



U.S. Department of the Interior
Bureau of Land Management

July 2023

Community Pit No. 1 Safety Project

Environmental Assessment

DOI-BLM-NM-L000-2023-0028-EA



Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005
575-525-4300

CONTENTS

| | |
|------------------------------------------------------------------------|-----------|
| CHAPTER 1. INTRODUCTION..... | 1 |
| 1.1. Purpose and Need..... | 1 |
| 1.2. Decision to be Made | 4 |
| 1.3. Land Use Plan Conformance | 4 |
| 1.4. Relationship to Statues and Regulations..... | 4 |
| 1.5. Scoping and Issues..... | 4 |
| 1.5.1. Internal Scoping..... | 4 |
| 1.5.2. External Scoping | 4 |
| 1.5.3. Issues..... | 5 |
| CHAPTER 2. ALTERNATIVES..... | 12 |
| 2.1. Alternative A – Proposed Action | 12 |
| 2.1.1. Design Features..... | 13 |
| 2.2. Alternative B – No Action Alternative | 15 |
| 2.3. Alternatives Considered but Dismissed..... | 15 |
| CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS | 15 |
| 3.1. Introduction | 15 |
| 3.2. Cumulative Actions..... | 16 |
| 3.2.1. Past and Present Actions | 16 |
| 3.2.2. Reasonably Foreseeable Future Actions | 17 |
| 3.3. Issue 1: Visual Resources..... | 17 |
| 3.3.1. Affected Environment..... | 17 |
| 3.3.2. Environmental Impacts | 18 |
| 3.4. Issue 2: Paleontological Resources..... | 22 |
| 3.4.1. Affected Environment..... | 24 |
| 3.4.2. Environmental Impacts | 31 |
| CHAPTER 4. CONSULTATION AND COORDINATION | 33 |
| CHAPTER 5. LIST OF PREPARERS | 34 |
| CHAPTER 6. REFERENCES | 35 |

Table of Figures

| | |
|--------------------------------------------------|---|
| Figure 1: Community Pit General Location..... | 2 |
| Figure 2: Community Pit No. 1 Project Area | 3 |

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 3: Community Pit No. 1 Project Area in profile, facing south from Ridgeline Trail. The limestone cap is approximately denoted for reference. | 16 |
| Figure 4: Community Pit No. 1 KOP Map | 19 |
| Figure 5: Geologic Map of the Community Pit No. 1 Project Area and Vicinity | 25 |

Table of Tables

| | |
|---------------------------------------------------------------------------------------------|----|
| Table 1: Issues Identified for Detailed Analysis in this EA..... | 5 |
| Table 2: Resources and resource uses not significantly impacted by the proposed action..... | 5 |
| Table 3: Key Observation Points (KOP) | 20 |
| Table 4: Vertebrate Trace Fossils Present in the Robledo Mountains Formation | 27 |
| Table 5: Invertebrate Trace Fossils Found in Robledo Mountains Formation | 29 |

CHAPTER 1. INTRODUCTION

Community Pit No.1 is in Doña County, New Mexico, located approximately 7.50 air miles north of Las Cruces and is outside of the Organ Mountains Desert Peaks National Monument Boundary. (See Figure 1 for general location). Access to the site is via Rocky Acres Trail (Doña Ana County Road D013) and Francis Burke Memorial Easement from Shalem Colony Road. The Community Pit No.1 is located adjacent to Prehistoric Trackways National Monument (PTNM) in Township 22 South, Range 1 East, Section 19 New Mexico Principal Meridian (See Figure 2).

The Project Area encompasses approximately 85-acres including Community Pit No. 1. Community Pit No. 1 has been mined for building stone and other mineral material products since 1969. In 1979, the Bureau of Land Management (BLM) Las Cruces District Office formally designated the Community Pit No. 1. A community pit is defined as an area of public land from which the BLM can make disposals of mineral materials through contract sales to private citizens or businesses (Code of Federal Regulations 43 CFR 3603). The pit continued to be a source of building stone to local building contractors and the general public for many years. In 1994, the BLM limited use of the community pit to only four contractors and prohibited private citizens from using the pit. Contractor activities were managed by the regulations at 43 CFR 3600 and written stipulations developed by the BLM. Mining in the pit ended in 2007 with no reclamation of the pit having taken place; resulting in approximately 50 acres of disturbance that includes 150-foot unstable highwalls, spoil piles, and shallow pits. The 43 CFR 3600 regulations do not require community pit operators to perform reclamation after extracting mineral materials.

During ongoing monitoring of Community Pit No. 1, BLM has frequently observed public visitors climbing upon and underneath the undercuts of the highwalls. These highwalls consist of unstable and unconsolidated (loose) materials. The highwalls are extremely dangerous and pose a public safety hazard. Since 2002, there have been four fatalities and six serious injuries across New Mexico related to Abandoned Mine Lands features (NMEMNRD 2023).

On February 8, 2010, the BLM completed an Environmental Assessment (EA) and signed a Finding of No Significant Impact (FONSI) for the reclamation of Community Pit No.1 (DOI-BLM-NM-030-2009-0042). No Decision Record was issued for this project. (BLM 2010)

In 2005, the BLM completed an EA and signed both a FONSI and Decision Record (BLM 2005). In 2007 the Interior Board of Land Appeals (IBLA) remanded back to the BLM via “*Friends of the Robledos, et al*, IBLA 2005-211, for failing to analyze impacts to water quality.

1.1. Purpose and Need

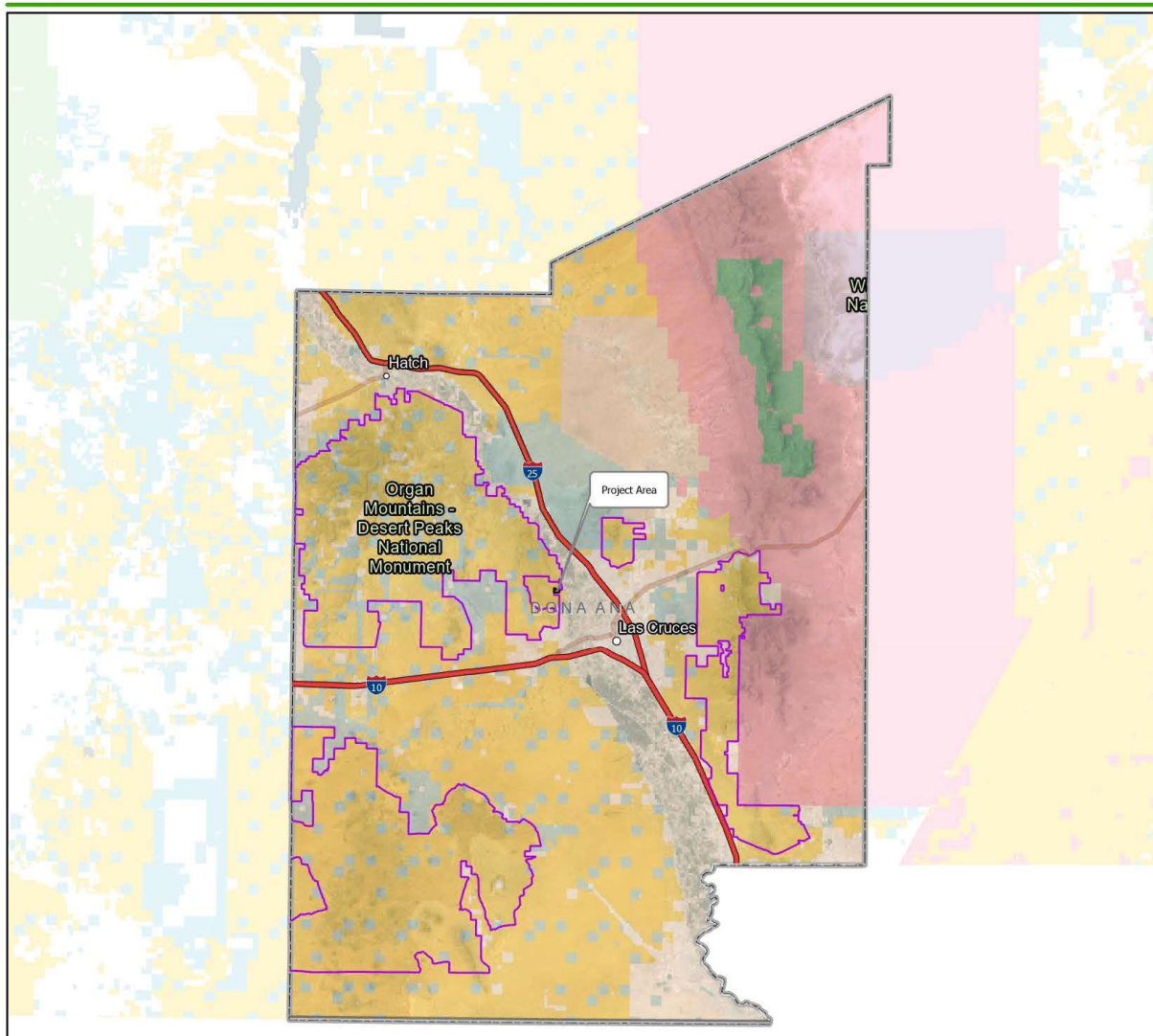
The purpose for the action is to reduce public hazards within Community Pit No. 1. The need of the action is to reduce the chances of visitors’ injury or death due to unstable and unconsolidated public land within the Community Pit No. 1 area.



Community Pit No. 1 General Location

Bureau of Land Management- Las Cruces District Office

Doña Ana County



- | | |
|--------------------------|-------------------------|
| Project Area | Bureau of Reclamation |
| National Monuments | Dept. of Agriculture |
| Transportation | |
| Interstate Highway | Dept. of Defense |
| Counties | Fish & Wildlife Service |
| Surface Ownership | |
| BLM | National Park Service |
| | Private |
| | State |
| | State Park |

Map Produced by: BLM Las Cruces District Office
Coordinate System: NAD 1983 UTM Zone 13N
File: Community Pit #1 Safety and Reclamation Project
Scale: 1:839,533
Scale: 1:0
Date: 3/14/2023

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the BLM. Spatial information may not meet National Map Accuracy Standards. This information is subject to change without notification.

0 10 20 Miles

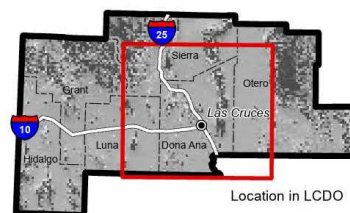


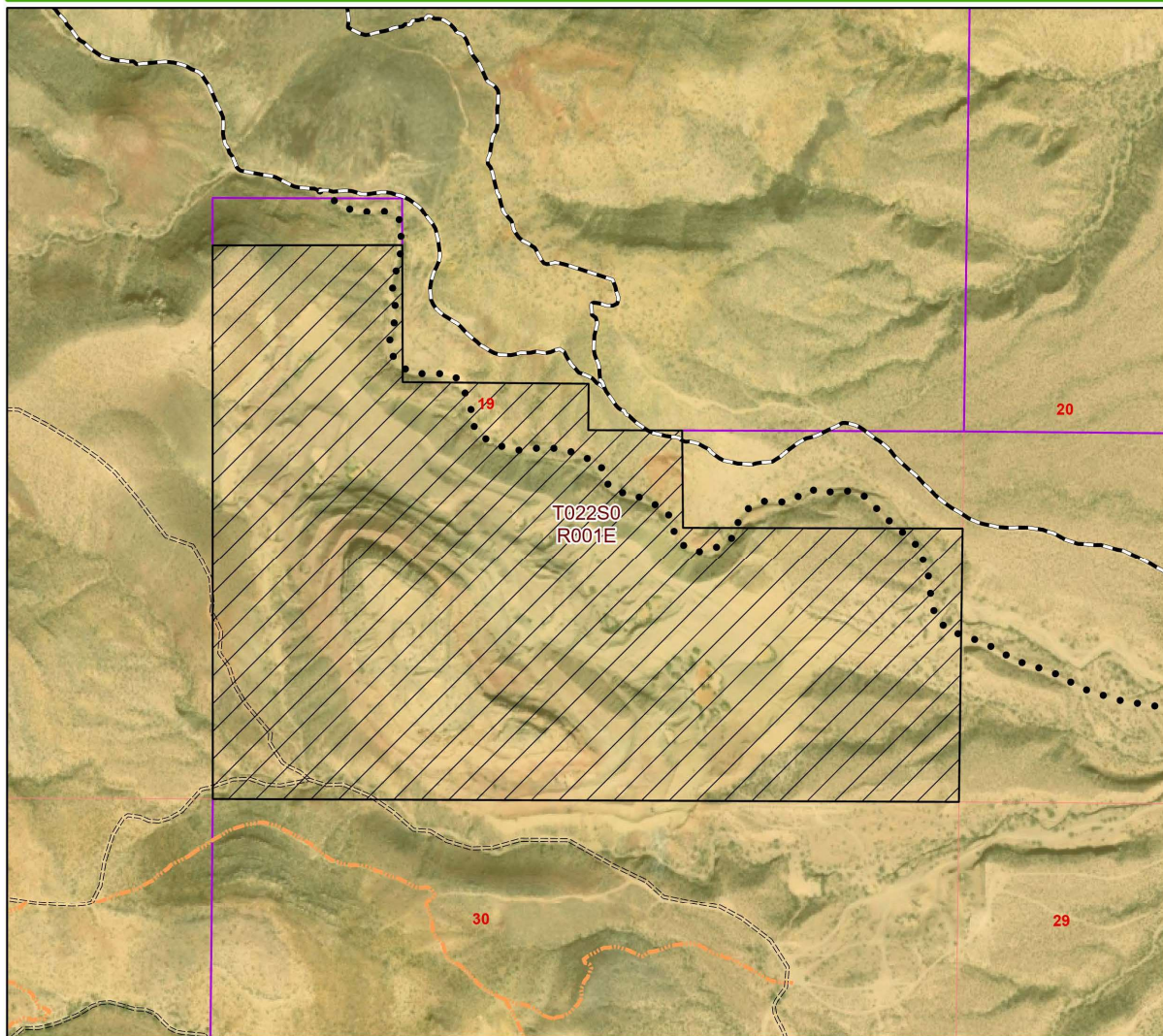
Figure 1: Community Pit General Location



