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

May 2025
Velvet-Wood Mine Plan of Operations Modification

Environmental Assessment
DOI-BLM-UT-Y020-2025-0018-EA

U.S. Department of the Interior
Bureau of Land Management
Canyon Country District
Monticello Field Office
365 North Main Street
Monticello, Utah 84535

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CHAPTER 1. INTRODUCTION

1.1. Background

Anfield Resources Holding Corp. (Anfield or Applicant) submitted a proposed Plan of Operations Modification (Plan) for the Velvet-Wood Mine to the Bureau of Land Management (BLM) Monticello Field Office in April, 2025 to modify the existing Plan for the Velvet Mine (BLM case file number UTUT106098800 (Legacy Serial Number UT-068060)) and add the Wood mineralization, a mineralized zone in the Cutler Formation (Proposed Action). The Velvet Mine is an existing conventional underground uranium/vanadium mine located near Lisbon Valley, approximately 10 miles south of La Sal and about 19 miles northeast of Monticello, Utah. The Plan area is located in both the Monticello and Moab Field Offices, in western San Juan County. The Plan area includes portions of Sections 1, 2, 3, 4, 10, 11, 12 and 23 of Township 31 South, Range 25 East and portions of Sections 6 and 7 of Township 31 South, Range 26 East, Salt Lake Meridian. The mine is accessed from Utah Highway 191 via County Road (CR) B113 (Big Indian Road) and CR B112 (Little Valley Road).

The first Plan of Operations for the Velvet Mine was submitted and approved in 1981. The BLM authorized an amendment to the Velvet Mine Plan of Operations in 1988 (File Number UT-069-88-36). At this time the mine was not in active operation. This 1988 amendment addressed maintenance activities during periods of non-operation. In 2003, substantial reclamation work included removal of all buildings, powerlines, the water treatment facility, pipelines and surface vents, backfilling and grading of the water treatment ponds and decline portal, installation of concrete closures over vent holes and grading and seeding of the waste rock pile. In 2019, further work was completed to correct erosional issues including broadcast seeding. At the last inspection in 2023 it was noted that more vegetation was present since the previous inspection, but reclamation standards had not yet been met. Anfield currently has an adequate bond in place to cover the remaining reclamation liability, specifically revegetation and plugging the water monitoring wells.

No production has occurred from the Wood area of the project (see Figure 1). Under the proposed Plan modification, Anfield would access the Velvet Mine workings by rehabilitating the existing portal access at the old Velvet Mine workings and develop new underground workings to access the rest of the ore in Velvet and to access the Wood mineralization. Anfield holds mining and exploration rights at the Velvet-Wood Mine area through 91 federal mining claims and a State of Utah Mining Lease (No. ML 54557) of approximately 677 acres.

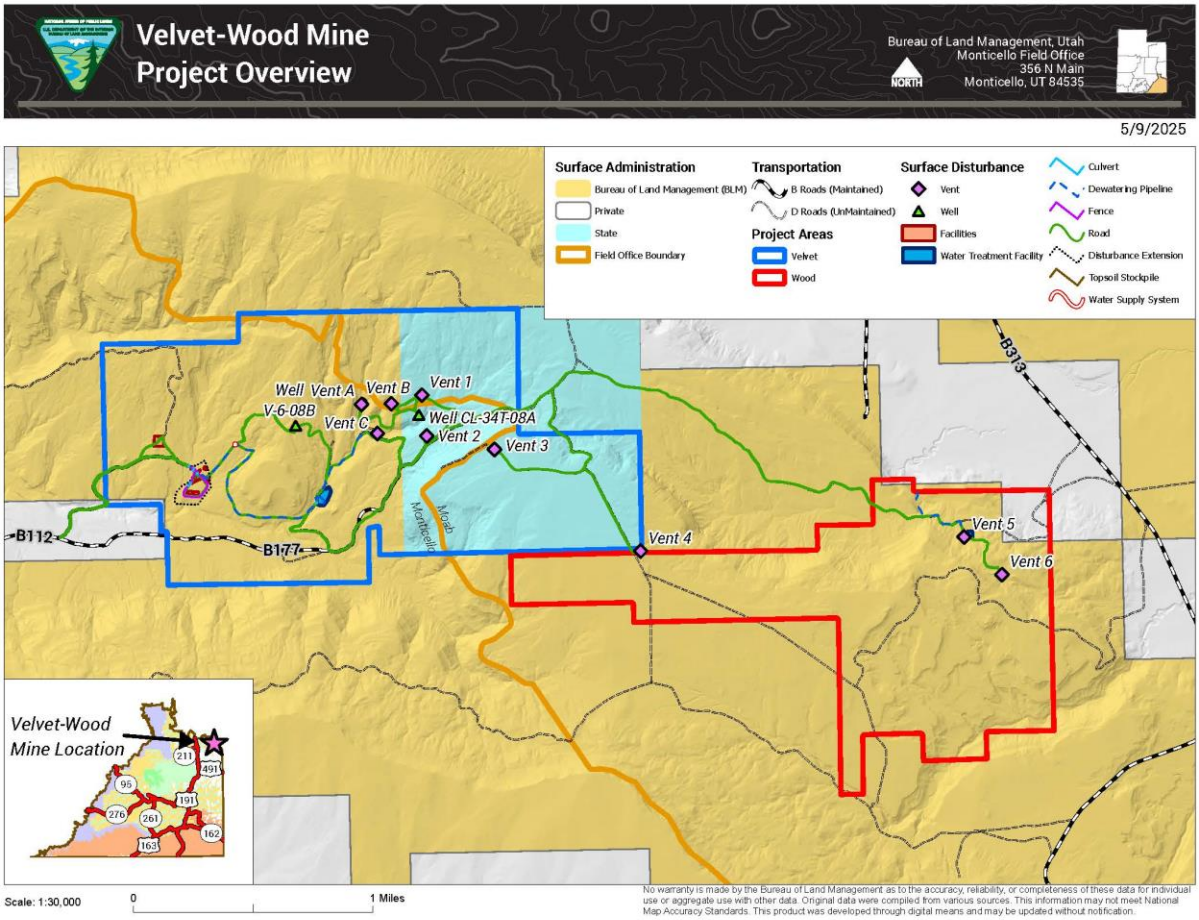

Figure 1. Project Overview.

The Plan provides for a total of 28 acres of surface disturbance, the majority of which (25 acres) is located within areas of pre-existing disturbance such as roads, buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, other surface and subsurface facilities, and areas where partial reclamation had occurred in the past. Therefore, overall, there would be only about 3 acres of new disturbance with the rest of the 25 acres being re-disturbance.

This Environmental Assessment (EA) has been prepared to analyze the potential impacts to the environment that could result from implementation of the Proposed Action, as compared to the No Action Alternative. The President issued Executive Order 14156 (EO14156) Declaring a National Energy Emergency on January 20, 2025, which directed the heads of executive departments and agencies to identify and exercise lawful authorities to "...facilitate the identification, leasing, siting, production, transportation, refining, and generation of domestic energy resources... on Federal lands." Secretary's Orders No. 3417 and 3418 implemented provisions of EO14156 and directed Bureaus and Offices under the Department of the Interior to identify any emergency authorities to facilitate "energy projects" as defined by EO14156. On April 23, 2025, Council on Environmental Quality (CEQ) authorized the use of alternative arrangements to comply with the National Environmental Policy Act (NEPA) before taking urgently needed actions (43 Code of Federal

Regulations (CFR) 46.150) for projects that respond to the national energy emergency. The Department has approved alternative arrangements (43 CFR 46.150(c)-(d)), which include:

1. The only energy-related projects eligible for alternative arrangements for NEPA compliance are those projects:
    a. that seek to identify, lease, site, produce, transport, refine, or generate energy resources as defined in section 8(a) of EO 14156; and
    b. for which the project applicant(s) have submitted plans of operations, applications for permits to drill, or other applications.
2. The project applicant must affirm in writing that they want the review of their project to be covered by the alternative arrangements for NEPA compliance.

The Responsible Official evaluating the application will prepare a focused, concise, and timely NEPA document. If the EA supports a finding of no significant impact, documentation of such will be prepared and published on a public website.

The applicant must agree to:

a. Operate in accordance with the approved application;
b. Take measures to mitigate reasonably foreseeable significant adverse effects on the quality of the human environment; and
c. Abide by applicable Federal, State, and local environmental laws.

Vanadium, which is primarily used as alloying agent for iron and steel, is considered a critical mineral (30 U.S.C. 1606(a)(3) and 2022-04027 (87 FR 10381)). Uranium, which is important for nuclear energy, is a mineral covered by Executive Order 14241.

On April 28, 2025, Anfield submitted in writing that it requests the alternative arrangements for NEPA compliance to be used. On May 12, 2025, the request was approved by the Acting Assistant Secretary – Land and Minerals Management.

1.2. Purpose and Need

The BLM's purpose for the Proposed Action is to respond to Anfield's Plan of Operations Modification for the Velvet-Wood Mine to commence with underground mining operations and construction of associated surface infrastructure.

The BLM's need for the Proposed Action is its statutory responsibility to respond to mine plan modification applications while preventing unnecessary or undue degradation of public lands as outlined in the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, and Surface Management regulations (43 CFR Subpart 3809). The BLM must also ensure consistency with the Use and Occupancy regulations (43 CFR Subpart 3715).

