on reducing impacts to known sensitive resources. The project is designed to obtain the quantity and quality of lithium deposits within the Project Area.

1.3 Purpose and Need for Action

The purpose of the Proposed Action is to provide Big Sandy an opportunity to explore their existing mining claims on public lands managed by the BLM. The need for action is established by the BLM's responsibility under the Mining Law of 1872, Section 302 of the

Federal Land Policy Management Act of 1976, as amended, the BLM Surface Management Regulations at 43 Code of Federal Regulations (CFR) § 3809 and the use and occupancy regulations found at 43 CFR § 3715. Under these regulations, the BLM is required to respond to the Plan and to ensure that the exploratory activities do not cause unnecessary or undue degradation of the public lands and to respond to the request for occupancy as part of the Plan (signage and fencing) that is reasonably incident to the development of locatable minerals.

1.4 Decision to be Made

The decision to be made by the BLM's Authorized Office would be to either:

- 1) approve the plan as submitted (43 CFR 3809.411(d)(1));
- 2) approve the plan subject to changes or conditions necessary to meet the performance standards at 3809.420 and to prevent unnecessary or undue degradation (3809.411 (d)(2)); or
- 3) disapprove or withhold approval of the plan of operations if mitigation measures would not prevent unnecessary or undue degradation of public lands.

1.5 Land Use Plan Conformance

Kingman Field Office Resource Management Plan, Date Approved: March 1995

The Proposed Action as described below is in conformance with the Kingman Field Office Resource Management Plan and Environmental Impact Statement (BLM 1995). Specifically, Page 1, Record of Decision, Minerals: "Minerals Subject to NEPA review, approximately 1,555,000 acres of federal minerals will be open to locatable mineral exploration and development, mineral materials sales, and mineral leasing."

1.5.1 Relationships to Statutes, Regulations, Other Plans and Environmental Analysis Documents

The Proposed Action is consistent with applicable federal laws and regulations, plans, programs and policies of federal, state, and local governments.

1.6 Scoping and Issue Identification

Internal scoping was conducted with BLM in August 2020 to discuss the proposed mineral exploration project and identify potential concerns/issues for analysis in this document. The following issues and concerns were identified at the meeting by BLM specialists:

- Potential impacts to nearby hot springs;
- Potential impacts related to Native American Religious Concerns;
- Potential impacts to special status species;
- Potential impacts to vegetation resources (native and invasive);
- Potential impacts to the groundwater in the area, source, and volume of water needed to complete the project; and
- Potential impacts to general wildlife species (including Migratory Birds).

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

Big Sandy proposes to conduct additional prospect exploration drill coring and bulk sampling of active federal mining claims within the Sandy Valley Prospect of Mohave County, Arizona. The exploration area is divided within a northern area (NM and NZ prospecting core holes) and a southern area (SM and SZ core holes) as shown on Figures 2 and 3 (Appendix C). The project would utilize existing Mohave Electric Cooperative, Inc., BLM, and Mohave County roads and trails across private and public lands to new and unimproved roads where proposed access begins to the Project Area. Existing roads proposed for use have been delineated and are shown on Figures 2 and 3 (Appendix C). Minor upgrades to the existing access roads has previously been accomplished with the Phase 1 and Phase 2 exploration notices. No additional road upgrades are proposed under the Plan (see Appendix D).

New surface disturbance within the Project Area would be minimized for the access, individual exploration sites, and ancillary support sites (staging and water sites). Access disturbance would be for the multiple pass ingress and egress of the exploration equipment with support equipment as follows in Table 1.

Table 1 – New Surface Disturbance

	LENGTH (FT)	WIDTH (FT)	AREA (FT ²)	AREA (ACRES)
New Access to Drill Pads	65,674	10	656,740	15.077
New Access to Bulk Sample Site	371	10	3,710	0.085
Proposed Drill Pads (n=145)	80	40	464,000	10.652
Proposed Bulk Sample Site	20	30	600	0.014
Proposed Staging Areas (n=4)	240	40	9,600	0.220
Existing Water Well Pad	80	40	3,200	0.073
Existing Water Well Access on Existing Two Track	0	0	0	0.000
12,000 Gallon Lifted Water Tank Storage Site	50	30	1,500	0.034
			Total	10.994