Community Pit No. 1 Project Area

Bureau of Land Management- Las Cruces District Office

Doña Ana County



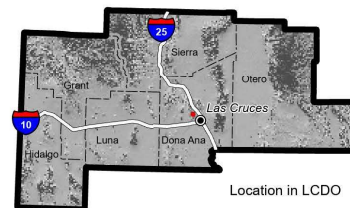
- Project Area
- National Monuments
- Surface Ownership
 - BLM
 - Sections
 - Townships

- Trail Type
 - Hiking
 - Multi-use Motorized
 - Multi-use Non-mechanized
 - Multi-use Non-motorized

0 500 1,000 Feet

Map Produced by: BLM Las Cruces District Office
Coordinate System: NAD 1983 UTM Zone 13N
File: Community Pit #1 Safety and Reclamation Project
Scale: 1:6,000
Scale: 1:0
Date: 4/20/2023

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the BLM. Spatial information may not meet National Map Accuracy Standards. This information is subject to change without notification.



Location in LCDO

Figure 2: Community Pit No. 1 Project Area

1.2. Decision to be Made

The BLM will decide whether to remediate and reclaim the public safety hazard by reducing 150-foot high, unstable high-walls, spoil piles, and shallow pits within the Community Pit No. 1 Project Area or to not address the public safety hazard. This remediation and reclamation would be in consideration of natural resources BLM manages, including paleontological, cultural, and biological resources.

1.3. Land Use Plan Conformance

This proposed action conforms to the Mimbres Resource Management Plan (RMP) (BLM 1993) and is consistent with the following program objective: “The minerals program is to provide for the public use of leasable, locatable, and salable minerals consistent with the laws that govern these activities and to minimize environmental damage and provides for the rehabilitation of affected land” (p. 2-3).

1.4. Relationship to Statutes and Regulations

The Mining and Minerals Policy Act of 1970, Sec 2 states: “The Congress declares that it is the continuing policy of the Federal Government in the national interest to foster and encourage ... (4) the study and development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities.”

The Federal Land Policy and Management Act of 1976 as amended states: “the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values...”

1.5. Scoping and Issues

1.5.1. Internal Scoping

The project was presented to the LCDO NEPA Interdisciplinary (ID) team on January 13, 2023 and held subsequent meetings to identify issues. A site visit was conducted on March 9, 2023.

1.5.2. External Scoping

In late 2009/early 2010 the BLM under Environmental Assessment (EA), DOI-BLM-NM-030-2009-0042, had a 30-day public review period and an additional 30-day public comment period was held in February 2010 on the EA and FONSI. A total of 23 comments were received and were considered in this analysis. For reasons unknown, the BLM did not finalize this EA with a Decision Record.

1.5.3. Issues

Table 1: Issues Identified for Detailed Analysis in this EA.

| ISSUE # | ISSUE STATEMENT | IMPACT INDICATOR |
|---------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Issue 1 | How would remediation and reclamation of the Community Pit No. 1 Project Area impact visual resources? | Does it meet the Visual Resource Management (VRM) objective (None, Weak, Moderate, or Strong)? |
| Issue 2 | How would remediation and reclamation of the Community Pit No. 1 Project Area impact paleontological resources? | Potential Fossil Yield Classification (PFYC) of impacted geologic units and number of known localities |

Table 2: Resources and resource uses not significantly impacted by the proposed action.

| NON-ISSUE STATEMENT | RATIONALE * |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What is the potential for the spread of noxious weeds and invasive plants? | Design features include standard noxious weed stipulations. These stipulations are known to be effective at preventing the spread of noxious weeds and invasive plants. There is an existing population of Saltcedar (<i>Tamarix spp.</i>) in a small ponding area at the base of Community Pit No. 1. These were treated approximately 3 years ago with herbicide and some remain active. The remaining Saltcedar can be grubbed and buried on site, this would bury Saltcedar material and seed. The elimination of the “ponding” area and subsequent standing water will reduce the potential for future Saltcedar establishment. |
| What are potential impacts to wilderness characteristics in the Robledo Mountains Wilderness?? | The Robledo Mountains Wilderness Area is approximately 12,946 acres, with approximately 785 acres overlapping the Prehistoric Trackways National Monument (PTNM) boundary. Following the goals outlined in Wilderness Act of 1964, management goals of the Robledo Mountains Wilderness Area include preserving naturalness, outstanding opportunities for solitude, supplemental values, primitive and unconfined recreation opportunities (BLM 1993). The |

| NON-ISSUE STATEMENT | RATIONALE * |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>proposed project is located outside of the Robledo Mountains Wilderness Area. The proposed project can be viewed from the wilderness and slightly affects naturalness and solitude. These effects will be short term while the project is in process. After remediation and reclamation, with implementation of design features, the project would enhance wilderness characteristics as a result of the Community Pit No. 1 blending into the landscape and no longer being viewable from the wilderness. In addition, the short-term impacts associated with the community pit would not lead to the reduction in size of the wilderness area or degradation of supplemental values.</p> |
| <p>What are potential impacts to Recreation, Visitor Experience, and Trails?</p> | <p>Prehistoric Trackways National Monument (PTNM) is located in the southern third of the Robledo Mountains. The 2015 PTNM RMP states: “BLM will maintain the rugged and scenic setting while providing opportunities for recreationists to enjoy these lands now, and for future generations, while ensuring the sustainability and protection of the paleontological resources” Some of the major recreational uses in PTNM include hiking, Off Highway Vehicle (OHV) travel, mountain biking, fossil viewing, birding, photography and other activities.</p> <p>Community Pit No. 1 is located outside of the monument but is close to PTNM’s recreation infrastructure including the Ridgeline Trail, Discovery Trail, SST Trail, parking and trailheads, the Robledo Mountains Wilderness, and many of the designated OHV trails. The effects to these resources will be short term during remediation and reclamation. The recreation infrastructure will not be affected by blasting or other ground disturbing work. Furthermore, for human health and safety, the public will not be allowed in and around the Community Pit No. 1 Project Area. This may slightly affect visitor experience but will be in the short term. After remediation and reclamation, with implementation of design features, the project would enhance visitor experience as a result of Community Pit No.1 blending into the landscape and being less visually intrusive from the PTNM recreational infrastructure.</p> |

| NON-ISSUE STATEMENT | RATIONALE * |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What impact would ground-disturbing activities have on the wildlife community and special status species? | Burrowing animals that occur within the Community Pit No. 1 Project Area may be killed during activities associated with remediation and reclamation. The burrowing animals that could potentially occur in this area are generally common and widespread, likely occurring in nearby habitats with intact vegetation, soils, and hydrology. Negative impacts would be minimal due to the disturbed nature of the reclamation area. There are no special status species that have the potential to occur in the area. Given successful remediation and reclamation of the Community Pit No. 1 Project Area, some species that have been absent from the site may return. |
| What are the potential impacts to availability of mineral materials? | The Community Pit No. 1 Project Area is not closed to leasable, saleable, or locatable minerals. Mineral materials are made available as saleable minerals and are disposed of as long as it is not detrimental to the public interest. BLM determined in 2007 that the Community Pit No. 1 Project Area is not suitable for disposal of mineral materials. |
| What are the potential impacts to cultural resources? | <p>Cultural resources on public land are protected by federal laws and regulations (e.g. Section 106 of the National Historic Preservation Act and the National Environmental Policy Act). Class III cultural surveys are conducted of the area of effect for proposed federal undertakings prior to the approval of any ground disturbing activities to identify any resources eligible for listing on the National Register of Historic Places (i.e. historic properties). Cultural resource inventories minimize impacts to cultural sites and artifacts by mitigating adverse effects to these resources prior to development of the proposed project.</p> <p>Community Pit No. 1 Project Area has been inventoried for cultural resources several times in response to proposed federal undertaking associated with the pit. The first cultural survey of Community Pit No.1 Project Area was performed in 1979 by the BLM (NMCRIS 37455/BLM report 030-79-061). The second cultural survey was performed in 1998 by Human Systems Research (NMCRIS 70848/BLM report 030-99-005) in response to a proposed expansion of the community pit. The most recent cultural survey was performed by Zia Engineering &</p> |

| NON-ISSUE STATEMENT | RATIONALE * |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Environmental Consultants in 2011 (NMCRIS 122591/BLM report 030-12-056) in conjunction with the 2011 Reclamation Plan. All previous cultural surveys have resulted in no historic properties being identified. Therefore, if the proposed project were to be approved, it is anticipated that there will be no historic properties affected</p> |
| <p>What are the potential impacts to Tribal Resources and Interests?</p> | <p>The BLM has conducted government to government consultation with 13 federally recognized tribes. To date BLM has not received any information that identifies sites, interests, and values of Tribal importance within the project area and to identify mitigative an "The BLM conducts government to government consultation with federally recognized Indian Tribes during land-use planning to determine how proposed federal undertakings may impact the tribe's interest, which includes, but not limited to, cultural resources, Traditional Cultural Properties, and sacred sites. The BLM acknowledges it has very little knowledge of tribal sacred or traditional use sites. Indigenous Traditional Cultural Properties may not be apparent to non-Indigenous archaeologists performing surveys in advance of project development and may be only adequately identified by tribes and their respective members. The government-to-government consultation process affords both tribes and the BLM opportunities to identify sites, interests, and values of Tribal importance within the project area and to identify potential mitigative and/or protective measures to preserve Tribal interests.</p> <p>For the proposed project, BLM requested consultation with 13 federally recognized tribes who have asked that they be consulted for federal undertakings that occur within Doña County New Mexico and/or that have ancestral ties to the region. To date, none of the consulted tribes have indicated that the proposed project will have an impact to their resources or interests. Therefore, the proposed project is anticipated to not adversely impact Tribal resources or interests. For more information see Chapter 4 Consultation & Coordination.</p> |
| <p>How would reshaping the landscape affect special status plant species</p> | <p><i>Peniocereus greggii greggii</i> (Night Blooming Cereus), a BLM designated Sensitive Species and state</p> |

| NON-ISSUE STATEMENT | RATIONALE * |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Peniocereus greggii greggii</i> and it's habitat? | designated Endangered Species, is known to exist in the area surrounding the project based on BLM Las Cruces District Office (LCDO) occurrence records. <i>Peniocereus greggii greggii</i> is an unassuming, stick-like cactus that typically grows in sandy to silty gravelly soils in Chihuahuan desert scrub or grassland. It is typically found growing within shrubs which act as nurse plants to it, especially <i>Larrea tridentata</i> (Creosote) and <i>Prosopis glandulosa</i> (Honey Mesquite). <i>Peniocereus greggii greggii</i> can often be found in colonies, connected by an underground tuber. It produces a showy, fragrant, white flower one night a year, typically between May & June. The Community Pit #1 Project Area is occupied by the Limestone Hills, Desert Shrub (R042BB021NM) and Gravelly, Desert Shrub (R042BB010NM) Ecological Sites, both of which are suitable <i>Peniocereus greggii greggii</i> habitat. BLM conducted a rare plant survey on March 22, 2023. The survey resulted in no observations of <i>Peniocereus greggii greggii</i> . However, as previously mentioned <i>Peniocereus greggii greggii</i> reside in unobservable underground tubers, as well as areas of the project area could not be surveyed due to unstable bluffs, and or loose gravel on extremely steep slopes. Considering these two factors <i>Peniocereus greggii greggii</i> cannot be completely ruled out from occurring within the project area. The proposed remediation and reclamation activities has the potential, in the short term to impact <i>Peniocereus greggii greggii</i> (Night Blooming Cereus) habitat. However, with future vegetation restoration the current potential suitable current habitat would be restored as well as potentially creating new <i>Peniocereus greggii greggii</i> habitat. |
| What impact would reclamation activities and temporary fence enclosure around the project area have on livestock grazing management? | The BLM manages for livestock grazing around the Community Pit No. 1 Project Area. The proposed project would not prevent livestock grazing activities and would not reduce available forage or prevent livestock access to water. |
| What are the potential impacts to nesting migratory birds? | Design features would require a survey for migratory birds before remediation and reclamation activities can occur during the migratory bird nesting season. A large part of the remediation and reclamation is in an area that is devoid of substantial vegetation. Blasting |