1.3. Decision to be Made

The BLM will decide whether or not to approve the Plan of Operations Modification, and if approved, under what terms and conditions. The BLM will also make decisions about the placement of signs and fences on public lands (43 CFR Subpart 3715).

1.4. Conformance with the Land Use Plan

The Proposed Action and alternative are in conformance with the following Land Use Plans (LUPs):

Monticello Field Office Record of Decision and Approved Resource Management Plan, as amended

Date Approved: November 2008

The Proposed Action is in conformance with the applicable LUP because it is specifically provided for in the following LUP decisions:

Goals and Objectives

"Continue to meet local and national energy and other public minerals needs to the extent possible. Provide opportunities for environmentally responsible exploration and development of mineral and energy resources subject to appropriate BLM policies, laws, and regulations" (page 79).

Management Decisions in Mineral Resources Section (MIN)

MIN-18
"The BLM will evaluate all operations authorized by the mining laws in the context of its requirement to prevent unnecessary and undue degradation of Federal lands and resources. 82 Monticello Approved RMP—Mineral Resources Consistent with the rights afforded claimants under the mining laws, operations will conform to the management prescriptions in the plan" (page 82).

Moab Field Office Record of Decision and Resource Management Plan, as amended

Date Approved: October 2008

The Proposed Action is in conformance with the applicable LUP because it is specifically provided for in the follow LUP decisions:

Goals and Objectives

"Provide opportunities for environmentally responsible exploration and development of mineral and energy resources subject to appropriate BLM policies, laws, and regulations."

Management Decisions

MIN-6
"Locatable Minerals: Existing operations would continue to be subject to the stipulations developed for the notice of the plan of operations. The BLM would evaluate all operations authorized by the mining laws in the context of its requirement to prevent unnecessary and undue degradation of the Federal lands and resources. Consistent with the rights afforded claimants under the mining laws, operations conducted after this RMP would be required to conform to the surface disturbing stipulations developed in this RMP" (page 74).

MIN-7
"Locatable Minerals: Operations on BLM-administered lands open to mineral entry must be conducted in compliance with BLM's surface management regulations (43 CFR

Subparts 3715, 3802, 3809, and 3814). BLM surface management regulations do not apply to operations on other Federal lands but do apply to split-level lands" (page 74).

MIN-9
"To the extent possible, the stipulations developed for oil and gas leasing are applicable to all mineral activities (leasable, locatable and saleable). These stipulations are found in Appendix A [to the RMP]" (page 74).

1.5. Relationship to Statutes, Regulations, and Executive and Secretary's Orders

The following laws, regulations, policies, and orders are directly related to the Proposed Action and alternatives:

- **Federal Land Policy and Management Act** requires the Secretary of the Interior to manage public lands under principles of multiple use and sustained yield and authorizes the Secretary to regulate the use of public land for the prevention of unnecessary or undue degradation.
- **General Mining Law of 1872 as amended** allows private U.S. citizens and businesses to prospect for, discover, locate, and extract certain valuable minerals on federal public domain lands that are open for that purpose. Later amendments, including the Hard Rock Mining Act, withdrew particular public lands from mining.
- **43 CFR Subpart 3809, Surface Management** (of Mining Claims Under the General Mining Laws)**,** requires proper permits and authorizations for mineral exploration, mining, and reclamation actions on the public lands administered by the BLM and sets performance standards for preventing undue and unnecessary degradation of federal lands.
- **Executive Order 14156, Declaring a National Energy Emergency,** implemented by Secretary's Order 3417, Addressing the National Energy Emergency, utilizes existing authorities, including emergency authorities, to improve development and production of energy and critical minerals.
- **Executive Order 14154, Unleashing American Energy,** implemented by Secretary's Order 3418, Unleashing American Energy, which removes impediments and regulations to unleash natural resources.
- **Executive Order 14241, Immediate Measures to Increase Mineral Production,** directs the Secretary of the Interior to prioritize mineral production projects to be fully permitted and operational as soon as possible to have the greatest potential effect on the robustness of the domestic mineral supply chain.
- **43 CFR Subpart 3715, Use and Occupancy Under the General Mining Laws,** regulates residency or seasonal occupancy of mining claims by mining claimants and requires that the BLM concur with the use and occupancy of public lands for the development of locatable mineral deposits by limiting such use or occupancy to that which is reasonably incident. BLM must also concur with the placement of gates and signs on public lands.
- **Clean Air Act** establishes National Ambient Air Quality Standards to control air pollution. Impacts to air quality from mineral development are controlled by mitigation measures

developed on a case-by-case basis. The Utah Division of Air Quality oversees air quality regulations and standards for stationary sources of air pollution.

- **Endangered Species Act** mandates protection for plants and animals that are federally listed as threatened with or in danger of extinction. Concurrence from the U.S. Fish and Wildlife Service (FWS) would be required, were the Proposed Action to potentially or adversely affect any threatened, endangered, or candidate species, as determined by the authorizing agency.
    - **Alternative Procedures for Informal Section 7 Consultation,** directs that, during the national emergency, the Department of the Interior can adopt alternative procedures for informal, expedited consultation to comply with section 7 (a)-(d) of the Endangered Species Act (50 CFR 402.05). The alternative procedures include the following:
        - The Federal action agency shall inform FWS about the proposed action and decision to use the alternative consultation procedures due to the national energy emergency.
        - The Federal action agency coordinates with FWS in accordance with 50 CFR 402.05(a) and proceeds with the proposed action if the necessary requirements of other departments and agencies are met.
        - As soon as practicable under the circumstances, following termination or expiration of the national energy emergency, the Federal action agency shall follow 50 CFR 402.05(b) and provide the information necessary to initiate consultation. FWS shall evaluate the information and deliver either a biological opinion or letter of concurrence to the Federal action agency, as appropriate, and in accordance with the timeframes set forth in the ESA section 7 implementing regulations at 50 CFR part 402.
- **Federal Water Pollution Control Act (Clean Water Act)** directs standards to be set for surface water quality and for controlling discharges to waters of the U.S. Under Section 402 of the Clean Water Act (as amended), the Environmental Protection Agency (EPA) is directed to develop a phased approach to regulate stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program. Industrial activities disturbing more than 1 acre of land may require an NPDES permit for stormwater discharge. Depending on the acreage disturbed, either a Phase I industrial activity (5 or more acres of disturbance) or a Phase II small construction activities (between 1 and 5 acres of disturbance) permit may be required. The State of Utah Division of Water Quality (UDWQ) oversees the Utah Pollutant Discharge Elimination System (UPDES) and stormwater regulatory programs. Additionally, a joint U.S. Army Corps of Engineers and UDWQ Section 404 permit and associated Section 401 certification for the discharge of dredge and fill materials into waters of the U.S. may be required.
- **National Historic Preservation Act** requires federal agencies to inventory and protect historic and archaeological resources. Concurrence from the State Historic Preservation Officer (SHPO) is required, if any historic properties may be affected by an undertaking.

- **Emergency Process for Section 106 Compliance,** the Advisory Council on Historic Preservation's (ACHP) regulations that implement 54 United States Code (USC) 306108 of the National Historic Preservation Act (NHPA), commonly and henceforth known as Section 106, expressly recognize the need for alternative procedures for compliance concerning proposed undertakings that address emergency situations, including when the President declares an emergency (36 CFR § 800.12 (b)(2)). These procedures do not require concurrence from the State Historic Preservation Officer, but do require Federal agencies to notify the ACHP, SHPO, and Tribal Nations and afford them an opportunity to comment within seven days.

The permits, approvals, and requirements for the Velvet-Wood Mine are listed in Table 1. Copies of formal permit approvals are included in the Plan. Under the Proposed Action, operations at the Velvet-Wood Mine would be conducted in a manner that complies with pertinent federal, state, and local laws and regulations, including permit requirements; Anfield would provide the BLM with a copy of all permits, plans, and monitoring reports issued or required by other local, state, and federal entities.

Table 1. Velvet-Wood mine list of permits or approvals.