Existing roads and proposed access (as shown on Figures 2 and 3) would provide necessary access for equipment, personnel, water, and supplies to the exploration sites with minimal cuts and fills constructed, and no turnouts or parking areas proposed. The length estimated disturbance for new road construction and existing road improvements are provided in Tables 3a and 3b in the Plan (refer to Appendix D). The exploration pad areas would accommodate the intended exploration equipment, water storage, drilling and coring supplies, and support trucks and trailers. Temporary truck and trailer parking and equipment storage may also occur along the existing BLM and county-maintained road disturbance with no new disturbance proposed. No staging would occur on the previously reclaimed Phase 1/Phase 2 pads, range improvements or water sources.

Coring depths would be a maximum of 360 feet (110 meters) utilizing the diesel-powered rotary coring equipment with fresh water and biodegradable polymer for coring. The proposed exploration drill-holes and the bulk-sampling site are proposed to gain maximum information

while minimizing surface disturbance and occupation. The drill-holes and bulk-sampling site are located where metals reserves are more likely to be encountered or where sub-surface information is less understood and where geologic anomalies may be present.

The drilling would be completed with four workers (one shift), which would stay at local lodging and is expected to take up to 18 months. Activities are anticipated to begin during summer 2021 (dependent upon project approval) and conclude with reclamation when surface conditions warrant.

Fresh-water ancillary facilities would likely only utilize the water well site or the 12,000-gallon stand water tank storage site but not both. However, both are proposed in this Plan not knowing the condition of the water well or the ability to use the water well until project implementation. A final decision on the source of water would be determined following a pump test at the water well site and approval to utilize the water from the BLM KFO during initial project implementation. No water well drilling, or deepening is proposed but rather a pump test and minimal water well rehabilitation and pump installation is proposed at this time. Any improvements to the actual well would remain part of the well following project use with the water well not being plugged or made incapable of future production following project use. The existing water well on the site is presumed useable with an electric submersible pump and 10-kilowatts generator anticipated to operate the well. If the water well is utilized the site would be reclaimed with the final core hole reclamation with the pump and generator removed from the site and the water well left in place and functional.

The water well would not be connected to the 12,000-gallon stand water tank storage site by pipeline but rather a large truck would fill the tank multiple times during project operations from either the functional water well or from Wikieup, Arizona municipal water under a volume based direct purchase agreement with the City of Wikieup. Water from the tank would then be transported from the stand tank to the northern and southern exploration core holes and access roads on an as-needed basis utilizing the smaller project water truck or pickup trucks. The stand tank would be transported to the stand tank site, raised to a height near 14 feet during project implementation then lowered and removed from the site and the site reclaimed at the conclusion of the project. The stand tank is raised and lowered with a self-contained hydraulic system then water pumped by truck to the tank and allowed to gravity flow from the tank for project use with no generator or engine required for daily use of the tank.

A 180-horsepower or less diesel-powered rubber track-mounted drilling rig with 3-1/2-inch (HQ) coring unit would be moved onto each of the 145 drill-hole sites with necessary analysis, water, and hole plugging materials. Fresh water with biodegradable polymer would be utilized as the coring medium with the drill-hole requiring 1 to 12 hours to drill and retrieve the 3-1/2-inch (HQ) core.

The proposed drill-hole would target formations containing metals potential. No shallow water or hydrocarbon zones are anticipated but, if encountered, would be isolated utilizing bentonite chips following the drilling and coring process.

Each core hole is anticipated to be dry and would be abandoned in compliance with Arizona R-12-15-816 prior to site reclamation. If confirmed dry, the core hole would be backfilled within twenty feet of surface then filled from twenty feet to surface with concrete. Should water be encountered the entire hole would be backfilled with bentonite chips then filled from twenty feet to surface with concrete.