| NON-ISSUE STATEMENT | RATIONALE * |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | operations are expected to have minimal impact on nesting birds because it will not be reoccurring and is far enough away from suitable nesting habitat (Holthuijzen et al., 1990). Disturbance from heavy equipment will also be temporary and removed spatially from suitable nesting habitat. If remediation and reclamation activities are successful, the proposed action may reestablish nesting habitat for select species. |
| How would blasting activities impact the local aquifer, existing water wells, and septic systems? | The closest wells and dwellings to the Community Pit No. 1 Project Area is approximately 2,400 ft to the east. Well data from the New Mexico Office of the State Engineer indicate depth to water is between 100-140 ft and constructed in fluvial sediments of the Santa Fe Group. The proposed short term blasting activities would not alter aquifer characteristics such as flow direction, volume, porosity, or permeability. Information provided in the 2023 Noise and Vibration Assessment (Appendix A), indicates that vibrations from blasting is unlikely to impacts wells and septic systems. |
| How would remediation and reclamation activities, including blasting, impact groundwater quality? | The geologic formations within the Community Pit No. 1 Project Area do not contain any known contaminants that could potentially impact groundwater. If mineralized zones are encountered that may impact groundwater quality, additional evaluation and coordination with NMED Groundwater Quality Bureau would be conducted to evaluate the potential threat to water quality. |
| How would vibrations from blasting impact residential and commercial structures? | According to the 2023 Noise and Vibration Assessment (Appendix A) three receptors located within a one mile radius of the Community Pit No. 1 Project Area measured vibration levels. The blast vibration levels are expected to be below the level of annoyance and well below the level required to damage nearby buildings. The time of day (daylight hours) chosen for remediation and reclamation activities, would further mitigate the effect of blasting on the nearby community. |
| How would noise from blasting impact the surrounding ambient noise levels? | According to the 2023 Noise and Vibratiton Assessment (Appendix A) 14 of 15 noise study locations within the surrounding area, identified noise levels from blasting to be less than normal human |

| NON-ISSUE STATEMENT | RATIONALE * |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | speech at 3 feet (67dBA). One location within the Community Pit No. 1 Project Area will have a noise level above human speech. Blasting activities will be intermittent and the Community Pit No. 1 Project Area and the surrounding Prehistoric Trackways National Monument will be closed to the public during blasting activities. Resulting in minimal impacts to the surrounding environment. |
| How would reducing the public safety hazard at Community Pit No.1 Project Area impact the soil resources? | The soils within the Community Pit No.1 Project Area have been altered by past mining activities. In addition, the activities and heavy equipment required to reduce the physical and safety hazards would result in soil compaction. The BLM would develop a reclamation plan based on pre-mine slopes and adjacent landforms returning the Community Pit No.1 Project Area to as near original contour and grade. The impacts to soil resource are remediated by the reclamation plan and design features, which include measures that would remediate the soil compaction and improve the soil structure, porosity and infiltration. |
| How would reducing the public safety hazard at Community Pit No.1 Project Area impact the air resources? | Air Resource concerns are addressed in project design features and stipulations, specifically requiring the contractor to meet all Federal, State of New Mexico, County and local emission standards and dust control measures. Any impacts from reducing the physical and safety hazard would be temporary and of short duration. BLM can reasonably rely on required compliance with Federal, State, and local regulations, rules, acts, ordinances, and design features identified in the Environmental Assessment to ensure that fugitive dust generated from reducing the public safety hazard would not cause or would not contribute to particulate matter (PM 10 and PM 2.5) emissions that would result in exceeding the national ambient air quality standards for particulate matter. |
| What impacts would blasting activities have on nearby geological faults? | According to a 2017 United States Geological Survey (USGS) frequently asked questions response it is highly unlikely that blasting activities associated with the remediation of the public safety hazard would cause an earthquake (USGS 2017). |

* Supporting documentation for these statements are included in the project record.

The following resources or uses are not present or are not affected; and are not analyzed further in this document: Wilderness Study Area, Lands with Wilderness Characteristics, and Lands and Realty.

CHAPTER 2. ALTERNATIVES

2.1. Alternative A – Proposed Action

Public safety is the primary objective of the remediation and reclamation strategy in this alternative. No recreation facilities are being proposed under this alternative. The BLM would bid out a construction contract for the remediation and reclamation of the safety hazard associated with Community Pit No. 1. The winning bidder would reclaim the site generally following a reclamation plan that was completed in 2012 (Zia 2012) and the blasting plan completed in 2022 (AD&B 2022).

Remediation and reclamation of the Community Pit No. 1 Project Area will involve blasting, recontouring, seeding, and re-establishment of vegetation.

The approximate 50-acres of surface disturbance would generally be reclaimed to slopes of 3:1 horizontal to vertical or less. The slopes on the west and south sides of the pit will generally follow the original natural 2:1 slope existing landscape. All the shallow pits and highwalls would be eliminated using a combination of 1) recovering waste materials cast over the out slopes and existing spoil piles, and 2) by blasting the limestone cap rock and ripping the softer sandstone, siltstone, and shale (red beds) below the cap for backfilling. Up to 100 feet of the limestone cap and red beds would be removed from below the elevation highpoint of the limestone cap. An estimated 800,000 cubic yards would be taken from the highwalls. The volume of waste materials cast over the out slopes and in existing spoil piles are estimated to be approximately 100,000 cubic yards. Once grading is completed the area would be seeded with a native seed mixture to re-establish a vegetative cover using best practices.

A series of blasts would be required to remove the limestone cap. After each blast the loose limestone material would be pushed from the top and used to recontour the site. Once the limestone has been removed the softer friable red beds will be ripped and used to continue recontouring the site.

Cast material on the side of the arroyos would be pulled back and used to recontour the site. No recontouring activities would occur in the arroyos. Spoil piles will be used to recontour the site. All shallow ponds would be filled in during recontouring.

Remediation and reclamation activities would only occur on lands previously disturbed by mining activities, which is approximately 50 acres.

Equipment that would be used for remediation and reclamation could consist of a drill and an explosives truck for blasting; bull dozers, excavators, scrapers, and front-end loaders to move and grade materials, a water truck for dust suppression, and various types of equipment for applying seed and mulch to the area.

Activities would only be allowed to take place Monday through Friday during daylight hours. The project would take up to six months of on the groundwork to complete reclamation over a three-year period.

Public access to the Community Pit No. 1 Project Area would continue to be prohibited until vegetation is re-established. Public access may be further restricted by fencing to keep public use off the Community Pit No. 1 Project Area until vegetation has become established within the project area footprint. The fence and gates would be removed after the reclamation is successful, which will be determined by the BLM Las Cruces District Office authorized officer and interdisciplinary team.

In order to maintain access to the Community Pit No. 1 Project Area for monitoring and other permitted uses, the current Community Pit No. 1 access road will not be a part of the mine reclamation process. Access will be restricted to the Community Pit No. 1 access road throughout the reclamation process.

2.1.1. Design Features

Public Safety

In order to reduce impacts to public safety:

- The contractor will coordinate and establish the construction access to the project to minimize impacts to public safety.
- Access to Prehistoric Trackways National Monument (PTNM) will be closed during blasting activities. Notice will be posted before blasting occurs.
- The Arroyo trail will be closed intermittently while pulling cast material off the arroyo side.

Wildlife

In order to reduce impacts to wildlife:

- Any wildlife encountered while traversing or working within the Community Pit No. 1 Project Area would be avoided and allowed to move out of the project area. Wildlife (e.g. snakes) would not be intentionally harmed or harassed.
- During the migratory bird nesting season (March 1- September 15), any nesting substrate such as large shrubs that need to be removed would be inspected for nests. If a nest is encountered, it would be avoided and left undisturbed until after the nesting season or it can be cleared by a qualified wildlife biologist.
- Fences should be wildlife friendly with a smooth bottom strand. If 3-strand fencing is used, wire spacing from the ground should be 16", 26" and 38". If 4-strand fencing is used wire spacing from the ground should be 16", 22", 28", and 40".

- To avoid wildlife entanglement, sediment control products that contain netting should be made from 100% biodegradable, non-plastic materials such as jute, sisal, or coir fiber. Degradable, photodegradable, UV-degradable, oxo-degradable, or oxo-biodegradable plastic netting (including polypropylene, nylon, polyethylene, and polyester) are not acceptable alternatives. All netting materials used should have a wildlife-safe, loose-weave design with movable joints between the horizontal and vertical twines, allowing the twines to move independently and thus reducing the potential for wildlife entanglement.

Special Status Species - Plants

In order to reduce impacts to *Peniocereus greggii greggii*:

- If any *Peniocereus greggii greggii* (Night Blooming Cereus) are encountered during the remediation and reclamation activities the BLM Authorized Officer would be notified and all work in that specific location would stop until directed by the BLM Authorized Officer.

Paleontological Resources

In order to reduce impacts to paleontological resources:

- Prior to blasting and ground disturbance, qualified and permitted paleontological monitors will conduct reconnaissance of the Community Pit No. 1 Project Area. Further, monitoring for paleontological resources would be conducted during remediation and reclamation activities as directed by the BLM Authorized Officer.
- Worker's Environmental Awareness Program: Development and delivery of training program that communicates requirements and procedures for the inadvertent discovery of paleontological resources during construction, to be delivered by the paleontological monitor to the construction crew prior to the onset of ground disturbance.
- Paleontological Resource Discovery: The operator shall immediately notify the BLM Authorized Officer and/or the paleontological monitor of any paleontological resources discovered. The operator shall suspend all activities in the vicinity of such discovery until notified to proceed by the Authorized Officer and shall protect the discovery from damage or looting. The operator may not be required to suspend all operations if activities can be adjusted to avoid further impacts to a discovered locality or be continued elsewhere. The Authorized Officer will evaluate, or will have evaluated, such discoveries as soon as possible. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the Authorized Officer after consulting with the operator. The operator will be allowed to continue activities through the site as soon as possible,
- The Voigt Excavation (NMMNH L-8220) and nearby localities located in the northwest corner of Community Pit No. 1 Project Area will not be disturbed. The extent of the localities shall be denoted with flagging, stakes, or other appropriate and visible markers,

General

- Measures would be taken to control erosion from the site including final grading of slopes along contours; leaving rougher slopes in steeper areas; the use of mulch, jute netting or other materials on slopes after seeding; and the use of hay or rock check dams and diversions.
- The contractor would be required to obtain all necessary permits and ensure that all applicable laws and regulations are met. Required permits may include a Storm Water Pollution Prevention Plan, a Section 404 of the Clean Water Act Permit, Dust Control Plan, and an Air Quality Permit.

2.2. Alternative B – No Action Alternative

The Community Pit No. 1 Project Area would remain essentially as it currently exists. No remediation or reclamation would take place under this alternative. The highwalls and pits would remain a hazard to the public land users which could result in fatalities and serious injuries to the public. No measures would be taken to re-establish vegetation or to control erosion on the site.

2.3. Alternatives Considered but Dismissed

- Reclamation of the Community Pit No. 1 Project Area without blasting. This alternative was dismissed as it does not meet the purpose and need to remediate and reclaim with the goal of eliminating the public safety hazard of the highwalls.
- Reclamation of the Community Pit No. 1 Project Area by utilizing hauled-in material was dismissed. The cost and impacts associated with hauling the amount of suitable material needed for reclamation would make this alternative economically not feasible.
- Inclusion of the reclaimed Community Pit No. 1 Project Area into Prehistoric Trackways National Monument (PTNM) was dismissed because does not address the public health and safety hazard.
- Fencing of the Community Pit No. 1 Project Area to prevent access. This alternative was dismissed as it does not meet the purpose as it does not address the public health and safety hazard and requires long term maintenance by the BLM.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1. Introduction

Existing Community Pit No. 1 Project Area topography is dominated by a large hill and an alluvial wash over approximately 85 acres. Mining activities resulted in approximately 50 acres of disturbance. Hill slopes consist of unstable highwalls up to 150 feet high that range from 2:1 horizontal to vertical to nearly vertical. Exposed high walls along the northern and southern margins of the intact portion of the highwalls are composed of friable (soft rock that easily erodes) sandstone, siltstone and, shale (red beds) overlain by an approximately 65-foot-thick

layer of dense limestone (see Figure 3). The limestone layer is acting as a cap over the friable red beds; the friable red beds are eroding quicker than the limestone cap creating an overhang which is a public safety hazard. In addition, decades of poorly engineered quarry activities have created unstable high walls, which is an additional public safety hazard. The unstable highwalls combined with erosion of the softer friable red beds is resulting in material coming down off the highwalls in an uncontrolled manner. Overtime the erosion and undercutting of the limestone cap will result in a failure of the highwall.