Permit/Number	**Agency**
Mine Plan of Operations for the Velvet Mine (UTUT106098800)	BLM (Approved for existing operations)
Record of Decision, File Number UT-069-88-36	BLM (Approved for existing operations)
Mine Plan of Operations Modification for Velvet-Wood Mine (X)	BLM (Application submitted)
Large Mine Permit (M370040) for the Velvet Mine and Plan Revision	Utah Division of Oil, Gas, and Mining (Application submitted)
Utah State Metalliferous Minerals Lease (ML 54557 OBA)	State Of Utah, School and Institutional Trust Lands Administration (Approved)
UPDES Permit UT0025810	UDWQ (Approved; The existing UPDES permit would need to be amended if the applicant determines that a second discharge system would be constructed)
Pilot Treatment Plant (authorized without a Ground Water Discharge Permit)	UDWQ (Under review)
Spill Prevention, Control, and Counter Measure Plan (SPCC)	Plan Modification Complete
Stormwater Pollution Prevention Plan (SPPP) UTR0025810	UDWQ (Approved)
Air Quality Permit DAQE-AN141930004-23	Utah Division of Air Quality (Approved)
Fixed-Time Water Right 05-4137	Utah Division of Water Rights (Approved)
Potable Water System	Utah Division of Drinking Water (Would be applied for prior to installation of system for greater than 25 employees)
Access Permit	San Juan County Public Works Department (Would be applied for prior to any new access needs)

Building Permit	San Juan County Community Development and Planning Department (Would be applied for prior to any building construction)
Septic System Permit	Southeast Utah Public Health Department (Would be applied for prior to installation of system)
Mine Safety and Health Administration (MSHA) Mine Registration	U.S. Department of Labor (Would be applied for prior to reopening the mine)
MSHA Training Plan, Escape and Evacuation Plan and Ventilation Plan	U.S. Department of Labor (Revised plans would be submitted prior to reopening the mine)
Pesticide Application Licensing	Utah Department of Agriculture (Would be applied for prior to applying pesticides)
Federal Explosives Permit	Bureau of Alcohol, Tobacco, Firearms and Explosives (Would be applied for prior to storing explosives on site)

The Proposed Action and alternatives are also consistent with the goals and objectives of the San Juan County Master Plan (SJC 2018). The SJC Master Plan emphasizes the importance of investing in a strong, diversified year-round economy (SJC 2018, pp. 80-81). With respect to the mineral industry, the county would continue to support the growth and development of these industries as opportunities present themselves and new technologies develop (Pages 52-53). The San Juan Resource Management Plan (SJC 2022), which is a component of the SJC Master Plan, recognizes the importance of the mining, energy, and minerals industries to the economy, culture, and lifestyle of the county stating that "…mining, energy and minerals properties have traditionally provided over 60% of County tax revenues" (SJC 2022, p. 60). County objectives include "Support responsible exploration and development of mineral resources including critical minerals consistent with law, policy and reasonable consideration for protection of natural and cultural resources." (SJC 2022, pp. 58-59).

1.6. Scoping and Issues

The project proposal was presented to the BLM Interdisciplinary Team on April 28, 2025, to initiate internal scoping. The BLM visited the Mine site on May 1, 2025. Under the alternative arrangements for NEPA compliance due to the national energy emergency described in Executive Order 14156, the Responsible Official is not required to seek public comment prior to finalizing the environmental assessment, finding of no significant impact, or any decision. The project was listed on the BLM National NEPA Register on May 12, 2025. The following issues were identified through internal scoping as requiring further analysis in the EA.

- Issue 1: How would implementation of the Proposed Action impact the availability of uranium and vanadium for energy production?
- Issue 2: What quantities and types of air pollutants would be produced from the Proposed Action? How would air pollutant emissions affect air quality and air quality related values?
- Issue 3: How would the Proposed Action impact surface and groundwater resources?
- Issue 4: How would impacts to groundwater hydrology from the proposed mining activities impact Colorado River threatened and endangered fish?

BLM identified an additional 23 issues and determined a detailed analysis was not warranted for these issues. They are listed below and analyzed in brief in Appendix A with a concise discussion regarding the affected area and degree of impacts related to each issue.

- AIB-1 (Paleontological Resources): How would paleontological resources be affected by proposed subsurface activity?
- AIB-2 (Greenhouse Gases): How would the proposed mining equipment use and processing/transport of material impact greenhouse gas emissions?
- AIB-3 (Cultural Resources): How would the Plan of Operations Modification impact cultural resources?
- AIB-4 (Floodplains): How would surface disturbance from the proposed mining activities impact floodplains?
- AIB-5 (Fuels/Fire Management): How would the proposed mining activities and equipment use impact fuels/fire management and the potential for wildfire ignition?
- AIB-7 (Geology): How would the Plan of Operations Modification impact geology?
- AIB-8 (Lands/Access): How would the Plan of Operations Modification impact lands/access?
- AIB-9 (Livestock Grazing): How would the Plan of Operations Modification impact livestock grazing on the Big Indian and the Lower Lisbon Allotments?
- AIB-10 (Native American Concerns): How would the Plan of Operations Modification impact Native American concerns?
- AIB-11 (Rangeland Health Standards): How would the Plan of Operations Modification impact Rangeland Health Standards?
- AIB-12 (Recreation): How would the Plan of Operations Modification impact recreation?
- AIB-13 (Socioeconomics): How would the Plan of Operations Modification impact socioeconomics in San Juan County, Utah?
- AIB-14 (Soils): How would the Plan of Operations Modification impact soils?
- AIB-15 (Vegetation – UT BLM Sensitive Species): How would the Plan of Operations Modification impact vegetation – UT BLM Sensitive Species?
- AIB-16 (Vegetation – Invasive Species/Noxious Weeds): How would the Plan of Operations Modification impact vegetation – Invasive Species/Noxious Weeds?
- AIB-17 (Vegetation – Threatened, Endangered, or Candidate Species): How would impacts to groundwater hydrology from the proposed mining activities affect habitat suitability for Navajo sedge?
- AIB-18 (Visual Resources): How would the Plan of Operations Modification impact visual resources?
- AIB-19 (Wastes – hazardous or solid): How would the Plan of Operations Modification impact wastes – hazardous or solid?

- AIB-20 (Wildlife – Non-designated species): How would the Plan of Operations Modification impact wildlife – Non-designated species?
- AIB-21 (Wildlife – Migratory birds including raptors): How would the Plan of Operations Modification impact wildlife – Migratory birds including raptors?
- AIB-22 (Woodland/Forestry): How would the Plan of Operations Modification impact woodland/forestry?
- AIB-23 (Human Health and Safety): How would the Plan of Operations Modification impact human health and safety?

Some resources are not associated with potential issues because they are not present or would not be impacted appreciably by the Proposed Action. Those resources are listed in Table 2 along with explanations concerning why no analysis is needed. Those resources listed in Appendix A were analyzed in brief because they do not relate to how the Proposed Action or alternatives respond to the purpose and need or they have no potential for significant impacts.

Table 2. Resources for Which No Analysis is Necessary.

Resource	Rationale for Why No Analysis Is Necessary
Areas of Critical Environmental Concern (ACEC)	There are no Areas of Critical Environmental Concern identified in the 2008 Monticello RMP or 2008 Moab RMP located within the project area. The closest ACEC to the Proposed Action in the Monticello Field Office is the Alkali Ridge ACEC, which is roughly 30 miles south of the project area. The closest ACEC is the Gypsum Valley ACEC in the Tres Rios Field Office, approximately 10 miles east of the project area.
BLM Natural Areas	There are no BLM Natural Areas as identified in the 2008 Monticello RMP or 2008 Moab RMP within the project area. The closest BLM Natural Area within the Monticello Field Office is the Mancos Mesa Natural Area, approximately 73 miles to the southwest. The closest BLM Natural Area is the Beaver Creek Natural Area managed by the Moab Field Office approximately 35 miles to the north. The closest Lands with Wilderness Characteristics managed to protect those characteristics are discussed in the Lands with Wilderness Characteristics section below.
Lands with Wilderness Characteristics	There are no Lands with Wilderness Characteristics as identified in the 2008 Monticello RMP, 2008 Moab RMP, or subsequent inventories within the project area. The closest inventoried Lands with Wilderness Characteristics are the Coyote Wash West unit, managed by the Moab Field Office, located approximately 3 miles north of the project area. The Coyote Wash West unit is managed to allow for other uses while not protecting wilderness characteristics under the 2008 Moab RMP. The closest Lands with Wilderness Characteristics managed to protect those characteristics is the Hart Point unit, located 16 miles west of the project area within the Bears Ears National Monument. The closest Lands with Wilderness Characteristics managed to minimize impacts to those characteristics is also the Hart Point unit, located 20 miles west of the project area. Due to the distance between the project area and these units, and considering the context of the existing Lisbon Valley Mine facility,

	it is not anticipated that the proposed project would impact the wilderness characteristics of size, apparent naturalness, or outstanding opportunities for solitude or primitive and unconfined recreation within these or any other inventoried Lands with Wilderness Characteristics.
Wetlands/Riparian Zones	The area of the proposal is located in an Upland Shallow Loam (Pinyon-Utah Juniper) ecological site that lacks appreciable surface and/or sub-surface waters for the establishment and maintenance of defined wetlands/riparian zones. Attachment B, Section 5.2.3, of the Plan states the project area contains several ephemeral drainages with localized pour-overs that support isolated occurrences of Fremont cottonwoods and tamarisks (invasive, non-native), yet wetland developed habitats are not present within the project area. Ephemeral drainages, which only flow during storm events, are not capable of supporting consistent riparian plants to develop defined wetland/riparian zones because they lack reliable water. In addition, this section also states two small hanging-garden seeps were identified with riparian plants, yet are far outside the area of disturbance and are not present within the mine permit boundary.
Wilderness / WSA	There are no designated wilderness or WSAs as identified in the 2008 Monticello RMP within or adjacent to the project area. The closest designated wilderness is Dark Canyon, managed by the Manti-La Sal National Forest approximately 40 miles west of the project area. The closest BLM wilderness are the Black Rock Canyon Wilderness managed by the Moab Field Office and Tres Rios Office approximately 60 miles to the north, and the Lizardhead Wilderness located approximately 60 miles east of the project area. The closest WSA is the Dolores River Canyon WSA, managed by the Tres Rios Field Office and located about 8 miles east of the project area in Colorado. The closest WSA within Utah is the Bridger Jack Mesa WSA within the Bears Ears National Monument, located about 23 miles to the west of the project area. Due to the distance between the project area and these units, and considering the context of the existing Lisbon Valley Mine facility, it is not anticipated that the proposed project would impact the wilderness characteristics of size, naturalness, or outstanding opportunities for solitude or primitive and unconfined recreation within these or any other inventoried Lands with Wilderness Characteristics.
Wildlife – UT BLM Sensitive Species	There are no BLM Utah Sensitive Wildlife Species or their associated habitats present within or near the proposed project area according to the 2008 RMP and habitat models obtained from the UDWR. Surveys conducted by the BLM wildlife biologist in 2025 and by Peak Ecological Services in 2023 confirm these findings.
Wildlife–Threatened, Endangered or Candidate Species	IPaC lists the following listed wildlife species as potentially being found within the project boundaries: Mexican Spotted Owl, Yellow-billed Cuckoo, Monarch Butterfly, Silverspot, and Suckley's Cuckoo Bumble Bee. No FWS designated critical habitat for these species is within the project boundaries. According to the 2008 Moab RMP and the 2008

	Monticello RMP and models obtained from the USFWS, the project area does not contain suitable habitat for any of these species. Surveys conducted by the BLM wildlife biologist in 2025 and by Peak Ecological Services in 2023 confirm these findings.
Wild and Scenic Rivers	There are no designated, eligible, or suitable wild and scenic rivers as identified in the 2008 Monticello RMP within the project area.