A 320-class diesel-powered excavator with 10-wheel dump truck would access the bulk sampling site and excavate the contents of the 30-foot long by 20-foot-wide site to a maximum depth of 16 feet while loading the adjacent 10-wheel dump truck with material for transportation to off-site milling and classification. The proposed bulk sample site would remove up to 50-tons of material and would target formations containing metals potential. No shallow water or hydrocarbon zones are anticipated but, if encountered, would bring a halt to deeper excavation and immediate notification to the BLM KFO. Excavation of the bulk-sampling site would ensure that no unsafe highwalls exist and that a ramped approach always be maintained to protect personnel and wildlife that may be in the area of the excavation and provide a safe egress in the unlikely event they fall into the excavation. Further, if any potentially unsafe conditions exist the entire bulk sampling site would be immediately fenced with temporary panels or steel wire fence.

2.1.1 Committed Environmental Protection Measures

The Plan (refer to Appendix D, Section 6.3) has committed to the implementation of the following environmental protection measures during the proposed exploration drilling and bulk sampling activities:

- Any survey and reference monuments would be protected to the extent economically feasible.
- Public safety would be protected while the project is in operation. All equipment would be operated and maintained in a safe and orderly manner.
- Solid wastes would be disposed of in a state, federal, or local designated site.
- If the use of the water well is approved, Big Sandy would agree to monitor its' water consumption in an effort to minimize any potential drawdown of the aquifer.

Cultural and Paleontological Resources

- Pad and access disturbances would be relocated to avoid historic cultural resources and suitable buffer within the project area.
- Any scientifically important archaeological or paleontological resources would not be knowingly disturbed, altered, injured, or destroyed nor would any historical or cultural site, structure, building, or object. Guidelines in the BLM's Cultural Resources (Archaeology) Standard Stipulations for Mining Operations would be followed. The discovery of any cultural or paleontological resource that might be altered or destroyed by operations would be reported to the authorized BLM officer and the discovery would be left intact.
- All reasonable steps would be taken to prevent fires in the project area. Appropriate fire suppression equipment would be kept on site. All state and federal fire laws and regulations that are applicable would be complied with.

Wildlife Resources

- Prior to the initiation of exploration activities, a qualified biologist would conduct a pre-activity survey of proposed temporary access roads, drill/sampling areas, and other temporary use areas to locate any occupied tortoise burrows/potential shelter sites that may be present in the Project Area. The results of the survey would be provided to the BLM and any occupied tortoise burrows or other shelter sites that may be used by Sonoran desert tortoises (e.g., large burrows, caliche caves) would be flagged for avoidance.
- Environmental awareness training would be provided for all personnel prior to conducting any onsite work. The training would include information on the protection of wildlife including the Sonoran desert tortoise and migratory bird nests, and procedures to be implemented in case they are encountered during project activities;
- If any Sonoran desert tortoises are encountered during project activities, onsite workers would adhere to the current handling guidelines for the Sonoran desert tortoise (see Appendix E);
- Onsite workers would travel at reduced speeds on access roads (25 mile per hour maximum) and remain aware of wildlife on the road.
- All on-site workers would be required to check under their parked vehicles and equipment prior to driving to make sure there is not a tortoise sheltering underneath the vehicle or piece of equipment. If a desert tortoise is found sheltering underneath a parked vehicle or piece of equipment, the tortoise would be allowed to move out from under the vehicle/equipment on its own. If the tortoise does not leave in a timely fashion, the BLM would be consulted prior to the tortoise being moved in accordance with the Arizona Game and Fish Department's Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (see Appendix E). While relocation of a Sonoran desert tortoise could result in minor stress from handling, injury or mortality of Sonoran desert tortoises is not anticipated to occur as a result of this project.
- If vegetation removal is required during the migratory bird breeding season (February 15 – August 31), a survey would be conducted to locate any active bird nests that may be present and disturbance to active bird nests would be avoided during vegetation clearing activities. Appropriate buffer distances for avoidance of active bird nests would be established in coordination with the BLM. Any tanks or sumps that hold water potentially containing contaminants would be fenced according to the Arizona Game and Fish fencing guidelines to prevent attracting wildlife (see Appendix F).
- Drill holes or other open excavations that may entrap wildlife would be covered if left open overnight or escape ramps shall be installed (e.g., for trenches or other steep-sided excavations).

Vegetation and Soil Resources:

- Surface disturbances would be as limited to the extent practical. Reclamation and re-vegetation would include the transplanting of native plants. All areas of off-road travel and surface disturbance would be raked out at the completion of surface disturbance activities.
- Any cacti in the areas to be disturbed would be transplanted to a nursery (with proper orientation to the north) and would be replanted after re-contouring of disturbed areas.