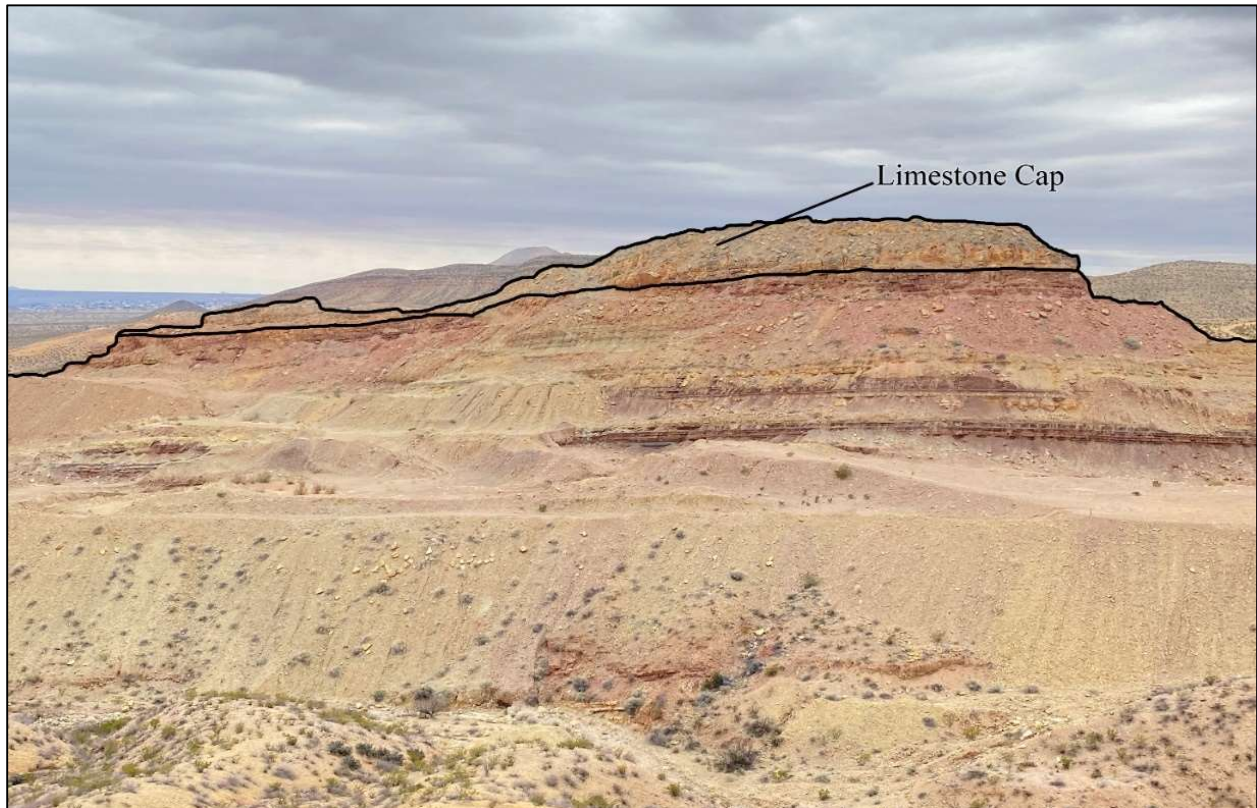


Figure 3: Community Pit No. 1 Project Area in profile, facing south from Ridgeline Trail. The limestone cap is approximately denoted for reference.

3.2. Cumulative Actions

3.2.1. Past and Present Actions

In November 1990, federal legislation established the Prehistoric Trackway Study Area, in 1993 the BLM established the Paleozoic Trackways Research Natural Area under the Mimbres RMP, and in March 2009, federal legislation established the Prehistoric Trackways National Monument (PTNM). Approximately 5,300 acres were designated as National Monument and a portion of the Monument's boundaries abuts the Community Pit No. 1 Project Area (north and west boundaries of the pit). This has led to further development of the area with designated trails and parking lots. With promotion via social media and guided hikes PTNM has seen an increase in visitors.

In 2014 BLM temporarily closed a portion of the Community Pit No. 1 Project Area to recreational target shooting.

Other historic uses of the Community Pit No. 1 Project Area include off-road vehicle events, fossil collection, paleontological research, geologic research, recreational target shooting, and illegal dumping.

In May 1959 the Department of Interior via a Public Land Order withdrew approximately 120 acres immediately south of Community Pit No. 1 Project Area for use by the International Boundary Water Commission (IBWC) for the Rio Grande Canalization Project. IBWC has mined mineral materials from this location for the construction of levees and jetties associated with the management of the Rio Grande.

On July 5, 2023, the BLM implemented a land closure for the area around and including Community Pit No. 1 Project Area. This closure closes 85 acres to the public until remediation and reclamation of Community Pit No. 1 has been completed. PTNM access and trailheads will remain open during this closure.

3.2.2. Reasonably Foreseeable Future Actions

Further recreational facilities may be considered for the Community Pit No. 1 Project Area after remediation and reclamation.

In addition to a native seed mixture, grass plugs, shrubs and forbs could be planted in the future to establish the desired vegetation cover, plant communities and habitat.

3.3. Issue 1: Visual Resources

How would remediation and reclamation of the Community Pit No. 1 Project Area impact visual resources?

Remediation and reclamation of the Community Pit No. 1 Project Area for human health and safety will decrease the distance (miles) from which Community Pit No. 1 Project Area will be viewed by the public. Currently, the Community Pit No. 1 Project Area is somewhat visible as far away as Interstate 25 to the east or 4.5 miles away. The Community Pit No. 1 Project Area is also visible in nearby neighborhoods along Shalem Colony Road and Valley Road, and within the Prehistoric Trackways National Monument (PTNM) existing recreation infrastructure. Short term there will be effects to visual resources with remediation and reclamation activities, but in the long-term remediation and reclamation will increase scenic character to conform with Visual Resource Management (VRM) class II objectives. Currently the management activities do not conform to VRM class II objectives. The level of change to the landscape should be low and management activities should not attract attention of the casual observer. After reclamation, the highwalls would be shorter by approximately 100 feet, contoured, and revegetated therefore less visible to the public.

3.3.1. Affected Environment

Visual resources include the natural and human-modified landscape. The existing visual quality of the Community Pit No. 1 Project Area is influenced by the presence of the Robledo

Mountains west of the proposed project area, recreation infrastructure in the Prehistoric Trackways National Monument, and agriculture and residential homes to the east.

The project is within the Robledo Mountains Scenic Quality Rating Unit (SQRU 43) as described in the Las Cruces District Office Visual Resource Inventory (BLM 2010). The Robledo Mountains have a B Scenic Quality Classification along with a High Sensitivity Level Rating. The Robledo Mountains create a dominant line and form on the west side of the landscape because of their proximity and size.

The Community Pit No. 1 Project Area is in a foreground-middle ground zone, a classification by the BLM that defines an area as visible for up to 10 miles. Within this distance, the most visible features, aside from the mountains, are existing small-to-medium residences, paved and unpaved roads, existing transmission infrastructure, recreation infrastructure, pecan orchards and agricultural fields. Predominant colors include tans and browns from the sandy soils and red tones from exposed red beds within the monument; light to medium greens and yellows from the vegetation; adobe, grey, and cream colors from the homes and human-made structures; and the occasional red or yellow from signs or vehicles.

The casual observers in this area are, residents living in the foothill neighborhoods, as well as anyone using Shalem Colony Road, North Valley Road, and other roads that access the Robledo's. Visitors travel by personal vehicles and off-highway vehicles along Shalem Colony Road and turn onto Doña Ana County Road - D013/Rocky Acres Trail to Francis Burke Memorial Easement to access the PTNM for scenic and recreational activities, including hiking, mountain biking, Off Highway Vehicle (OHV) use, fossil viewing, and photography. This range of individuals defines the casual observer.

Visual Resource Management Classes and Objectives

The BLM is responsible for managing public land for multiple uses while ensuring that the scenic values of public land are considered before authorizing actions on public land. The BLM accomplishes this through the Visual Resource Management (VRM) system. BLM-administered land is categorized into one of four VRM classes, as described in BLM Manual H-8410 (BLM 1986) and is managed in accordance with the class objectives. The project is within a VRM Class II area, as described in the Mimbres RMP (BLM 1993). The objective of this class is to retain the existing character of the landscape. The allowed level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements found in the predominant natural features of the characteristic landscape.

3.3.2. Environmental Impacts

3.3.2.1. *Impacts of Alternative A – Proposed Action*

BLM's VRM program (BLM 1986) includes a standardized system for reviewing land actions for RMP conformance. The analysis area for visual impacts are the viewsheds from thirteen KOPs identified using BLM Geographic Information System (GIS) technology and analysis. Thirteen KOPs were chosen to represent views from private residences, roads, wilderness, and recreation trails in the area around the Community Pit No. 1 Project Area (see Figure 4).

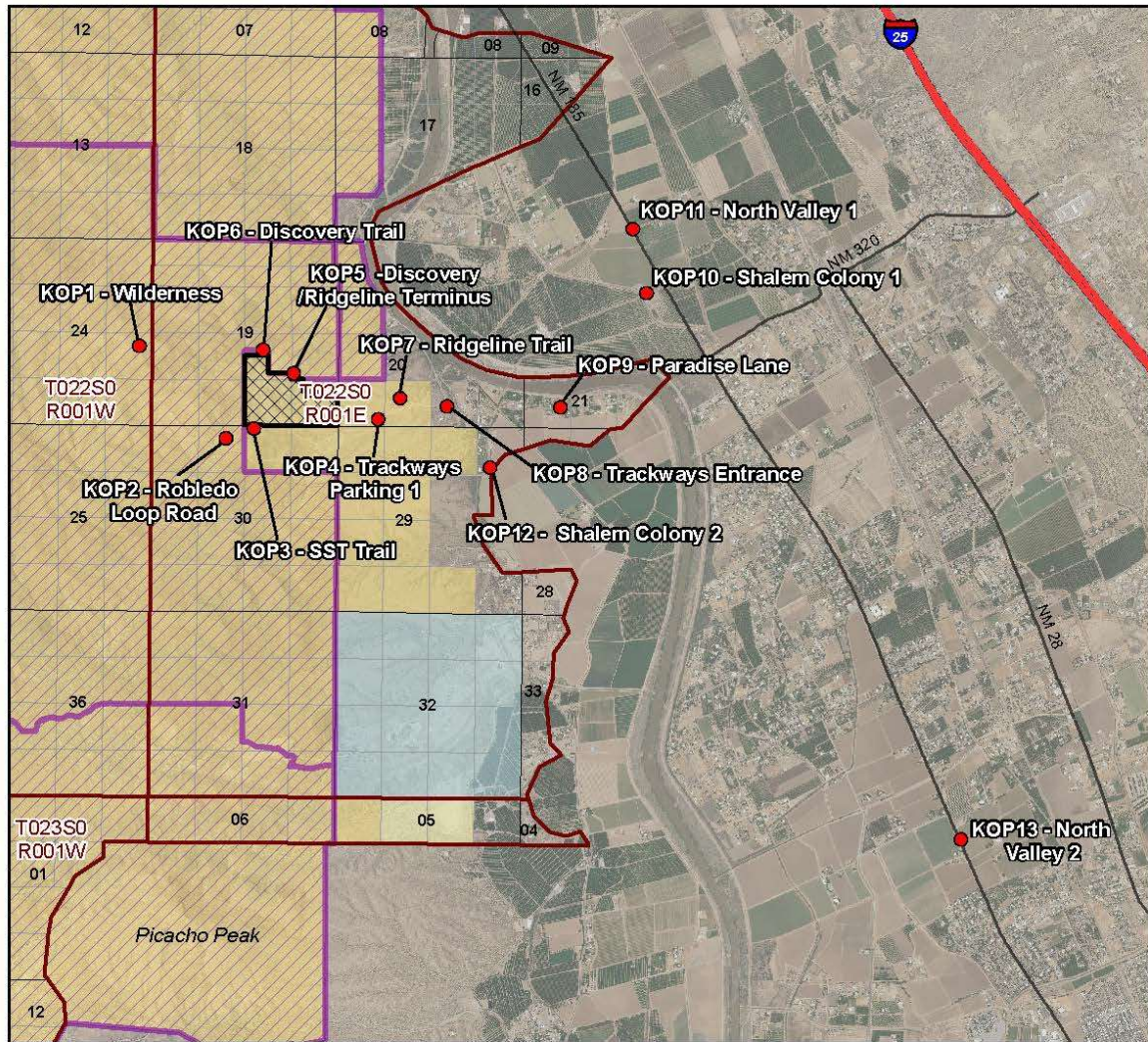
.