CHAPTER 2. ALTERNATIVES

This chapter describes the alternatives that will be analyzed in Chapter 3, as well as describes alternatives that were considered and why they were eliminated from detailed analysis.

2.1. Alternative A – No Action Alternative

Under the No Action Alternative, the facilities under the Plan of Operations Modification would not be developed. This would not preclude mining of the resources in the future, which would require the submission of a new mine plan modification.

2.2. Alternative B – Proposed Action

Anfield submitted a Plan of Operations Modification to the BLM Monticello Field Office for the Velvet-Wood Mine in San Juan County, Utah to access the Velvet Mine workings and develop the Velvet-Wood mineralization. The Plan, which includes all attachments submitted with the Plan, is incorporated into the Proposed Action by reference. The Proposed Action incorporates the requirements of applicable federal, state and local laws, and regulations and permits as specified in Section 1.5. Applicant-proposed mitigation or design features are found throughout the Plan and are part of the Proposed Action to avoid or reduce environmental impacts and prevent unnecessary or undue degradation. BLM required design features are also incorporated as a part of the Proposed Action (Section 2.2.11). The Mine would operate in accordance with federal and state regulations to protect the mine workers and general public from radiation exposure.

2.2.1. Mine Development

Anfield proposes mine modifications that are designed to facilitate mineral development activities for approximately eight years with about 6.5 years of continued production and six months of reclamation (see Figure 2). The facilities would be constructed in a phased manner as follows:

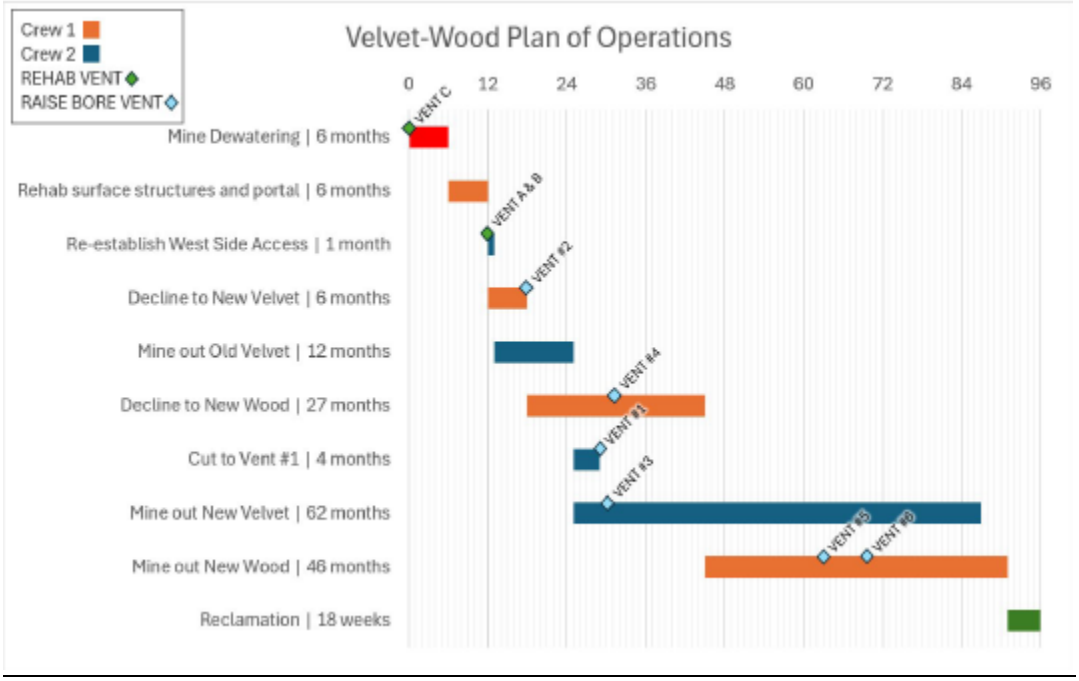

Figure 2. Velvet-Wood Plan of Operations Chart.

2.2.1.1. *Dewatering of the Velvet decline*

Return to operations requires that the partially flooded mine portal and underground workings be dewatered. Initial activities would focus on the dewatering of the Velvet decline (which is a sloping underground opening for machine access from level to level or from the surface) using the existing Vent C (See Figure 3). Water would be pumped by installing a dewatering pump in Vent C. Approximately 50,000,000 gallons of water would be removed and treated using a pilot water treatment plant (see Attachment M of the Plan) via mixing and settling tanks. The pilot water treatment plant would be constructed on the historic mine's water treatment ponds and would be downsized after the first phase of dewatering is complete. Initial mine dewatering would last for approximately 6 months; dewatering rates would be approximately 250 gallons per minute (gpm) during this time. Mine water would be treated on site with barium chloride and discharged under a UPDES permit.

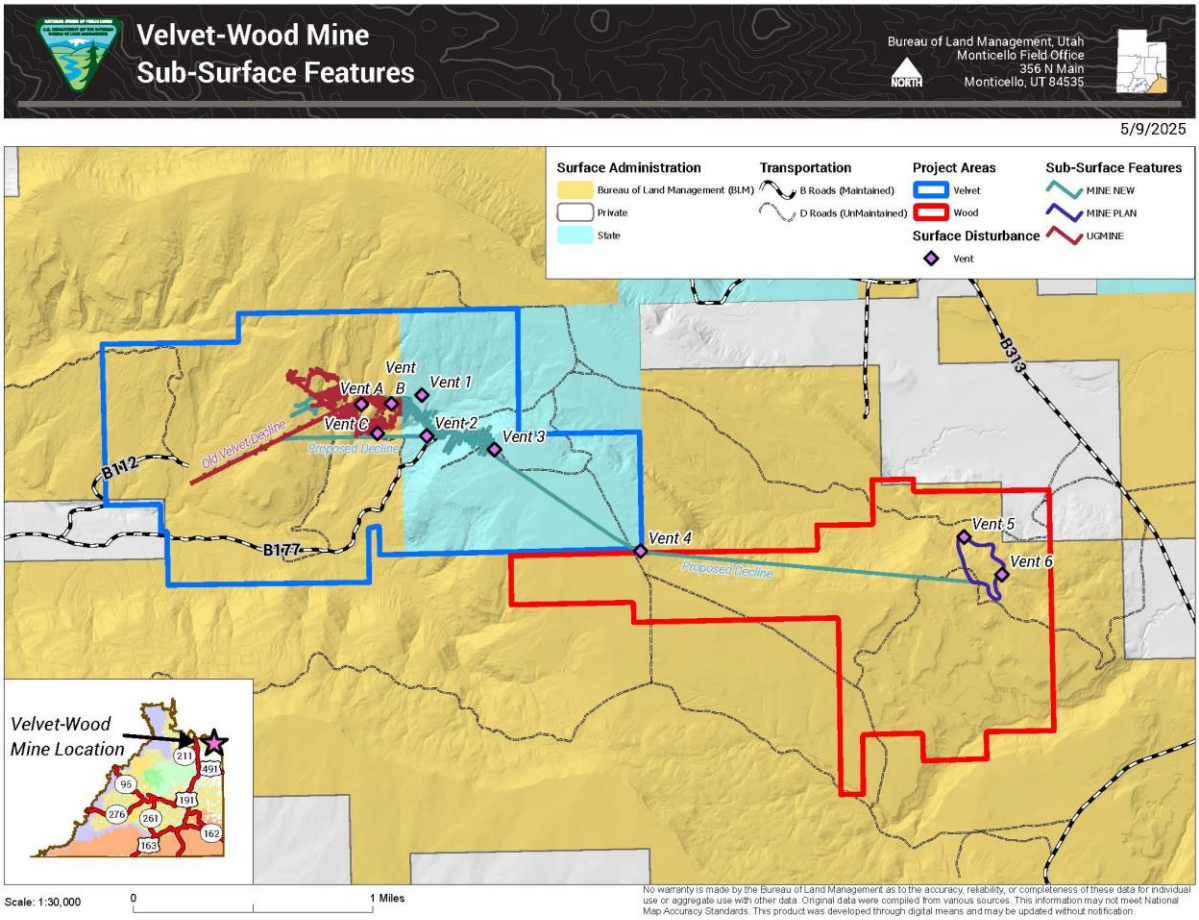

Figure 3. Sub-Surface Features.