- Surface disturbances would be limited to the minimum amount as practically and safely possible.
- Noxious weed controls would be utilized throughout the project life to prevent or minimize the introduction of noxious weed species into the project area. Only BLM approved, certified weed-free seed would be used during reseeding. Reclaimed areas would be monitored for infestations of noxious weeds.
- Surface disturbances would be as limited as practically as possible through interval reclamation during the drilling process. Reclamation and re-vegetation would include recontouring and seeding with the transplanting of plants not anticipated. All areas of off-road travel and surface disturbance would be raked out at the completion of surface disturbance activities.

2.2 Alternatives Analyzed in Detail

2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. The Plan including exploration drilling and bulk sampling of active federal mining claims within the Sandy Valley Prospect of Mohave County, Arizona, would not occur and therefore no new surface disturbance would occur within the Project Area.

2.3 Alternatives Considered but not Analyzed in Detail

No alternative actions are proposed as no additional issues or environmental concerns have been raised to date necessitating analysis of additional alternatives to limit impacts. Any possible alternative actions would be limited by the location of the mineral resource and the narrow focus of the exploration drilling program.

CHAPTER 3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Resources and Uses

The BLM is required to consider many authorities when evaluating a federal action. The table below summarizes the resources and uses that have been reviewed by the BLM ID Team to determine whether or not they would be affected by the proposed project and rationale for whether the topic will be carried forward for detailed analysis. Those resources or uses determined not present or present but not affected by the Proposed Action need not be carried forward or discussed further. Resources or uses determined to be present and may be affected could be carried forward in the document if there are issues which necessitate a detailed analysis.