Community Pit No. 1 Safety Project KOP Map

Bureau of Land Management- Las Cruces District Office

Doña Ana County



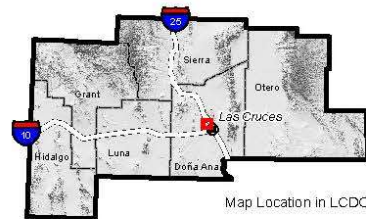
1:24,000

- KOPs
- Community Pit #1 Closure
- NLCS National Monument
- Surface Ownership**
 - BLM
 - Bureau of Reclamation
 - Private (transparent)
 - State

0 0.5 1 Miles
0 2,000 4,000 Feet

Map Produced by: BLM Las Cruces District Office
Coordinate System: NAD 1983 UTM Zone 13N
File: Community Pit KOP Map
Date: 4/12/2023

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the BLM. Spatial information may not meet National Map Accuracy Standards. This information is subject to change without notification.



Map Location in LCDO

Figure 4: Community Pit No. 1 KOP Map

There are six KOPs closest to the Community Pit No. 1 Project Area (foreground), these include views for recreationists from the Robledo Mountains Wilderness, OHV trail Robledo Mountains Loop, SST Trail, Ridgeline Trail, and Discovery Trail. There are two KOP's that include views for recreationists from parking and the entrance into Prehistoric Trackways National Monument (PTNM). There is one KOP with views from residences from a nearby neighborhood off Paradise Road. Lastly, there are four KOPs furthest from the proposed work site (middle ground), that include views of drivers on Shalem Colony Road and North Valley Road.

Overall, these KOPs illustrate the community pit at the foreground/middle ground see Table 3 for more information. The visual contrast rating worksheets and photographic simulations for each KOP are presented in Appendix B. In Appendix B there are there 18 visual contrast rating worksheets, with each KOP having two worksheets representing a short term (ST) visual rating and a long term (LT) visual rating. Community Pit No. 1 is barely visible from KOP 10, KOP 11, KOP 12, and KOP 13, with a minimal contrast and therefore do not have visual contrast rating worksheets. In addition to the visual contrast rating worksheets Appendix B also has 26 photos representing Community Pit No. 1 Project Area before and after the remediation and reclamation.

Table 3: Key Observation Points (KOP)

| KOP (#) | Time Frame | Degree of Contrast | Conformance to VRM Class II Objectives |
|----------------------------------------|------------|--------------------|----------------------------------------|
| Wilderness (1) | Short Term | Moderate to Weak | Yes |
| | Long Term | Weak to None | |
| Robledo Loop (2) | | | |
| SST Trail (3) | Short Term | Moderate to Weak | |
| Trackways Parking 1(4) | | | |
| Discovery/Ridgeline Trail Terminus (5) | Long Term | Weak to None | Yes |
| Discovery Trail (6) | | | |
| Ridgeline Trail (7) | | | |
| Trackways Entrance (8) | Short Term | Moderate to Weak | Yes |
| | Long Term | Weak to None | |
| Paradise Lane (9) | Short Term | Moderate to Weak | Yes |
| | Long Term | Weak to None | |
| Shalem Colony 1(10) | Short Term | Weak | Yes |

| KOP (#) | Time Frame | Degree of Contrast | Conformance to VRM Class II Objectives |
|----------------------|------------|--------------------|----------------------------------------|
| Wilderness (1) | Short Term | Moderate to Weak | Yes |
| | Long Term | Weak to None | |
| Shalem Colony 2 (11) | | | |
| North Valley 1 (12) | Long Term | None | |
| North Valley 2 (13) | | | |

KOP Wilderness: The overall, short-term contrasts created by the earthwork, blasting, and reclamation would be moderate to weak. This KOP is approximately 0.72 miles from the Community Pit No. 1 Project Area and given the close somewhat proximity the proposed action would attract attention somewhat but would not dominate the landscape. In the long term after remediation and reclamation, the contrasts would be weak to none, and the Community Pit No. 1 Project Area would be almost nonexistent from this location because of the reduction in height of the high wall. VRM Class II objectives are now met (See Appendix B for worksheets and simulations).

KOP Robledo Loop, KOP SST Trail, Trackways Parking 1, KOP Discovery/Ridgeline Trail Terminus, KOP Discovery Trail, KOP Ridgeline Trail: This group of KOPs is similar in distance range with the closest KOP being 250 yards away and the farthest KOP is 0.4 miles away. They are grouped together because the impacts are similar. The overall, short-term contrasts created by the remediation and reclamation would be moderate to weak. Recreationists will not be present when blasting is occurring. However, due to the close proximity, the recreationists may notice the Community Pit No. 1 Project Area during the remediation and reclamation activities. Short term there would be some contrasts with vegetation and texture. The Community Pit No. 1 Project Area has predominantly yellow, light green, and dark green vegetation, that is patchy and irregular and after work most of the vegetation would be cleared away and the texture from soil disturbance would provide weak to moderate contrast.

In the long term after remediation and reclamation the contrast would be weak to none and the community pit will draw less attention to the casual user and would repeat basic elements of line, vegetation, and color on the landscape. VRM Class II objectives are now met (See Appendix B for worksheets and simulations).

KOP Prehistoric Trackways National Monument (PTNM) Entrance: The overall, short-term contrasts created by the remediation and reclamation would be moderate to weak. This KOP is approximately 0.88 miles from Community Pit No. 1 Project Area and given the close somewhat proximity the proposed action would attract attention somewhat but would not dominate the landscape. Short term there would be some contrasts with vegetation and form. The Community Pit No. 1 Project Area has predominantly yellow, light green, and dark green vegetation, that is patchy and irregular and after work most of the vegetation would be cleared away. Also, from this location the Community Pit No. 1 Project Area dominates the landscape as you turn into the monument. During the removal of the highwalls and until the contours have been shaped the form will be irregular and broken which will provide weak to moderate contrast.

In the long term after remediation and reclamation the contrast would be weak to none and the Community Pit No. 1 Project Area will draw less attention to the casual user and would repeat basic elements of line, vegetation, and color on the landscape. VRM Class II objectives are now met (See Appendix B for worksheets and simulations).

KOP Paradise Lane: The overall, short-term contrasts created by the remediation and reclamation would be moderate to weak. This KOP is located 1.45 miles away and there are existing structures in the landscape, vertical trees, the simple, linear paved road, contrasts with the tan rolling hills. The Community Pit No. 1 Project Area would attract the attention of the casual observer but would not dominate the viewshed during operations.

In the long term after remediation and reclamation, the contrast would be weak to none and the Community Pit No. 1 Project Area would draw less attention to the casual user and would repeat basic elements of line, vegetation, and color on the landscape. VRM Class II objectives are now met (See Appendix B for worksheets and simulations).

KOP Shalem Colony 1, KOP Shalem Colony 2, KOP North Valley 1, KOP North Valley 2: This group of KOPs is similar in distance range with the closest KOP being 2 miles away and the farthest KOP is 4.2 miles away. They are grouped together because the impacts are similar. The overall, short-term contrasts created by the remediation and reclamation would be weak. Line and vegetation are indistinct. Long-term impacts to the viewshed at this location were not evaluated on a visual contrast rating form because the short-term aspect of the project would create weak to no contrasts in the landscape. Simulations were created to show how reclamation would decrease the distance in air miles Community Pit No. 1 Project Area is visible on the landscape. VRM Class II objectives would be met.

Past and current actions have resulted in the Community Pit No. 1 Project Area not meeting VRM Class II objectives. Reducing the public safety hazard would result in the Community Pit No. 1 Project Area improving and meeting VRM Class II objectives. Future projects could include installing signs, constructing trails and parking areas could slightly change contrast color, line, and forms, and with these recreation infrastructure improvements the Community Pit No. 1 Project Area would still meet the VRM Class II objectives (See Appendix B for simulations).

3.3.2.2. *Impacts of Alternative B – No Action Alternative*

Under the No Action Alternative, the BLM would not complete remediation and reclamation on the Community Pit No. 1 Project Area. The Community Pit No. 1 Project Area would remain unchanged, this would lead to further risks to human health and safety, and the Community Pit No. 1 Project Area would continue to not conform with Visual Resource Class II Objectives.

3.4. **Issue 2: Paleontological Resources**

How would remediation and reclamation of the Community Pit No.1 Project Area impact paleontological resources?

The Paleontological Resources Preservation Act (PRPA) defines paleontological resources as “any fossilized remains, traces, or imprints of organisms preserved in or on the Earth's crust.”

Paleontological resources can be scientifically important when “it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value.” (BLM 2008). Paleontological resources that may not have scientific importance are those that “lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research.”

Paleontological resources are documented at paleontological sites, which PRPA defines as “a locality, location, or area where a paleontological resource is found; the site can be relatively small or large.” Furthermore, localities are typically “confined to a discrete stratigraphic layer, structural feature, or physiographic area” (BLM 2008).

To measure the impacts on paleontological resources from a proposed action, the following indicators are defined:

1. The number and extent of recorded paleontological localities present in as area defined in a proposed action.
2. The scientific importance of the specimens recorded/collected in said localities,
3. The Potential Fossil Yield Classification of the impacted geologic units at 1:24,000 scale.
4. The geographic extent of paleoenvironments (original depositional environments) within the impacted geologic formations (see Figure 5).

This analysis uses the paleontological locality and specimen database from the New Mexico Museum of Nature and Science in Albuquerque, NM (the approved repository for most BLM New Mexico fossils), data from Jerry P. MacDonald (the “Father” of Prehistoric Trackways National Monument), and data recorded by BLM LCDO paleontologists. Note that the number of specimens recorded/collected does not necessarily indicate the fossil richness of the locality or associated geological formation. Further, several point localities may be recorded along the same stratigraphic layer, which indicates that the entire stratigraphic layer is fossil-rich, but that every fossil instance has not been recorded.

The Community Pit No. 1 Project Area is geologically mapped at 1:24,000 by Seager et al. (2008). Scientific peer-reviewed papers and the locality/specimen data will be used to discern the nature of paleoenvironments within the impacted geologic formation. Not all the impacted limestone cap and red beds have been completely studied, so we can only use the data that has been collected and papers published to date.

Further, the Potential Fossil Yield Classification (PFYC) system (BLM 2022) is used to identify the prevalence of scientifically important paleontological resources and their sensitivity to adverse impacts. (e.g., geologic formations with higher PFYC will be presumed to contain unrecorded scientifically important paleontological resources). The PFYC system allows the BLM to make initial assessments of paleontological resources to plan for multiple uses of public lands, such as proposed action under NEPA. See Appendix C for PYFC Definitions.

Short term is the duration of the remediation and reclamation activities (at least three years) and long term is the foreseeable future.

3.4.1. Affected Environment

Several geologic formations are present in the Community Pit No. 1 Project Area as mapped by Seager, et al. (2008) (See Figure 5). The limestone cap has been assigned to the Apache Dam Formation which is only found within the southern Robledo Mountains. The underlying Robledo Mountains Formation, which contain fossil-rich red beds, is also present in the southern Robledo Mountains, as well as the Doña Ana Mountains (Lucas, et al., 1998), and southwestern flank of the San Andres Mountains (Lucas et al., 2002). However, the outcrops in the San Andres Mountains have not received much research because they are entirely within lands managed by the Department of Defense (White Sands Missile Range) and access is limited.

The geological formations that are not impacted by the proposed action or are known to have a low probability of preserving paleontological resources are the Permian-aged Community Pit Formation (Pcp), the Paleogene-aged Love Ranch Formation (Tlr), the Paleogene-aged Palm Park Formation (Tpp), the Neogene-aged Rincon Valley Formation (Trv), the Neogene-aged mafic igneous rocks (Tb), the Plio-Pleistocene-aged Camp Rice Formation (conglomeratic and piedmont slope facies) (QTcc, QTcp), and the Quaternary-aged older valley-border alluvium (Qvo). The remaining geologic units are described below and provides the background for the impact indicators listed in the above.