Once initial dewatering is completed, dewatering of the Velvet decline would continue at a rate of 25 gpm, resulting in approximately 16,500,000 gallons of water being removed annually. This water would be treated by permanent water treatment facilities that are described later in Section 2.2.5.17.

2.2.1.2. *Rehabilitate Portal and Existing Decline*

As the water levels lower in the main decline, rehabilitation of the Old Velvet access would begin. The main decline system, shown in the Plan, Figure OP-3, and Figure 4 below, utilizes the original portal and decline to access the Old Velvet workings and remaining unmined reserves within that location. Vents A and B would be rehabilitated for use when work is proceeding in the Old Velvet portion of the mine (See Figure 4).

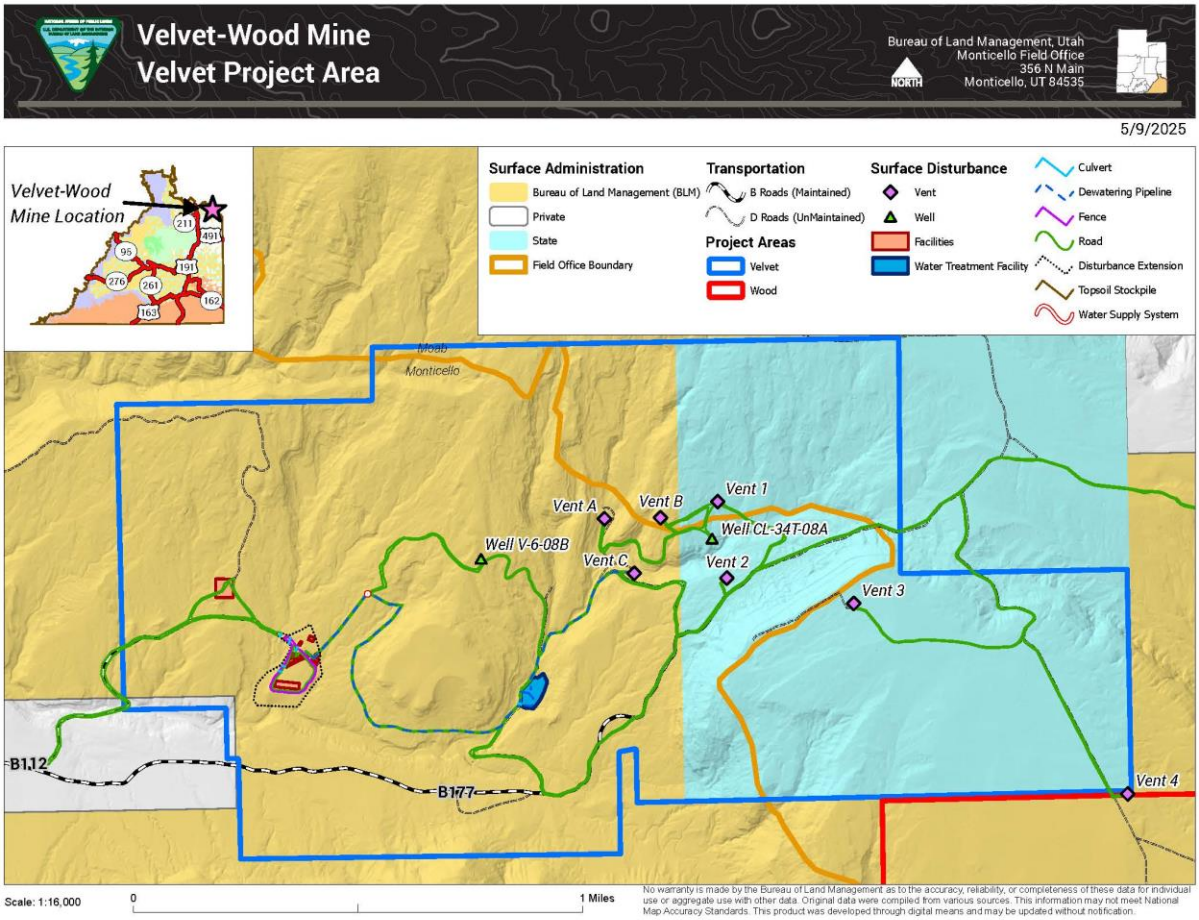

Figure 4. Velvet Project Area.

2.2.1.3. *Develop decline to New Velvet*

A new decline, referred to as New Velvet would be constructed 12 feet wide and 9 feet high and would extend approximately 3,000 feet to the northeast from the redeveloped portal. From the decline haulage mains, 12 foot wide and 8-foot-high drifts would be driven to the three proposed vents - Vents 1, 2, and 3. The proposed vents would be established by up-reaming. The proposed vents would be 72 inches in diameter or less. In mining terms, drift refers to horizontal tunnels made in a mine, which can be used for various purposes such as haulage, ventilation, or exploration.

Once the New Velvet decline and proposed vents are established, production could begin within the developed mine workings in the Old and New Velvet areas (see Plan, Figure OP3). See Section 2.2.2 for more details about mine production.

The New Velvet decline extension would generate approximately 12,000 to 14,000 bank cubic yards of materials from non-mineralized stratigraphic units consisting of sandstone, shale, and clay from the Chinle Formation and Moss Back Member formations. This material, as well as that from the drifts being driven to the vents, would be utilized to create a shelf to expand the work pad

(labelled in Plan, Figure DET-1 as the Work Pad Expansion), on which the truck loadout area would be placed.

2.2.1.4. *Mine Out Old Velvet*

While the New Velvet decline is being developed, production would begin in the Old Velvet area. Approximately 7,345 tons of material would be mined per month from the Old Velvet area, for approximately 12 months.

2.2.1.5. *Wood Mineralization Access*

The Wood decline would be developed from the New Velvet decline to the Wood mineralization. The Wood decline would be constructed at 12 feet wide and 9 feet high and would extend approximately 12,050 feet. Proposed Vents 4, 5, and 6 would be established by up-reaming (See Figure 5). The proposed vents would be 72 inches in diameter or less. An additional water treatment plant would be constructed near the Wood mineralization, with sustained dewatering rates of approximately 25 gpm (see Section 2.2.3.17).

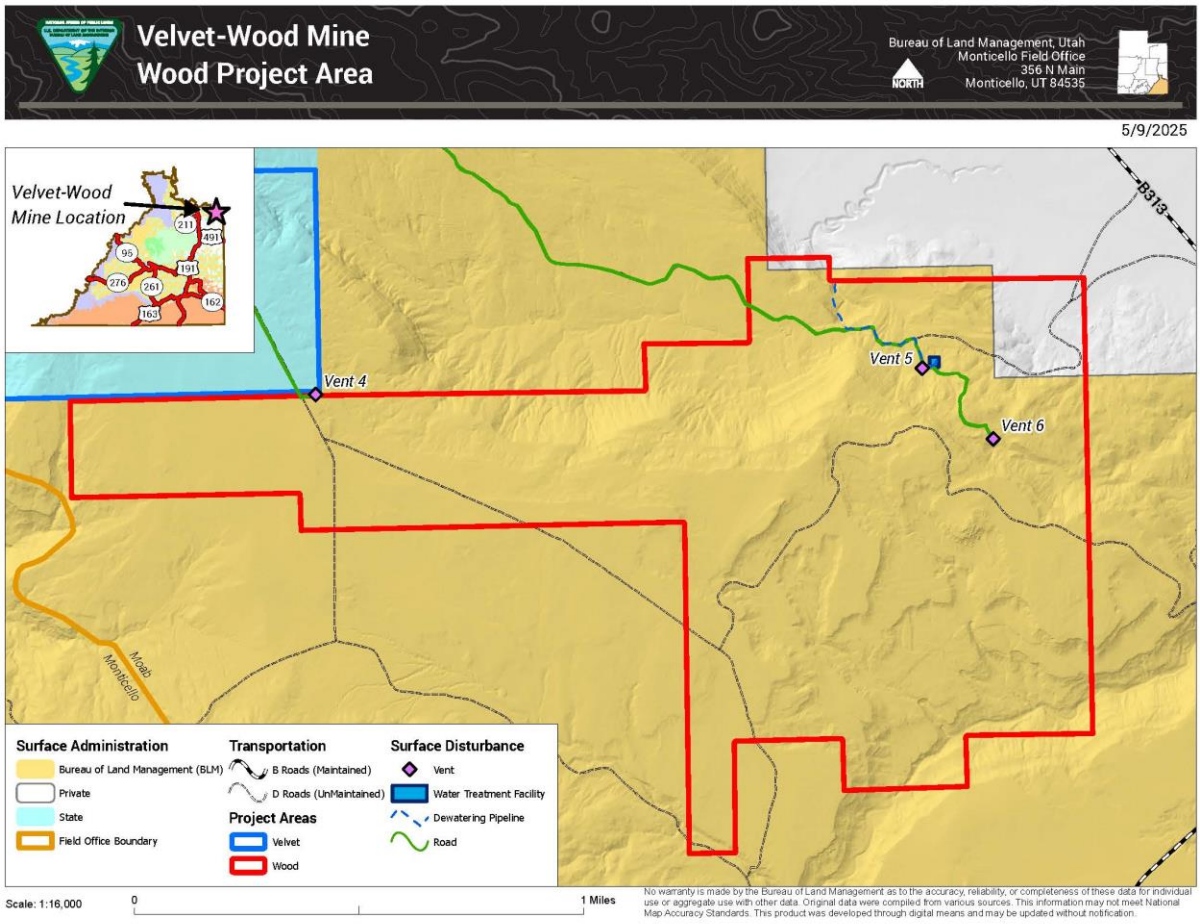

Figure 5. Wood Project Area.