Table 2: Resources and Uses

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
Air Quality	Yes	No	The Project Area lies within the Mohave County PM-10 attainment area as classified by the Environmental Protection Agency (ADEQ 2019). Effects from drilling operations were taken into consideration when the classification was made. Therefore, all alternatives would be in conformance with PM-10 attainment area air quality standards.	--
Areas of Critical Environmental Concern	No	No	There are no Areas of Critical Environmental Concern within the Project Area.	--
Cultural Resources	Yes	No	A Class III Cultural Resources Survey was conducted and resulted in one previously recorded Site and three newly recorded sites. The proposed drilling program was designed to avoid known resources identified in the Class III survey.	--
Environmental Justice	No	No	Minority, low-income populations, and disadvantaged are present within Mohave County and the Town of Wikieup, but not at levels that warrant their classification as such for purposes of environmental justice. The Proposed Action would not cause any disproportionately high and adverse effects on minority or low-income populations either individually or collectively.	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
Farmlands Prime/Unique	No	No	No prime or unique farmland are in the vicinity of the Proposed Action.	--
Fire Management	Yes	No	The Plan calls for the use of a 12,000-gallon freshwater tank and other appropriate fire suppression equipment that can be utilized for fire suppression if needed. All reasonable steps would be taken to prevent fires in the Project Area.	--
Fish Habitat	No	No	No fish habitat is present in the Project Area.	--
Floodplains	Yes	No	Floodplains within the NM and NZ Project Area include Bitter Creek Wash and unnamed washes. Floodplains within the SM and SZ Project Area includes Gray Wash. The Big Sandy River is also a floodplain. These floodplains are special flood areas subject to inundation by the 1% annual chance flood. No drill sites or access roads are located in these floodplains; therefore the Proposed Action would not affect these areas.	--
Forestry Resources and Woodland Products	No	No	There are no woodlands within the vicinity of the Project Area.	--
Human Health and Safety	Yes	No	Drilling operations would be implemented in accordance with all applicable federal, state, and site-specific safety regulations. All equipment would be inspected, operated and maintained in accordance with manufacturer guidelines. Daily tailgate safety meetings would be conducted to protect workers. The project would operate with barriers and signage to prevent endangering human health and safety.	--
Land Use Authorizations/Access	Yes	No	The Project Area lies entirely within active federal mining claims on federal surface and mineral lands, under the management of the BLM.	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
			<p>Access to the Project Areas would be via existing Mohave Electric Cooperative, Inc., BLM, and Mohave County roads and trails across private and public lands. No new access roads would be constructed as part of the Plan. No access would be restricted to the area by the proposed exploration operations.</p> <p>No land use authorization/access issues are anticipated for the Proposed Action.</p>	
Lands with Wilderness Characteristics	No	No	There are no lands with wilderness characteristics within the Project Area.	--
Livestock Grazing Management	Yes	No	<p>The northern Project Area lies within the Hot Springs livestock grazing allotment and the southern Project Area lies within the Gray Wash livestock grazing allotment (BLM KFO 2018).</p> <p>The Proposed Action is temporary in nature and all new disturbances would be reclaimed per the Plan upon completion of the Proposed Action, which would minimize any potential impacts to livestock grazing.</p>	--
Mineral Resources	Yes	No	The Proposed Action calls for exploration drilling for lithium and other poly metals in the Project Area. The Proposed Action would minimally affect mineral resources since only core samples and one bulk size sample would be collected and removed.	--
Native American Religious Concerns/ Traditional Values	To Be Determined	To Be Determined	Consultation is ongoing to determine any concerns with the Proposed Action.	--
Paleontological Resources	Yes	No	The Big Sandy Formation is host to the lithium bearing sediments targeted in the exploration program within the Project Area. This geologic formation is known to contain diverse mammalian and avian fossils of Late Miocene age (Dickinson 2008), however there is no Potential Fossil Yield Classification given to the Big	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
			Sandy Formation. Any potential effect on paleontological resources would be limited given that much of the Proposed Action would occur on the overlying unconsolidated sand and gravel sediments. Fossils in this formation are rare and the primary fossil quarries are found several kilometers south of the Project Area near Box Canyon Wash (Dickinson 2008).	
Recreation	Yes	No	There are no designated recreation areas within the Project Area. Dispersed recreation occurs in the project area, however access would not be restricted by the Proposed Action, therefore no impacts to any dispersed recreationists are anticipated.	--
Socioeconomics	Yes	No	Given the limited scope and temporary nature of the Proposed Action, any socio-economic effects on the local community would be minor and short lived and not contribute to a long-term tax base or population increase.	--
Soil Resources	Yes	No	Soils in the Project Area include cacique family extremely gravelly loam, 1 to 7 percent slopes, Cave gravelly sandy loam, dry, 10 to 35 percent slopes, and Torriorthents, dry, 35 to 65 percent slopes, according to the National Resources Conservation Service (Web Soil Survey). The Proposed Action would result in the disturbance of approximately 26 acres of land. Reclamation of disturbed areas (e.g. access roads and drill pads) would be re-contoured to blend with original contours and to mitigate future erosion and blend with the surrounding topography. Disturbed areas and area of overland travel would be scarified then reseeded by a manual broadcast method and raked by	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
			hand to reduce disturbance to the extent practicable.	
Special Status Species	Yes	Yes	There are no federal Threatened, Endangered species in the Project Area. The Sonoran Desert Tortoise is a sensitive species designated by the BLM that may be present in the Project Area and is discussed in Section 3.2.1.	3.2.1
Travel and Transportation Management	No	No	Travel and transportation management would not be impacted by the Proposed Action.	--
Vegetation Resources (native and invasive)	Yes	Yes	Vegetation resources are discussed in Section 3.2.2.	3.2.2
Visual Resources	Yes	No	<p>The Project Area is within areas designated as Visual Resource Management Class II and Class III (BLM Arizona Visual Resource Management Keyhole Markup Language (KMZ) and Layer Package 2019). The objective of Class II is to retain the existing character of the landscape while allowing for low levels of change to the landscape. The objective of Class III is to partially retain the existing character of the landscape while allowing for moderate levels of change to the landscape (BLM 1986).</p> <p>The Proposed Action is temporary in nature and should not attract the attention of the casual observer. All new disturbances would be remediated upon completion of the Proposed Action.</p>	--
Wastes Hazardous or Solid	Yes	No	<p>Hazardous materials proposed to be used at the Project Area would be properly contained. Any spills would be cleaned up using the best available practices and disposed of at an approved disposal facility.</p> <p>Potential impacts to the environment include accidental release of materials during transportation to and from the Project site or from the use,</p>	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
			handling, and storage at the site which is discussed in the Plan (Appendix D, Section 7).	
Water Resources	Yes	Yes	Water resources are discussed in Section 3.2.3	3.2.3
Water Quality (Surface/ Ground)	Yes	No	<p>The Proposed Action would not affect water quality within or near the Project Area. Drilling methods would utilize fresh water, biodegradable polymers, and Arizona Department of Water Resources standard hole plugging materials.</p> <p>The proposed drill-holes would target formations containing metals potential. No shallow water or hydrocarbon zones are anticipated but, if encountered, would be isolated utilizing bentonite chips following the drilling and coring process. Each core hole is anticipated to be dry and would be abandoned in compliance with Arizona R-12-15-816 prior to site reclamation. If confirmed dry, the core hole would be backfilled within twenty feet of surface then filled from twenty feet to surface with concrete. Should water be encountered the entire hole would be backfilled with bentonite chips then filled from twenty feet to surface with concrete.</p>	--
Wetlands/ Riparian Zones	Yes	No	The wetlands/riparian zones within NM and NZ Project Area includes Bitter Creek Wash. This is classified as a riverine, intermittent, streambed, seasonally flooded wetland. The wetlands/riparian zones within SM and SZ Project Area includes Gray Wash and another unnamed wash. These are classified as a riverine, intermittent, streambed, temporarily flooded wetlands. No drill sites or access roads would be located in these wetlands/riparian zones; therefore the Proposed Action would not affect these areas	--