Apache Dam Formation

Geology, Extent, and Paleoenvironments

The Apache Dam Formation (the limestone cap) (Geologic Formation Pad on Figure 5) is the uppermost and youngest early Permian rock preserved in the Robledo Mountains. This Formation only occurs in the southern end of the range, in Prehistoric Trackways and Organ-Mountains-Desert Peaks National Monuments generally between the Community Pit No. 1 Project Area and Picacho Mountain. It typically caps hills and forms cuevas and ledges above the slope-forming Robledo Mountains Formation, as it does in the Community Pit No. 1 Project Area. It is typically comprised of wavy limestone rock layers. A recent biostratigraphic study indicates this formation was deposited ~290 million years ago (González, et al., 2023).

Within the Project Area the Apache Dam Formation is the “limestone cap” and also occurs atop a hill in the very northwest corner. The limestone cap generally dips (slants) to the southeast (see Figure 3), ranging in thickness from approximately 65 feet to approximately 10 feet. The thickness varies in part from the dipping, faulting, and from uneven mining operations on the top.

Research into the paleoenvironments have concluded that the lowest stratigraphic layer of the Apache Dam Formation (i.e., those present in the Community Pit No. 1 Project Area) were deposited in a restricted, shallow marine environment (Lucas et al., 2015).

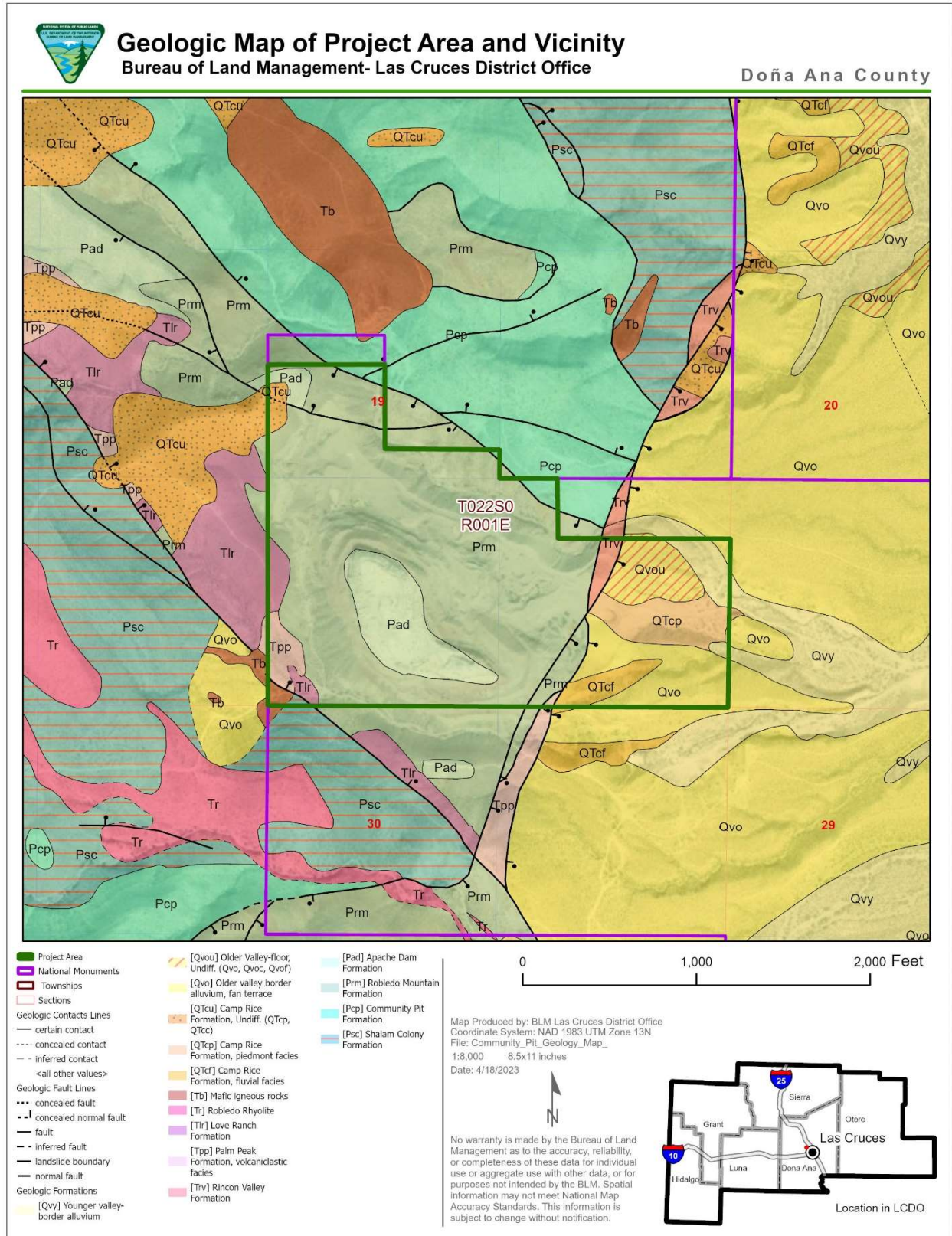


Figure 5: Geologic Map of the Community Pit No. 1 Project Area and Vicinity

Paleontological Resources

Within the northwest portion of the Community Pit No. 1 Project Area there is only one recorded locality which records microfossils. However, fossils have been casually observed and identified by the public within the Community Pit No. 1 Project Area. Typical fossils observed include calcareous algae, crinoidal (sea lilies) debris, brachiopods, large gastropods (snails), ostracods (seed shrimp), and bryozoans (moss animals) (Lucas et al., 2015). These fossils are often poorly preserved and entombed in the rock, making study and collection difficult.

Potential Fossil Yield Classification

The Apache Dam Formation, which includes the limestone cap, is classified as having a PFYC 2 (low). This is due to the Apache Dam Formation poorly preserving a generally low diversity assemblage of common marine invertebrate fossils.

Robledo Mountains Formation

Geology, Extent, and Paleoenvironments

The Robledo Mountains Formation (Geologic Formation Prm of Figure 5), which contain and will be referred to as the red beds, is primarily in the Robledo Mountains, as well as the Doña Ana Mountains (Lucas, et al., 1998), and southwestern flank of the San Andres Mountains (Lucas et al., 2002). However, the outcrops in the San Andres Mountains have not received much research because they are entirely within the White Sands Missile Range and access is limited. Lucas et al, (1998) also noted that the uppermost portion of the Formation is missing in the Doña Ana Mountains. In the Robledo Mountains, the Robledo Mountains Formation is primarily exposed in the southern portion of the range, which is west and south of the Community Pit No. 1 Project Area (Seager, et al., 2008). Lucas et al (2015) measured several stratigraphic sections throughout this area, which showed that this Formation typically contains 4–6 intervals of distinctive, red-colored fine-grained sandstone, siltstone, and mudstone (i.e., the red beds). These red beds make up one third of the formation, while the other two thirds is comprised of thicker intervals of yellow and gray marine shale and limestone (Lucas et al 2015). Two of these stratigraphic sections are located in Community Pit No. 1 Project Area; one (Community Pit Stratigraphic Section) documenting 219 feet of the Robledo Mountains Formation on the north side and central side of the Community Pit No. 1 Project Area (Lucas et al., 2015), and the other (called the Voigt Excavation or NMMNH L-8220) documenting 67 feet on the northwest margin of previous disturbance (Voigt, et al., 2013a). A recent biostratigraphic study indicates this formation was deposited between ~294–291 million years ago (González, et al., 2023).

The Voigt Excavation was the first detailed analysis of the red beds in the Robledo Mountains Formation. Previous studies and collection efforts were unsystematic, and this resulted in conflicting paleoenvironmental reconstructions of the area (LeMone et al., 1975; Mack and James, 1986; Lucas et al., 1995, 1998b; Mack 2007; Minter and Braddy, 2009; Voigt et al., 2013a). Ultimately, the study concluded that the fossil-bearing red beds were deposited in near-shore but supratidal environments (i.e., in distal parts of an extensive coastal floodplain during alternating wet and dry conditions) (Voigt et al., 2013a). However, Lerner and Lucas (2015) described an exception to this rule, a unique and spatially limited marine or tidally influenced depositional environment in the uppermost red beds at the top of the measured Community Pit

Stratigraphic Section and in related red beds adjacent to the Community Pit No. 1 Project Area. This tidal flat paleoenvironment preserved a unique collection of trace fossils that are rarely, or totally lacking, from the rest of the Robledo Mountains Formation.

Paleontological Resources

Paleontological resources are abundant within the Robledo Mountains Formation, including marine invertebrates, invertebrate trace fossils, vertebrate trace fossils, and plants (Kues, 1995; Minter and Braddy, 2009; DiMichele et al., 2015; Lerner and Lucas, 2015; Lucas et al., 2013; 2015; Voigt and Lucas, 2015; Voigt et al., 2013a; 2013b).

The congressionally mandated Paleozoic Trackways Study Report (Lucas et al., 1994) described the paleontological resources from the Robledo Mountains as representing “the most diverse ichnofauna of Paleozoic age in the world” and that their evaluation indicates that the tracksites “are the most scientifically significant early Permian tracksites known”, citing their diversity, abundance, and quality (Lucas et al. 1994). Five of the 34 localities studied in Lucas et al. (1994) are within the Community Pit No. 1 Project Area, some of which were impacted or buried by later mining operations. Continued research has produced scores of peer-reviewed research papers on these fossils. Furthermore, the establishing legislation for the Prehistoric Trackways National Monument, which surrounds the Community Pit No. 1 Project Area calls out the paleontological and other related resources as “unique and nationally important”.

Voigt and Lucas (2015) performed a conservative reanalysis on the 775 tetrapod footprint specimens from the Robledo Mountains Formation within the New Mexico Museum of Natural History and Science (NMMNHS) collections and concluded that eight tetrapod (four-legged vertebrates) ichnogenera (trace fossils) are represented. Approximately 90% of the identifiable specimens belong to three ichnotaxa (*Batrachichnus*, *Dromopus*, and *Dimetropus*), with all other specimens being uncommon or rare. See Table 4 for a list of known vertebrate trace fossils from the Robledo Mountains Formation.

Table 4: Vertebrate Trace Fossils Present in the Robledo Mountains Formation

| Type | Trace Fossil | Possible Trackmakers |
|------------|-------------------------------------|----------------------------------------------------------------------------------|
| Vertebrate | <i>Batrachichnus salamandroides</i> | temnospondyl amphibians (i.e., small, semiaquatic tetrapod) |
| Vertebrate | <i>Dromopus lacertoides</i> | Araucoscelids (extinct diapsid reptiles) |
| Vertebrate | <i>Dimetropus leisnerianus</i> | “Pelycosaur”-grade synapsids (e.g., <i>Dimetrodon</i> , <i>Edaphosaurus</i>) |
| Vertebrate | <i>Matthewichnus caudifer</i> | microsaur lepospondyl amphibians |
| Vertebrate | <i>Hyloidichnus bifurcatus</i> | Captorhinomorphs (primitive reptiles) |
| Vertebrate | <i>Amphisauropus kablikae</i> | Seymouriamorphs (reptile-like amphibians) |

| | | |
|------------|----------------------------------|-------------------------------------------------------------------|
| Vertebrate | <i>Notalacerta missouriensis</i> | basal non-diapsid eureptiles (i.e., primitive “true reptiles”) |
| Vertebrate | <i>Robledopus macdonaldi</i> | basal non-diapsid eureptiles (i.e., primitive “true reptiles”) |
| Vertebrate | <i>Undichna</i> | non-tetrapod vertebrate fin scratches |
| Vertebrate | -- | “lungfish aestivation burrow” |
| Vertebrate | <i>Lunichnium rotterodium</i> | Tetrapod swimming traces |
| Vertebrate | <i>Characichnos</i> | Tetrapod swimming traces |

In addition to vertebrate trackways, the Robledo Mountains Formation is host to numerous invertebrate trackways, dominated by arthropods (Minter and Braddy, 2009). Table 5 lists the known invertebrate trace fossils found in the red beds of the Robledo Mountains Formation. In the uppermost red beds of the Robledo Mountains Formation, Lerner and Lucas (2015) described the *Selenichnites* ichnoassociation (a group of trace fossils often found together). While most of the Robledo Mountains Formation ichnofossils (trace fossils) do not show any marine or tidal influence, their interpretation of this ichnoassemblage was that it represents a nearshore marine setting or tidal flat. It is not known if this unique depositional environment occurs elsewhere in the Robledo Mountains Formation.