2.2.1.6. *Mine out New Velvet*

While the decline to the Wood area is developed, the Operator would mine out the New Velvet area. The Operator would also cut to and develop Vent 1. Approximately 6,585 tons of material would be mined per month from the New Velvet area, for approximately 62 months.

2.2.1.7. *Mine out New Wood*

Once the decline to the Wood area is established, mining out the Wood mineralization would begin. Approximately 6,930 tons of material would be mined per month from the Wood area, for approximately 46 months.

2.2.1.8. *Reclamation*

Reclamation would begin once the New Wood has been mined out. See Section 2.2.7 for details on reclamation.

2.2.2. Production

Upon completion of main haulages and ventilation shafts, laterals would be driven through known ore-bearing zones to provide access for production mining. Lateral in mining typically refers to the development of ore bodies at various horizons or levels, where the ore is accessed laterally rather than vertically. This involves creating tunnels or drifts and branch headings to access different levels of the ore deposit. Mining would generally proceed from the laterals up dip, beginning at the farthest extents of the mine and retreating back to the main decline. The laterals would also provide access for geologic mapping, long-hole drilling, rib scanning and collecting samples. This geologic data would be used to develop detailed mine planning and scope development for each lateral. See Section 2.2.6.1 for more details about underground mine infrastructure.

Jumbo drills operating on compressed air would be utilized to drill the blast holes and rock-bolt holes in the declines and laterals. Air-jacklegs would be utilized to drill blast holes in production areas. All blasting operations would be conducted in accordance with MSHA regulations (30 CFR Parts 56 and 57). Blast holes would be loaded with an electric blasting cap, chemical booster, and a mixture of ammonium nitrate and fuel oil prills. The blasts would be initiated electronically with the hole pattern, firing sequence and delays designed to allow for optimum breakage. Explosives and detonators would be stored in underground magazines and transported from the magazines to the working face in accordance with MSHA regulations (30 CFR Part 56 and 27 CFR Part 55).

The ore and waste rock would be mucked out using low-profile diesel loaders and ore would be hauled to the surface ore stockpile. The unclassified waste rock would be hauled to the surface and placed in the work pad expansion area. Waste produced during subsequent development and production would be disposed of both on the surface and underground in mined out areas whenever possible to minimize waste rock volumes at the surface. See Section 2.2.3 and 2.2.5.1 for details on stockpiles and back-stowing.

2.2.3. Mined Material Handling

Based on the available data, recommended clean-up criteria, and applicable standards and/or criteria, mine spoil would be subdivided into the following categories:

- **Interburden/unclassified waste rock** - Material which is radiometrically equivalent to background, is not acid forming, and does not contain concentrations of metals or other constituents in excess of Utah Department of Oil, Gas, and Mining (DOGM) criteria. This material can be used for most construction purposes and would be used to form the work surface on the work pad expansion area. It may additionally be stowed in the surface waste rock area or underground. This material would be produced from development headings including the main declines.
- **Subgrade ore/mineralized waste rock** - Material which contains at least 0.03 weight percent U3O8 but is not economically retrievable. This material is slightly elevated in radionuclides, less than 10 pCi/g (picocuries per gram) radium-226, and may have the potential to be acid forming and/or contain metals in excess of DOGM criteria. During operation, this material would be stockpiled in mined-out areas away from the groundwater table, but in such a manner that it may be retrieved should it become economically viable over the course of operations. At the conclusion of operations, the material would be backstowed. This would occur either above the groundwater table or deep enough below the groundwater table to be reasonably expected to be anoxic. In either case, the metals and radionuclides would be rendered immobile.
- **Ore** - Material which contains above currently economically retrievable grades of uranium/vanadium mineral. This material would be brought to the surface and stowed in the ore stockpile bins before being hauled offsite to the Shootaring Canyon Uranium Facility.

2.2.4. Surface Disturbance

Table 3 provides a summary of the surface disturbance expected from the Proposed Action and previously approved actions. Of the 28 acres of disturbance proposed, 3 acres are not within a previously disturbed area with the majority of this new disturbance (2.2 acres) occurring around the existing mine portal where the Velvet Surface facilities would be constructed. The other 0.8 acres of new disturbance would be at the two water facilities. The project area occurs within both the Monticello and Moab Field Offices. The majority of the surface disturbance would be within the Monticello Field Office, which contains the Velvet surface facilities, water treatment plant and Vents A, B and C. Vents 1, 2 and 3 are on Utah Trust Land Administration lands and Vents 4, 5 and 6 and the Wood water treatment facility is located on public lands within the Moab Field Office.

Table 3. Surface Disturbance.

Area	Mine Acres
Velvet Surface Facilities	11.4
Velvet Water Treatment Facility	1.9
Wood Water Treatment Facility	0.5
Roads	14.2
Vents A, B, C	0.01
Vents 1,2,3,4,5 &6	0.02
Total	**28.02**

2.2.5. Surface Facilities

The proposed surface facilities are shown in Figure DET-1 of the Plan, Velvet Surface Facilities. The main surface infrastructure would be located in the vicinity of the Mine Portal area. Surface facilities or stockpile areas would not be located above the decline to the mine. These facilities include the following and are described in detail below:

- Waste rock piles
- Ore stockpile and truck loadout area
- Topsoil stockpile areas
- Storm water/surface drainage control structures
- Fuel and oil storage areas
- Office & Employee Facility
- Maintenance shop & warehouse
- Designated parking and lay down areas
- Mine access roads
- Air compressor
- Mine Vents
- Water Supply System
- Fenced leach field
- Solid waste storage (trash, scrap metal, batteries)
- Propane tank

Mine dewatering, treatment and discharge facilities are discussed in 2.2.5.18 and includes:

- Dewatering vent
- Waterline corridor
- Water treatment facility
- Access roads

2.2.5.1. *Waste Rock Piles*

During initial decline and lateral development, the unclassified waste rock would be hauled to the surface and placed in the work pad expansion area. Waste produced during subsequent

development and production would be disposed of both on the surface and underground in mined out areas whenever possible to minimize waste rock volumes at the surface. Backstowing would be used preferentially, and waste would only be disposed of on the surface if ground conditions (such as unstable workings) prevent underground disposal. A total volume of up to 191,000 cubic yards of unclassified and mineralized waste rock is anticipated over the life of the mine. It is anticipated that at minimum 60% of mined waste would be able to be backstowed. The surface waste stockpiles are capable of accommodating approximately 40% of the maximum production of waste rock over the life of the mine; the reclamation surface can accommodate approximately 50% if necessary.

Waste rock would be separated based on quality and/or character. See Section 2.2.3 for details on waste rock that would be stored on the waste rock pile.

The waste rock pile would be located on top of the previously reclaimed waste rock area and would encompass approximately 2.5 acres. The maximum stockpile height would be 40 feet or less. Unclassified waste rock would be placed at slopes of 1.5H/1V (horizontal to vertical ratio) less for operational conditions and would be regraded to lesser slopes for reclamation.

A water truck would spray the waste rock pile for fugitive dust as needed.

2.2.5.2. *Ore Stockpile Areas*

The mine would be developed to ultimately support an average ore production rate of up to 500 tons per day, with an average waste to ore ratio of 0.2 tons of waste per ton of ore mined. No mineral processing would be conducted at the Velvet Mine, and, therefore, ore would only be present in temporary stockpiles. Ore would be transported from the underground workings via low-profile, end-dump haul trucks with the capacity of 10 tons and would be stockpiled adjacent to the main decline on top of the historical mine waste rock area and contained within a concrete ore bin (see Plan, Figure DET-1). The location of the ore loading station is labeled Truck Loadout Area. This ore stockpile area encompasses approximately 0.5 acres and can accommodate up to 12,000 cubic yards or 15 tons of stockpiled ore assuming an average stockpile height of 15 feet, a stockpile density of 90 pounds/cubic foot, and up to seven separate stockpiles. Mined ore would be transported from the site for processing shortly following mining. It is anticipated that no more than 2 months' worth of ore (24,000 tons) would be present in stockpile at any given time. Ores would be continuously trucked from the site to the Shootaring Canyon Uranium Facility near Ticaboo, Utah. In the event that the Shootaring Mill is unavailable, ore would be hauled to the Energy Fuels Blanding Mill.

In the event of an economic downturn in the uranium market, ore may become subgrade and would be backstowed above the groundwater table into the existing underground workings or buried in the waste rock final reclamation surface at a depth equal to or greater than 10 feet.

The majority of material would be sourced from the upper and lower divisions of the Chinle Formations, which is not anticipated to be acid-generating.

2.2.5.3. *Topsoil Stockpile Areas*

The mine area was disturbed by historic mining and exploration activities that occurred prior to the implementation of state and federal reclamation laws. As a result, little topsoil was salvaged

prior to initial mine development and the majority of the mine site was later reclaimed using the soils and unclassified waste rock that existed on the disturbed areas at the time of reclamation.