RESOURCE/USE	PRESENT YES/NO	MAY BE AFFECTED YES/NO	RATIONALE	ANALYZED IN SECTION
Wild and Scenic Rivers	No	No	The Project Area is not near designated, suitable, or eligible wild and scenic rivers.	--
Wild Horses and Burros	Yes	No	The Project Area is within the Big Sandy Herd Management Area (HMA). The burros generally inhabit river bottoms in the area, which are not located in the Project Area. Minimal forage would be removed by the proposed project within the HMA therefore no impacts would be expected to wild burros.	--
Wilderness	No	No	The Project Area is not near any designated wilderness.	--
Wildlife (including Migratory Birds)	Yes	Yes	Wildlife is discussed in Section 3.2.4.	3.2.4

3.2 Resources Brought Forward for Analysis

The Interdisciplinary Team evaluated potential impacts from the Proposed Action and No Action alternative to determine which resources, and resource uses (as listed in the table above) to determine if detailed analysis would be necessary. Through this process, the Interdisciplinary Team determined the following resources warrant detailed analysis in this environmental assessment (EA).

The description of the Affected Environment for the No Action would be the same as that for the Proposed Action.

3.2.1 Special Status Species

Affected Environment

Identified in the Biological Evaluation (see Appendix E) prepared for the proposed exploration Plan (see Appendix D), the Sonoran desert tortoise (*Gopherus agassizii*), a sensitive species designated by the BLM, has the potential to occur with the Project area. The proposed exploration activities are located within an area that has been designated as a Category III (the least valuable and protected habitat) desert tortoise habitat. The Sonoran desert tortoise is protected under a multi-agency Candidate Conservation Agreement with signatories that include multiple state and federal agencies including the BLM.

The Sonoran desert tortoise occurs primarily on rocky slopes and bajadas in Sonoran desert scrub and adjacent vegetation communities throughout central, southern, and western Arizona. While boulder-covered slopes are the preferred habitat of the Sonoran desert tortoise, tortoises may also be present in low densities on lower mountain bajadas and along washes when suitable shelter sites are present (Grandmaison et al. 2010).

Suitable habitat for Sonoran desert tortoises is present throughout the Project Area and in adjacent lands. Tortoises could potentially be encountered anywhere in the Project Area given

the proximity to documented occurrences of this species in the immediate project vicinity. Potential shelter sites that were observed during the biological survey on October 29, 2019, were limited to a series of caliche caves along the eastern edge of Bitter Creek. No large burrows (of sufficient size for adult tortoises) were encountered on the hillsides and hilltops in the northern (NM and NZ) drill area, which typically had small to medium-sized (up to 12-inch) cobbles but no large boulders and few areas of rock outcrop. The southern (SM and SZ) drill area is less rocky than the northern drill area, with fewer trees and cacti; the southern (SZ) drill area extends along flat ridgetops with steep, eroded sides.