It must be noted that most of the trace fossils reported from the *Selenichnites* ichnoassociation are extremely rare in the rest of the Robledo Mountains Formation; they are only found in the Community Pit No. 1 Project Area and an adjacent locality. Of particular note are the “scratch circles/jellyfish impressions” that Lerner and Lucas (2015) noted on loose rock blocks from the Community Pit No. 1 Project Area. At least some of these circular structures are confirmed hydrozoans (jellyfish) (S. Lucas, personal communication, 3/22/2023). Jellyfish and other soft bodied animals are not typically preserved in the fossil record because they lack easily preserved hard parts (e.g., shells). This results in the jellyfish fossil being a very rare occurrence in a scarce uniquely preserved paleoenvironment within the Robledo Mountains Formation.

At least 12 (point) localities (both in-place and on loose blocks) document the stratigraphic layer within the red beds that has the *Selenichnites* ichnoassociation. This suggests that the stratigraphic layer is present on all sides of, and under, the limestone cap (approximately covering 8 acres as measured in GIS). Lerner and Lucas (2015) recorded it approximately four feet below the bottom of the limestone cap in the Community Pit Stratigraphic Section. Outside of the Community Pit No. 1 Project Area, the *Selenichnites* ichnoassociation is documented at four (point) localities. A rough estimate of the extent of this stratigraphic layer in GIS is two acres, indicating that the full spatial extent of this stratigraphic layer at the surface and under the surface is 10 acres. Current research of this layer in the Community Pit No. 1 Project Area is mostly limited to fallen blocks as the layer itself is high on the exposed wall.

Plant fossils from the reds beds of the Robledo Mountains Formation are dominated by branches of walcian conifer trees, which are commonly found (Lucas et al., 1995; DiMichele et al., 2015). However, the Voigt Excavation (NMMNH L-8220) located in the northwestern corner of

Community Pit No. 1 Project Area recorded some of the first non-trace plant fossils for the Robledo Mountains Formation. Specimens were identified as *Taeniopteris* (possible fern or cycad), *Samaropsis* (winged seeds), leafy shoots of two different conifer species, an undetermined seed-bearing plant, and numerous roots (Voigt et al., 2013a). Other plant fossils found in the red beds include *Supaia thinnfeldioides*, *Gigantopteridium* sp and callipterid peltasperms (all extinct, fern-like seed plants) (DiMichele et al., 2015).

Marine fossils of the Robledo Mountains Formation are currently the best studied of all the Permian marine sediments in the Robledo Mountains. Kues (1995) documented over 70 taxa but notes that further study is still warranted and that his list is likely incomplete.

Table 5: Invertebrate Trace Fossils Found in Robledo Mountains Formation

| Type | Trace Fossil | Possible Trackmakers |
|------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|
| Invertebrate | <i>Dendroidichnites</i> | Myriapods (centipedes and millipedes) |
| Invertebrate | <i>Diplichnites</i> | Myriapods (centipedes and millipedes) |
| Invertebrate | <i>Diplopodichnus</i> | Myriapods (centipedes and millipedes) |
| Invertebrate | <i>Lithographus</i> | Pterygote (winged) insects |
| Invertebrate | <i>Tonganoxichnus</i> | Apterygote (wingless) insects |
| Invertebrate | <i>Stiaria</i> | Apterygote (wingless) insects |
| Invertebrate | <i>Octopodichnus</i> | Arachnids (spiders and scorpions) |
| Invertebrate | <i>Alacranichnus braddyi</i> | Scorpion resting trace |
| Invertebrate | <i>Palmichnium</i> | Eurypterids (sea scorpions) |
| Invertebrate | <i>Lockeia</i> | invertebrate resting trace |
| Invertebrate | <i>Rotterodichnium</i> | invertebrate resting trace |
| Invertebrate | <i>Selenichnites</i> | invertebrate resting trace |
| Invertebrate | <i>Striatichnium</i> | arthropod grazing trace |
| Invertebrate | <i>Stiallia</i> | arthropod grazing trace |
| Invertebrate | <i>Treptichnus</i> | Non-arthropod grazing trace |
| Invertebrate | <i>Augerinoichnus</i> | horizontal and coiling worm burrow |
| Invertebrate | <i>Spirorhaphe azteca</i> | Undetermined, but 1 st occurrence in tidal environment (vs usual deep sea) |
| <i>Selenichnites</i> Ichnoassociation | <i>Selenichnites rossendalensis</i> | horseshoe crabs resting, feeding, or digging |
| <i>Selenichnites</i> Ichnoassociation | <i>Kouphichnium</i> | horseshoe crabs walking |

| | | |
|------------------------------------------|------------------------------------|-------------------------------------------------------------|
| <i>Selenichnites</i> Ichnoassociation | <i>Helminthopsis hieroglyphica</i> | Worm burrows (Roundworms, ribbon worms, or segmented worms) |
| <i>Selenichnites</i> Ichnoassociation | <i>Cochlichnus anguineus</i> | Worm burrows (Roundworms, ribbon worms, or segmented worms) |
| <i>Selenichnites</i> Ichnoassociation | Hydrozoan / Scratch circles | “Jellyfish” soft body impressions |

Kues’ study documented two genera of Porifera (Sponges), rare corals, several genera of bryozoans (moss animals), at least 19 species of brachiopods, at least 16 species of bivalves (e.g. clams), at least 18 species of gastropods (snails), an uncommon amount of poorly preserved scaphopods (tusk shells), at least five genera of nautiloids and at least two genera of ammonoids (generally coiled shelled squid-like animals), common unarticulated echinoid spines and interambulacral plates (sea urchins), isolated columnals and stem sections of crinoids (sea lilies), and one occurrence of a partial trilobite.

Two localities within the Community Pit No. 1 Project Area record marine invertebrates. Lucas et al. (2015) noted in Community Pit Stratigraphic Section, a thick stratigraphic layer containing the marine shrimp burrow *Thalassinoides*. The other location is located in the southwest corner of the Community Pit No. 1 Project Area. This “Brachiopod Sidewalk” represents a snapshot of the seafloor immediately prior to burial (Kues, 1995). The large productid brachiopod *Squamaria* aff. *S. moorei* and fenestrate bryozoan colonies are common here, with appearances of bellerophontid gastropods and the bivalve *Septimyalina*. Note that unrecorded occurrences of marine invertebrates have been observed in multiple stratigraphic layers in the Robledo Mountains Formation within the Community Pit No. 1 Project Area.

Potential Fossil Yield Classification

The Robledo Mountain Formation is classified as PFYC 5 (very high) because the marine stratigraphic layers preserve a diverse and well-preserved assemblage of marine invertebrates, and the red beds preserve hundreds of localities containing an abundant, diverse assemblage of very high-quality vertebrate, invertebrate, and plant trace fossils with high scientific value.

Plio-Pleistocene and Quaternary fluvial (river) Geologic Units

The eastern edge of the Community Pit No. 1 Project Area lies east of the East Robledo Fault which generally defines the Robledo Mountains to the west and alluvial fans and Rio Grande (river) sediments to the east (Seager et al., 2008).

The fluvial (river) facies of the Camp Rice Formation (Geologic Formation QTcrf, see Figure 5) represent deposits made by the ancestral Rio Grande between 3.1 and 0.8 million years ago. These fluvial deposits are present along the flanks of the present Rio Grande Valley near Hatch, NM and continuing downstream past El Paso, TX, preserving a diverse fossil assemblage of mammals including gomphotheres (extinct elephants), mammoths, mastodons, camels, horses, giant ground sloths, dire wolves, short-faced bears, as well as various rodents, rabbits, turtles, tortoises, snakes, and birds (Morgan and Harris, 2015). A small outcrop of this fluvial facies is partially buried by waste material from previous mining activities. There are no known paleontological resource inventories of this stratigraphic layer, however poorly preserved and

fragmentary vertebrate fossil material is recorded just outside the Community Pit No. 1 Project Area to the south.

Seager et al. (2008) also mapped unnamed fluvial units younger than the Camp Rice Formation along the Community Pit No. 1 access road in the Community Pit No. 1 Project Area (within Geologic Formation Qvou, Figure 5).

Potential Fossil Yield Classification

The fluvial facies of the Camp Rice Formation is ranked PFYC 4 (high) because of the diverse preserved fossil assemblage of mammals and other vertebrates that are scientifically important paleontological resources but vary in occurrence and predictability.

The scientific literature does not speak to the potential fossil resources within the younger fluvial unit but given the similar depositional environment as the fluvial Camp Rice Formation, the unit is ranked PFYC U (unknown) until more information can be acquired. PFYC U units are treated as though they were PFYC 5 (very High) until more information is available to rank differently.

3.4.2. Environmental Impacts

3.4.2.1. *Impacts of Alternative A – Proposed Action*

Apache Dam Formation

In the short term, blasting the limestone cap (i.e., the Apache Dam Formation) would impact the paleontological resources within the Apache Dam Formation. There are no recorded fossil localities within this area to be blasted, but common marine invertebrate fossils have been casually observed. The PFYC of the Apache Dam Formation is 2 (low) because of the low diversity and commonality of the marine invertebrates present, and the preservation is sub-optimal (silicified). According to the blasting plan (AD&B, 2022) all of the limestone cap would be blasted, which could damage or destroy most of any fossils present.

In the short and long term, pushing blasted material with heavy equipment would remove any intact fossils from their stratigraphic context, nullifying any scientific value.

While these impacts are locally permanent, the long-term and cumulative loss of scientific value for the Apache Dam Formation is low because of the homogeneous depositional environments found throughout the formation where it is exposed throughout the southern Robledo Mountains. Furthermore, most of the Apache Dam Formation is preserved within Prehistoric Trackways National Monument (PTNM) or Organ Mountains-Desert Peaks National Monument.

Robledo Mountains Formation

While the red beds would not be blasted directly, the weight of the heavy equipment pushing of the blasted limestone cap material above the red beds could impact the red beds. The stratigraphic layer within the red beds that contains the *Selenichnites* ichnoassociation (jellyfish and horseshoe crab trace fossils) is approximately four feet below the bottom of the limestone cap (Lerner and Lucas, 2015).

In the short term and long-term, paleontological resource would be physically impacted by the reclamation activities. Ripping and pushing up to 65 feet of red beds (at the thickest point) with heavy equipment, would impact the fossil-bearing stratigraphic layers by breaking them apart. This could cause the broken blocks to scrape across each other, which would damage the fossils and reduce their scientific value. In addition to the numerous stratigraphic layers (up to 65ft thick) with very high potential for scientifically important vertebrate and invertebrate trace fossils, there would also be impacts to the stratigraphic layer preserving the *Selenichnites* ichnoassociation (jellyfish and horseshoe crab trace fossils) and the tidal flat paleoenvironment located approximately four feet below the base of the limestone cap.

Based on GIS analysis there is approximately 8-acres within the project area and 2-acres outside of the project area, totaling 10-acres that consists of the *Selenichnites* ichnoassociation (jellyfish and horseshoe crab trace fossils stratigraphic layer). The proposed remediation and reclamation (ripping) activities would impact six acres (60%) of this stratigraphic layer. Within this 6-acres there are five (point) localities where these fossils are documented. The proposed remediation and reclamation activities would also bury approximately 2-acres, that document an additional seven (point) localities. Burial of these 2-acres could potentially preserve the fossils in the Community Pit No. 1 Project Area. In total, all 8-acres of the *Selenichnites* ichnoassociation within the Community Pit No. 1 Project Area would be impacted, either by removal or burial, which is ~80% (8/10 acres) of the layer known to exist. Future research within these 10-acres would be limited to the remaining 2-acres that are outside of the Community Pit No. 1 Project Area.

In the short term, re-contouring the waste material (the spoil piles and cast material) could impact fossil-bearing stratigraphic layers buried under the material at uneven depths, which includes at least one recorded locality. Additionally, a few areas intended to be re-contoured have exposed stratigraphic layers with recorded localities containing invertebrate and vertebrate tracks.

The Voigt Excavation area (NMMNH L-8220), located in the northwest corner of the Community Pit No. 1 Project Area is in an area that was previously disturbed by mining activities. Four (point) localities were identified and recorded at this location, which produced 264 specimens. This area is important because it was the first in-depth and systematic study of the geology and paleontology of the red beds. This area is not going to be remediated and reclaimed, and the localities would be flagged and avoided to reduce any unintended impacts.

In the short term, monitoring of the heavy equipment ripping the red beds and re-contouring waste material by qualified paleontological resource monitors could reduce impacts to the scientific value of the fossil-rich stratigraphic layers. Monitoring and data collection could include: pre-work stratigraphic and fossil locality ground-truthing and reconnaissance, collection and curation of physical specimens, digital capture (e.g., photogrammetry, 3D scanning) of specimens not physically collected. The effectiveness of this monitoring could be limited by the very small size of the fossils and potential human safety concerns on the hilltop during ripping operations. While not all observed fossils with scientific value may be physically collected due to limits of curation space at the approved repository, the data collection (e.g., photogrammetry, 3D scanning) would preserve the scientific value of these fossils. Further, in the long term, fossils salvaged from the monitoring (both physical and digital specimens) would expand

scientific knowledge of geological history and past life from the previously buried portions of the fossil-rich stratigraphic layer.