Available topsoil would be salvaged from all excavation areas including reclaimed areas and stockpiled, provided that the topsoil has not been degraded by historic mine wastes.

Topsoil would be tested for baseline properties prior to stockpiling. Soil stripping would be performed using a tracked dozer or a front-end loader and/or motor grader. All topsoil stockpiles would be neatly dressed and identified with signage clearly identifying the stockpile as topsoil. Stockpiles would range from 8 to 16 feet in depth. Equipment would not be allowed to cross over the piles to minimize compaction. The topsoil piles (see Plan, Figure OP-4) would be placed outside of drainage areas to minimize erosion losses and would be uphill from the fueling station. Topsoil piles would be contoured, furrowed, and broadcast seeded in late fall with a BLM approved seed mix (see BLM required design features in Section 2.2.11).

In the event that vegetation is difficult to establish, the stockpiles would be blended to match the surrounding terrain as much as possible. Please refer to Section 110.5 of the Plan for specific revegetation methods that would be used. Sediment controls (i.e., grass buffer areas, earthen berms, straw bales, etc.) would be installed and maintained as necessary to prevent surface run-off from mine operations and roads that intersect the topsoil piles within the surface facilities area. Vegetation success on the stockpiles would be monitored and stockpiles would be reseeded where vegetation is sparse. Prior to being removed from the stockpile for reclamation, topsoil would be re-tested and amended as needed.

2.2.5.4. *Drainage Control Structures*

Surface water within the project area is limited to ephemeral drainages. These drainages would be protected as described in Section VI of the Plan and in Attachment G, the Stormwater Pollution Prevention Plan. There would be no disturbances to existing drainage systems as part of the Plan. Surface facilities would be contained within existing disturbance areas which are located outside of the ephemeral drainages in the mine area. All storm water runoff contacting the ore stockpiles, waste rock stockpiles, and other disturbed areas would be routed to storm water catchment ponds sized to contain approximately 10-year 24-hour precipitation events. The storm water catchment ponds have been designed as a zero-discharge facility with a clay liner of low hydraulic conductivity. Seepage from the ponds is expected to be minimal.

This contact storm water from the mine portal area would be transported by water truck to water treatment systems for treatment and subsequent discharge under a UPDES permit. Some of the treated water may be trucked to a storage tank located near the employee facility and workshop to provide non-potable water to these facilities (see Plan, Figure DET-1). Non-contact storm water up gradient of the facilities would be routed away from or around the mine facilities.

Temporary diversion structures would be developed to accommodate the runoff generated from over 98 percent of the storms expected during the potential mine life and would be maintained by the Operator as needed. As best management for implementation of the UPDES permit, erosion on the site would be controlled through broadcast seeding the downslope portions of the waterline corridor and the topsoil pile and with sediment control measures including undisturbed buffer areas, stormwater catchment ponds, earthen berms, and/or sediment control fences would be

placed down gradient from disturbed areas to minimize the volume of sediment impacting the drainage system. See Plan, Attachment G for further details.

2.2.5.5. *Fuel and Oil Storage Area*

Diesel fuel and other petroleum products would be stored on-site in tanks, drums, and small containers. The fuel storage area is shown in Figure DET-1 of the Plan. The fuel storage containment area would be surrounded with earthen berms and covered with a 50-foot by 50-foot synthetic HDPE or equivalent liner to contain any fuel spills or leaks. The synthetic liner would be covered with a protective layer of road base. The berms would be 2.5 feet tall, or the height necessary to contain the total volume of the largest tank within the containment area plus an additional ten percent. The fueling areas would be sloped so that any spills during equipment fueling or fuel delivery to the site would flow into the containment area, which would be able to contain the total volume held within the berm plus an additional ten percent.

Diesel fuel would be stored in two 10,000-gallon steel tanks which would be painted a neutral color. The mine would use approximately 1,500 gallons of diesel per day. Approximately 10,000 gallons of diesel would be kept on-hand; therefore, 10,000 gallons of diesel would be delivered every 5-7 days.

2.2.5.6. *Utilities*

Diesel generators would be used to provide the mine with power. The Operator would construct a 20-foot by 50-foot concrete pad north of the mine portal to support four generators. See Table 4 on page 23 of the Plan for proposed generator specifications. Utility lines would be buried in a 540-foot long, 6-inch HDPE utilities culvert that would run from the concrete pad to Office, Maintenance Shop, and Mine Portal. The Operator would pursue connecting the mine to line power in the future.

2.2.5.7. *Site Access Control*

A 6-foot-tall chain link fence would be constructed around the Mine Portal, Topsoil Stockpile, Maintenance Shop, Waste Rock Pile, and Ore Stockpile to provide site access control, limiting public access to these facilities. The chain link fence would be approximately 2,770-feet in length.

2.2.5.8. *Office and Employee Facilities*

A 48-foot by 60-foot by 8-foot prefabricated metal building built on a 6-inch slab on grade foundation would be used to house the mine office and employee facility. The building would be located along the access road to provide site access control to limit public access to the mine. Figure DET-1 of the Plan shows the location of the mine office. Visitors would be directed to the office and provided with site specific safety training prior to entering the site. The building would be painted neutral colors to better blend in with the surrounding natural features. Upon completion of mining, the facility would be removed from the site.

The employee facility would be in the same building as the mine office. The employee facility would include a lunch/meeting area, toilet and shower facilities and laundry area. Non-potable treated water would be supplied from the mine water treatment system effluent and would be

trucked from the treatment area to a holding tank (see Plan, Figure DET-1). Black and gray water from onsite facilities would be pumped to the leach field to be treated. Potable water would be provided from an approved commercial source. Employee parking would be located on an area of existing disturbance on the east side of the main access road and covered with a 6-inch gravel base.
Maintenance Shop and Warehouse

A 40-foot by 80-foot prefabricated shop and warehouse with attached wash bay would be constructed as shown in Figure DET-1 of the Plan. These facilities would be located on 6-inch concrete slab on grade foundations and would be painted neutral colors to blend in with the surrounding natural features. All drainage from the shop floor and wash facility would be collected for reuse and/or treatment and disposal in a lined sump and oil water separator. Water would then be pumped to storm water drainage control structures for treatment. Oil wastes from the separator would be contained in drums on palettes and removed by a qualified third-party vendor for recycling. Waste oil and other petroleum-based products would be collected for recycling by a qualified vendor. Upon completion of mining, these buildings would be removed from the site. Concrete pads would be demolished, and the waste concrete used for bulkhead material in the closure of the mine decline would be disposed of at a licensed landfill.

2.2.5.9. *Designated Parking and Lay Down Areas*

Designated parking and laydown areas are shown in Figure DET-1 of the Plan. These areas would not be paved but would be graveled utilizing clean interburden waste materials from the decline extension or the gravel would be sourced from the Papoose limestone mine about 8 miles from the Velvet-Wood facilities

2.2.5.10. *Mine Access Roads*

Access to the mine portal would utilize the existing haul road off County Road B122. The haul road would be widened to approximately 40-feet in width. Access to the mine vents and water treatment facilities would utilize existing access roads and would not be widened beyond the existing footprint.

2.2.5.11. *Air Compressor*

An approximately 13-foot by 6-foot air compressor would be located on the south end of the maintenance shop. The air compressor would be used to supply compressed air for pneumatic drills and other equipment, both on the surface and underground.

2.2.5.12. *Vent Shafts*

As shown in the Figure 3, nine mine vents would be developed. Three of the nine vents, one pre-existing vent (Vent C) for dewatering and two pre-existing vents for ventilation (Vent A and B), would be redeveloped; six vents would be newly constructed for ventilation. Mine ventilation would be of sufficient volume to maintain radon, exhaust, and other fumes and gases to safe working levels as required by MSHA. It is anticipated that this would require the movement of 200,000 CFM of air through the mine. Each vent would have a maximum 14-foot wide by 14-foot long and 8-inch-thick concrete slab base.

Vent 4 would be equipped with an 8-foot long, 8-foot wide and 6-foot-high emergency escapeway shack that would sit on a 24-foot long by 14-foot wide, and 8-inch-thick concrete pad. One vent out of Vents A, B, C and 1, 2, 3 would be equipped with an emergency escapeway for the Velvet side of the complex. One vent out of Vents 5 and 6 would be equipped with an emergency escapeway for the Wood side of the complex. It is estimated that there would be about a 50-foot area that would be disturbed beyond the 14-foot by 14-foot concrete slab during construction of the vents.

2.2.5.13. *Water Supply System*

Water for bathrooms, showers, washing equipment, and other general uses would be supplied by recycling the treated mine water. The treated water would be pumped from the water treatment facility to an elevated tank, from which water would flow by gravity to the surface facilities. The pipeline would follow existing roads. The tank pad would be placed on a previously disturbed area. Drinking water would be supplied by the mine from an approved commercial source.

2.2.5.14. *Fenced Leach Field*

An industrial septic tank and leach field utilizing high-capacity leaching chambers in a mounded system would be located down gradient from the site and fenced to prevent mine traffic from travel on the leaching chambers. The septic system would be designed and installed to meet current state and local regulations. The septic system would be pumped out, as needed, on a routine basis.