Environmental Consequences

Proposed Action

The Proposed Action would result in the loss of approximately 26 acres of potential foraging habitat for the Sonoran desert tortoise and may also result in impacts to potential shelter sites for tortoises.

Sonoran desert tortoises may be encountered on access roads and other temporary use areas due to the presence of suitable habitat throughout the Project Area. Reclamation of disturbed areas would occur upon completion of the exploration activities as described in the Plan.

Given the amount of available foraging habitat in the Project Area and in the surrounding area, and restoration of disturbed areas following exploration activities would avoid long-term impacts from habitat loss or degradation to Sonoran desert tortoises or their habitat in the Project Area.

No Action

Under the No Action alternative, the Proposed Action would not occur thus eliminating any potential impacts to the Sonoran desert tortoise.

3.2.2 Vegetation Resources (native and invasive)

Affected Environment

Vegetation in the project area consists of a variety of trees, shrubs, sub-shrubs, and cacti that are native to the Sonoran desert and indicative of the Paloverde-Cacti-Mixed Scrub Series (Logan Simpson 2020).

Foothills paloverde (*Parkinsonia microphylla*) and shrubs/subshrubs including creosotebush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), flat-top buckwheat (*Eriogonum fasciculatum*), and brittlebush (*Encelia farinosa*) are the dominant species occurring in the project area. Succulent and cactus species that commonly occur throughout the project area include ocotillos (*Fouquieria splendens*), prickly pears (*Opuntia spp.*), chollas (*Cylindropuntia spp.*), hedgehogs (*Echinocereus sp.*), California barrel cacti (*Ferocactus cylindraceus*), Graham's nipple cacti (*Mammillaria grahamii*), crucifixion thorn (*Canotia holacantha*), and saguaro cacti (*Carnegiea gigantea*). A sparse to moderate ground cover of desert Indianwheat (*Plantago sp.*), three-awn (*Aristida sp.*), fluffgrass (*Dasyochloa pulchella*), and big galleta (*Pleuraphis rigida*) is present between cacti, shrubs, and trees. Weedy and invasive species appear to be uncommon in the project area, consisting primarily of red brome (*Bromus rubens*) in scattered locations throughout the project area.

Bitter Creek, a wide and sandy-bottomed ephemeral wash, borders the southern edge of the northern drill area. Bitter Creek and the various smaller washes in the project area are lined with xeroriparian vegetation consisting of a combination of paloverde trees, velvet mesquite (*Prosopis velutina*), catclaw acacia (*Senegalia greggii*), wolfberry (*Lycium andersonii*), white ratany (*Krameria grayi*), cheeseweed (*Hymenoclea sp.*), sweetbush (*Bebbia juncea*), desert broom (*Baccharis sarothroides*), and canyon ragweed (*Ambrosia ambrosioides*).

Environmental Consequences

Proposed Action

Under the Proposed Action, approximately 26 acres of vegetation would be removed or crushed within the project area. Areas where vegetation is removed would leave the ground bare which could increase chances of invasive species to grow. Given the amount of available vegetation in the Project Area and in the surrounding area and that reclamation of disturbed areas would occur upon completion of the exploration activities there are no long-term impacts of vegetation loss in the Project Area.

No Action

Under the No Action alternative, the Proposed Action would not occur thus eliminating removal or crushing of vegetation within the project area.

3.2.3 Water Resources

Affected Environment

Water resources are a sensitive resource within the Project Area and vicinity. The Proposed Action calls for the use of an existing water well in the Project Area to extract groundwater for drilling and dust suppression purposes. A final decision on the source of water would be determined following approval from the BLM and a pump test at the water well. If the water well is not utilized, then the water would be trucked in from the Wikieup municipal system and stored in a 12,000-gallon stand water tank.