In the long term, future proactive paleontological resource inventories outside of the Community Pit No. 1 Project Area may discover additional locations of the *Selenichnites* ichnoassociation (jellyfish and horseshoe crab trace fossils). This would have an impact to the scientific value to the Robledo Mountain Formation. While the inventories are reasonably foreseeable in the Robledo Mountains, the discovery of additional localities containing these scarce paleontological resources is not guaranteed or likely based on previous surveys and known stratigraphic composition of the Formation.

Plio-Pleistocene and Quaternary fluvial (river) Geologic Units

Fluvial (river) deposits of the Camp Rice Formation (PFYC 4, high) and younger unnamed fluvial geologic units (PFYC U, unknown) are present on the east side of the Community Pit No. 1 Project Area, buried under waste material. In the short term, re-contouring the waste material (the spoil piles and cast material) by heavy equipment could potentially impact these geologic units buried under the material at uneven depths. Monitoring of these areas during remediation and reclamation activities by qualified paleontological monitors could reduce unintentional impacts.

3.4.2.2. *Impacts of Alternative B – No Action Alternative*

Under the No Action Alternative, remediation and reclamation activities would not occur within the Community Pit No. 1 Project Area. Paleontological resources within the Community Pit No. 1 Project Area would not be impacted or removed from their original context. In the long term, erosion of the red beds under the limestone cap may cause failure of the highwalls which has potential to impact and remove fossils from their original context.

In the long term, erosion from wind and rain may adversely impact the red beds where highwalls are near vertical. Vertical highwalls containing scientifically important paleontological resources would remain unsafe for research. However, the red beds under the limestone cap, including the very rare *Selenichnites* ichnoassociation (jellyfish and horseshoe crab trace fossils), would be impacted by overall preservation.

The stratigraphic layers of the Robledo Mountains Formation, that are buried by the existing cast-off material would continue to be preserved and protected from weathering and erosion.

Stratigraphic layers containing paleontological resources exposed at the base of the highwall would remain accessible but despite being accessible this is a significant public safety hazard. However, the red beds containing paleontological resources that were buried by previous Community Pit No. 1 mining operations would remain buried and largely inaccessible.

CHAPTER 4. CONSULTATION AND COORDINATION

Letters requesting consultation were sent out on March 17, 2023, to the following 13 federally recognized tribes: Acoma Pueblo, Comanche Tribe, Fort Sill Apache Tribe, Hopi Tribe, Isleta

Pueblo, Kiowa Tribe, Laguna Pueblo, Mescalero Apache Tribe, Navajo Nation, Tesuque Pueblo, White Mountain Apache Tribe, Ysleta del Sur Pueblo, and Zuni Pueblo. The BLM followed up via email to each of the tribes' respective Tribal Historic Preservation Officers or respective equivalents on April 5, 2023. On April 19, 2023, a follow up phone call was made to all the tribes. To date the BLM has received the following responses to the request for government-to-government consultation on this project: Acoma Pueblo, Comanche Nation, Fort Sill Apache Tribe, Mescalero Apache Tribe, and White Mountain Apache Tribe have all indicated that the proposed project will have no impact on their respective tribe's resources or interests.

Although the tribes that responded to the request for consultation indicated that the project would not have an impact on their resources or interests, several tribes including Acoma Pueblo, Fort Sill Apache Tribe, and Mescalero Apache Tribes relayed that certain paleontological resources are considered cultural resources of their respective tribe. In particular, the Pueblo of Acoma requested that it be known that, commonly, paleontological resources are overlooked as resources that may have cultural value or other importance to Tribal nations.

CHAPTER 5. LIST OF PREPARERS

Table 5-1. List of Preparers

| NAME | TITLE | RESOURCE |
|---------------------|--------------------------------------------------|----------------------------------|
| Leighandra Keeven | Geologist, Project Co-lead | Minerals |
| Christopher Teske | Abandoned Mine Lands Specialist, Project Co-lead | Abandoned Mine Lands |
| Gordon Michaud | Planning & Environmental Coordinator | Air Quality, Soils, & NEPA |
| Cody Howard | Wildlife Biologist | Wildlife |
| Colin Dunn | Paleontologist | Paleontology |
| Corey Durr | Hydrologist | Hydrology |
| Elizabeth Plazewski | Botanist | T&E Plants |
| Alexandra Bettinger | Outdoor Recreation Planner | Visual, Recreation, & Wilderness |
| Garrett Leitemann | Archaeologist | Cultural & Tribal |
| Jesarey Barela | Natural Resource Specialist | Livestock Grazing |
| Ray Hewitt | GIS Specialist | Visual |
| Ruben Rodriguez | GIS Specialist | Mapping |

| NAME | TITLE | RESOURCE |
|--------------------|------------|--------------------------------------|
| Westland Resources | Contractor | Blasting: Noise & Vibration Analysis |

CHAPTER 6. REFERENCES

Arizona Drilling & Blasting (AD&B), 2022, New Mexico Reclamation Project Pre Blast Plan.

Bureau of Land Management (BLM), 1993, Mimbres Resource Management Plan. Las Cruces District Office Mimbres Resource Area, December 1993.

Bureau of Land Management (BLM), 2005, Community Pit No. 1 Environmental Assessment, January 2005.

Bureau of Land Management (BLM), 2008, Assessment and Mitigation of Potential Impacts to Paleontological Resources, Attachment 1: Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources. Instructional Memorandum 2009-009

Bureau of Land Management (BLM), 2010, Reclamation of Community Pit 1, NMNM-110639, Environmental Assessment NM-030-2009-0042 & Finding of No Significant Impact, February 2010.

Bureau of Land Management (BLM), 2022, Implementing the Paleontological Resources Preservation Act of 2009 (PRPA), Permanent Instructional Memorandum 2022-009

DiMichele, W.A., Chaney, D.S., Falcon-Lang, H., Kerp, H., Looy, C.V., Lucas, S.G., Krainer, K., and Voigt, S., 2015. A compositionally unique voltzian conifer-callipterid flora from a carbonate-filled channel, lower Permian, Robledo Mountains, New Mexico, and its broader significance. *New Mexico Museum of Natural History and Science Bulletin* 65:123-128.

González, D.C., Beauchamp, B., and Henderson, C.M., 2023, High-frequency sequence stratigraphy of Pennsylvanian-Lower Permian carbonate successions of the Robledo Mountains, New Mexico and the Carnic Alps, Austria: a record of the acme and demise of the late Palaeozoic ice age. *Facies* 69:2 <https://doi.org/10.1007/s10347-022-00658-z>

Morgan, G. S., and A. H. Harris. 2015. Pliocene and Pleistocene Vertebrates of New Mexico. *New Mexico Museum of Natural History and Science Bulletin* 68: 233–427.

Holthuijzen, A.M., W.G. Eastland, A.R. Ansell, M.N. Kochert, R.D. Williams, and L.S. Young. 1990. Effects of Blasting on Behavior and Productivity of Nesting Prairie Falcons. *Wildlife Society Bulletin*, Vol. 18 No 3 (Autumn 1990), pp. 270-281.

Kues, B.S. 1995. Marine Fauna of the Early Permian (Wolfcampian) Robledo Mountains Member, Hueco Formation, Southern Robledo Mountains, New Mexico p63–90 in Lucas, S.G., and Heckert, A.B., Eds, 1995. Early Permian footprints and facies: *New Mexico Museum of Natural History and Science Bulletin* v6, 301p

- LeMone, D.V., R.D. Simpson, K. W. Klement. 1975. Wolfcampian upper Hueco Formation of the Robledo Mountains, Doña Ana County, New Mexico. New Mexico Geological Society Guidebook 26:119–121.
- Lucas, S.G., Hunt, A.P., and Hotton III, N., 1994., The Paleozoic Trackways Scientific Study Report, Unpublished report to the Bureau of Land Management under Contract No. N651-RFP3-3026 in fulfillment of the Prehistoric Trackways Study Act of 1990.
- Lucas, S.G., O. J. Anderson, A. B. Heckert, and A. P. Hunt. 1995. Geology of early Permian tracksites, Robledo Mountains, south-central New Mexico: New Mexico Museum of Natural History and Science Bulletin 6:13–32.
- Lucas, S.G., Heckert, A.B., Estep, J.W. and Cook, C.W., 1998, Stratigraphy of the Lower Permian Hueco Group in the Robledo Mountains, Doña Ana County, New Mexico: New Mexico Museum of Natural History and Science Bulletin 12, p. 43–54.
- Lucas, S.G., A.B. Heckert, J. W. Estep, A. P. Hunt, and O. J. Anderson. 1998. Stratigraphy, paleontology and depositional environments of the Lower Permian Robledo Mountains Formation of the Hueco Group, Robledo Mountains, New Mexico. New Mexico Museum of Natural History and Science Bulletin 12:29–41.
- Lucas, S.G., Krainer, Karl, and Kues, B.S., 2002, Stratigraphy and correlation of the Lower Permian Hueco Group in the southern San Andres Mountains, Doña Ana County, New Mexico, pp. 223–240, IN Geology of White Sands, Lueth, Virgil; Giles, Katherine A.; Lucas, Spencer G.; Kues, Barry S.; Myers, Robert G.; Ulmer-Scholle, Dana; [eds.], New Mexico Geological Society 53 rd Annual Fall Field Conference Guidebook, 362 p. <https://doi.org/10.56577/FFC-53>
- Lucas, S.G., K. Krainer, and D. Vachard. 2015. The lower Permian Hueco Group, Robledo Mountains, New Mexico. New Mexico Museum of Natural History and Science Bulletin 59:43-96.
- Lucas, S. G., A. J. Lerner, and S. Voigt. 2013. Scorpionid resting trace from the lower Permian of southern New Mexico, U.S.A. *Ichnos* 20:195–201.
- Lerner, A.J., and Lucas. S.G.,. 2015. A *Selenichnites* ichnoassociation from early Permian tidal flats of the Prehistoric Trackways National Monument of south-central New Mexico. New Mexico Museum of Natural History and Science Bulletin 65:141-152.
- Mack, G. H. 2007. Sequence stratigraphy of the lower Permian Abo Member in the Robledo and Doña Ana mountains near Las Cruces, New Mexico. *New Mexico Geology* 29:3–12.
- Mack, G. H., and W. C. James. 1986. Cyclic sedimentation in the mixed siliciclastic carbonate Abo-Hueco transitional zone (Lower Permian), southwestern New Mexico. *Journal of Sedimentary Petrology* 50:635–647.
- Minter, N. J., and S. J. Braddy. 2009. Ichnology of an early Permian intertidal flat: the Robledo Mountains Formation of southern New Mexico, U.S.A. *The Paleontological Association Special Papers in Paleontology*. 82:1–107.

New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD) , Mining and Minerals Division, Abandoned Mine Land Program, 2023. Abandoned Mine Accidents and Fatalities Tracking

Seager, W.R., Kottowski, F.E., and Hawley, J.W., 2008, Geologic map of the Robledo Mountains and vicinity, Doña Ana County, New Mexico, New Mexico Bureau of Geology and Mineral Resources, Open-File Report 509, 1:24,000

United States Geological Survey (USGS) 2017, Frequently Asked Questions, Can we use explosives to cause small earthquakes in order to prevent having large ones? Available online at <https://www.usgs.gov/faqs/can-we-use-explosives-cause-small-earthquakes-order-prevent-having-large-ones>; Accessed July 14, 2023.

Voigt, S., Lucas, S. G. and Krainer, K., 2013a, Coastal-plain origin of trace fossil bearing red beds in the Early Permian of southern New Mexico: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 369, p. 323-334.

Voigt, S., S. G. Lucas, M. Buchwitz, and M. D. Celleskey. 2013b. *Robledopus macdonaldi*, a new kind of basal euryptile footprint from the Early Permian of New Mexico. New Mexico Museum of Natural History and Science Bulletin 60:445–459.

Voigt, S. and S. G. Lucas. 2015. Permian tetrapod ichnodiversity of the Prehistoric Trackways National Monument (south-central New Mexico, USA). New Mexico Museum of Natural History and Science Bulletin 65:153–167.

Zia Engineering & Environmental, 2012, Draft Reclamation Plan, BLM Community Pit #1, Dona Ana County, New Mexico, August 2012.

Appendix A – Noise and Vibration Assessment for the Community Pit Reclamation Project Las Cruces, New Mexico

Appendix B – Visual Contrast Rating Worksheets and Photo Simulations

Appendix C – Potential Fossil Yield Classification System (BLM, 2022)

Appendix D - EA public comment and response summary and matrix