Environmental Consequences

Proposed Action

Minimal fresh-water consumption is proposed with the Plan but is required to ensure cuttings removal during the drilling process and for as-needed dust-suppression on the existing and proposed access roads during use. Fresh-water use is anticipated at 1,000 gallons or less per core hole totaling up to 145,000 gallons of fresh-water use for the Plan. Efforts to reduce overall truck traffic within the Project Area have proposed use of an existing water well site and use of a separate 12,000-gallon stand water tank storage site within the Project Area. The stand water tank also provides additional fire suppression capability within the Project Area.

No Action

Under the No Action alternative, the Proposed Action would not occur and there would be no effect to water resources.

3.2.4 Wildlife (including Migratory Birds)

A variety of wildlife including many bird species were observed (or heard) within the Project Area during the site visit conducted on October 29, 2019. Birds that were observed included cactus wrens (*Campylorhynchus brunneicapillus*), Gila woodpeckers (*Melanerpes uropygialis*), verdins (*Auriparus flaviceps*), house finches (*Haemorhous mexicanus*), black-tailed gnatcatchers (*Polioptila melanura*), black-throated sparrows (*Amphispiza bilineata*), and curve-billed thrashers (*Toxostoma curvirostre*). Black-tailed jackrabbits (*Lepus californicus*) were also observed; small rodent burrows and wood rat (*Neotoma spp.*) middens were the primary signs of small mammal activity within the project limits. Signs of cattle grazing (i.e., scat, broken tree limbs) were observed throughout the project area. Other wildlife species that are likely to occur in the project area include: birds such as the mourning dove (*Zenaida asiatica*), greater roadrunner (*Geococcyx californianus*), and red-tailed hawk (*Buteo jamaicensis*); mammals such as the mule deer (*Odocoileus hemionus*), javelina (*Pecari tajacu*), and coyote (*Canis latrans*); and reptiles such as the western diamondback rattlesnake (*Crotalus atrox*).

Given the amount of available foraging habitat in the Project Area and in the surrounding area, no long-term impacts to wildlife (including migratory birds) are anticipated from the temporary loss of desertscrub vegetation in the Project Area.

Environmental Consequences

Proposed Action

The Proposed Action would result in the loss of 26 acres of soil and vegetation, temporarily displacing wildlife in the area. Environmental protection measures to reduce weeds and promote native regrowth would be implemented as specified in the Biological Evaluation (see Appendix E) to reduce loss of forage and nesting habitat for wildlife.

Reclamation of disturbed areas would occur upon completion of the exploration activities. Given the amount of available foraging habitat in the Project Area and in the surrounding area impacts to wildlife would be minimal. Given the relatively small overall area that would be impacted by ground-disturbing activities and the low observed density of potential shelter sites for wildlife within the Project Area, the likelihood of any direct interaction between the Proposed Action and wildlife is relatively low. Restoration of disturbed areas following their use would avoid long-term impacts from habitat loss or degradation.

No Action

Under the No Action alternative, the Proposed Action would not occur thus eliminating any potential impacts to wildlife.

CHAPTER 4 CONSULTATION, COORDINATION AND PREPARERS

Table 3: Persons, Groups, or Agencies Consulted

AGENCY/GROUP
Arizona Game and Fish Department
Chemehuevi Indian Tribe
Colorado River Indian Tribes
Fort Mojave Indian Tribe
Hopi Tribe
Hualapai Tribe
Navajo Nation
Salt River Pima-Maricopa Indian Community
Yavapai-Apache Nation
Yavapai-Prescott Indian Tribe

Table 4: List of Preparers

NAME	TITLE
Paul Misiaszek	BLM, KFO Geologist
Joelle Acton	BLM, KFO Wildlife Biologist
Thomas Thompson	BLM, KFO Archaeologist
Amanda Dodson	BLM, KFO Field Manager
Angelica Rose	BLM, Colorado River District Planning and Environmental Coordinator
Anthony Griego	Environmental Resources Management (ERM)
David Abranovic	Environmental Resources Management (ERM)
Ian Tackett	Logan Simpson
Allison Wolfe	Logan Simpson
Marybeth Harte	Logan Simpson

APPENDICES

Appendix A – Acronyms and Abbreviations

Appendix B – List of References

Appendix C – Figures

Appendix D – Plan of Operations for Mineral Exploration

Appendix E – Biological Evaluation

Appendix F – Arizona Game and Fish Fencing Guidelines