2.2.5.15. *Solid Waste Storage*

A roll off container for trash disposal would be located next to the Maintenance Shop and Warehouse. The trash would be picked up on a routine basis by a service company and disposed of at an approved landfill. No landfills would be constructed on site. Scrap metal would be stored in a bin and/or on pallets near the Maintenance Shop and Warehouse until it can be picked up for recycling. Used batteries and tires would be stored in the same area and would be picked up and recycled by vendors.

2.2.5.16. *Propane Tank*

Propane would be used to heat buildings, including the office and maintenance shop. A 2,000-gallon tank would be located in a fenced area near the buildings. The tank would need to be refilled 2 to 3 times per year, depending on demand.

2.2.5.17. *Water Treatment Facilities*

Water treatment facilities are depicted in Figures 4 and 5. The water treatment facilities would use barium chloride, or as consistent with Utah discharge standards, to remove the radium and uranium from the water via mixing tanks and settling tanks. This treatment would initially take place in the pilot water treatment plant, and then in the permanent water treatment plants thereafter. Steel settling tanks would be placed at all water treatment facilities and would be sized to contain the maximum contents of the water treatment facilities plus ten percent plus one foot of freeboard.
The pilot water treatment plant would be constructed on the historic mine's water treatment ponds. The pilot water treatment plant would consist of a 15,000-gallon mixing tank and two 40 cubic

yard settling tanks. The water treatment plant would be constructed on a 25-foot by 75-foot HDPE-lined earthen berm. Once initial dewatering of the Velvet decline is completed, the pilot facility would be downsized and a smaller, Velvet water treatment facility, would be constructed. The Velvet facility would consist of 3x300 gallon reaction tanks, 2x250 gallon storage tanks, and a 10-foot and 50-foot HDPE lined earthen berm. Construction disturbance would be limited to the northern margins of the area to avoid impacting drainage and silt fencing would be utilized to limit migration of sediment. The Velvet facility would be fenced to prevent intrusion by livestock.

A second water treatment facility, referred to elsewhere in the EA as the Wood water treatment facility, would be constructed in the Wood area of the project if needed. The Wood facility would consist of a 47-foot by 8-foot trailer, 3x300-gallon reaction tanks, 2x250-gallon storage tanks, within a 25-foot by 75-foot HDPE lined earthen berm.

Liquid effluent would be discharged at the Velvet facility under UPDES permit UT0025810. All solid waste (precipitate) from water treatment would be characterized and disposed of in an appropriate off-site permitted disposal facility to be determined based on the solid waste characteristics. Approximately 2.7 cubic yards of precipitate would be produced from the initial mine dewatering. An additional 0.75 cubic yards of precipitate would be produced annually from subsequent mining activities.

Upon completion of mining, the water treatment systems would be removed. Any contaminated soils or materials from the water treatment facilities, including the synthetic liner, would be transported off-site for permanent disposal at a duly permitted facility.

The combined water treatment facilities would encompass less than 3 acres. Treated mine water would then be used as non-potable water by the surface facilities or discharged down Dry Wash.

2.2.5.18. *Waterline Corridor*

Water would be pumped from the mine workings via Vent C. The water would be pumped through a nominal 6-inch schedule 80 HDPE line following the same route as historically utilized for mine dewatering. This line would be installed on the surface and covered with at least 42 inches of soil to prevent potential freezing during cold weather.

2.2.5.19. *Powder Magazine*

The location and details on storage of powder magazines are confidential; however, the area was surveyed for cultural resources and paleontological resources and these were not present. There were also no issues with T&E species for the location given.

2.2.6. Mine Infrastructure and Equipment

2.2.6.1. *Mine Infrastructure*

The ore would be mined using a modified room-and-pillar system and retreat mining. This mining method is common for mining in uranium-bearing sandstone and is designed to follow the irregular configuration of the individual ore bodies. Where possible, mined-out areas would be back-stowed with waste from adjacent mining. If a room is fully mined, and back-stowing is unpractical or unsafe, the roof would be collapsed to relieve stress on adjacent rooms and haulages.

The ore seams vary in height but average 6.7 feet, or approximately equivalent to the full-face mining height of 7 feet. The minimum mining thickness, including dilution, is 4 feet. In instances with lower mine thicknesses, split shooting methods would be employed. The split shooting method, commonly known as pre-splitting, is a controlled blasting technique used in mining to create a fracture plane that enhances safety and stability in rock excavation while minimizing overbreak.

Roof support would consist of metal roof mats anchored into the roof using eight-foot-long resin roof bolts. Bolting would be performed as necessary with the spacing varying according to roof conditions and the size of the opening. The size of the mine openings would depend on roof conditions but would typically be 14-feet or less in width based on the experience of similar mining operations conducted in the same formation. Ten-foot-long mats would be installed diagonally on the ribs when additional rib support is required. The underground area would also include maintenance and storage areas. Routine maintenance and minor repairs would generally be done underground with more extensive repairs and maintenance completed in the Maintenance Shop on the surface. Roof support materials, blasting supplies, lubricants and the smaller and more commonly used equipment parts would be stored in designated locations underground. These locations are expected to change as the mine workings are advanced.

2.2.6.2. *Mine Equipment*

See Plan Sec 106.2 for a list of anticipated equipment for underground operations.

Surface support equipment would include:

- Light vehicles for the maintenance, engineering, and safety departments.
- ATVs for use in areas with limited access and/or during inclement weather conditions.
- One track loader/dozer for use dressing stockpiles and loading ore.
- Trucks with pup trailers and approved covers for ore transport. A typical haul truck, trailer, and 2-axle pup would have a tare weight of approximately 47,500 pounds and a gross vehicle weight of approximately 124,000 pounds.

2.2.7. Workforce, Access, and Transportation

The estimated workforce and transportation requirements are conservatively based on the maximum potential extent of the ore body.

2.2.7.1. *Workforce*

The mine would be operated by staffing 2, 10-hour shifts which would consist of 2 mining crews and 1 utility crew. An additional crew would be available to rotate, totaling 3 shifts on a daily basis (Plan, pg. 17). Approximately 29 personnel would be on-site each shift; a total of 76 personnel would be employed at the Velvet-Wood Mine.

2.2.7.2. *Roads and Public Access*

Access to the Mine Portal is via county maintained, designated road CR B113. The Velvet water treatment facility would be accessed via CR B177, D0549 and D0550. The Wood water treatment facility would be accessed via D0553 and D0554. This area could also be accessed via CR B313

to D0554. These routes are designated routes in the Monticello and Moab Field Offices Travel Management Plans.

Access to the mine portal area and surface facilities there would be restricted by an access gate which would be beyond the end of CR B112. Fencing around water treatment facilities would not restrict access on open roads. There would be no restrictions to public use of roads open in the Monticello and Moab Travel Management Plans within the project area.

2.2.7.3. *Reasonably Foreseeable Transportation*

Ore extracted from the Velvet-wood Mine would be hauled to the Shootaring Canyon Uranium Facility near Ticaboo, Utah for processing. The transportation route would likely be via Highway 191 through Monticello and Blanding and then SR 95 to SR 276. The ore would be transported according to U.S. Department of Transportation (USDOT) regulations (CFR Title 49, Transportation). Truck size and weight described in 2.2.6.2.

2.2.8. Fugitive Dust Control Plan

Fugitive dust on mine roads would be controlled through enforcement of speed limits and treatment of the roads with magnesium chloride or a similar compound. A water truck would also be used to spray the mine roads, waste rock pile, and ore stockpiles within the permit area, as needed. Sec 109.4

2.2.8.1. *Temporary Cessation of Operations*

In the event that market conditions or other circumstances require a temporary cessation of mine operations, Anfield Energy, Inc would provide notice to the BLM in accordance with requirements of Part 3802.4-7, Title 43 of the CFR and to DOGM in accordance with Utah Rule R647-4-117. The Interim Management Plan is described in detail in Attachment L of the Plan.

2.2.9. Reclamation

Immediately following cessation of mining and dewatering activities it is anticipated that the ground water level would begin to recover towards its original level. Ground water monitoring would be ongoing during reclamation, as during mining, and would continue after reclamation until sufficient equilibrium is maintained and the monitoring wells removed.

Reclamation treatments are described below and shown on in the Plan, Attachment F, Figures RP-1 and RP-2.

2.2.9.1. *Roads*

Roads to be reclaimed are identified in Figure RP-1 of the Plan. These roads are existing and incorporated either within the existing permit or recent exploration notices. The main access road from the country road to the Mine Portal would be surveyed for any deleterious material. If deleterious material is found, it would be excavated and placed in the central portion of the waste rock pile and isolated.

For roads which are located on bedrock where natural vegetation did not exist, closures would be created utilizing on site boulders to prevent future access. For roads that occur in areas of alluvium and/or native topsoil materials with attendant natural vegetation, the roads would be reclaimed by:

- Regrading any cuts and fills to reestablish the original ground contours and drainages.
- Ripping the roads to a depth of 18 to 24 inches.
- Placing a minimum 3-inches of loose topsoil in locations where topsoil was removed.
- Revegetation would adhere to the specifications as provided in Attachment F of the Plan.

2.2.9.2. *Regrading and Drainages:*

Slopes would generally be regraded to approximately original contours. Where this is not possible, such as the waste rock pile, the maximum reclamation slope shall be 3:1 (horizontal to vertical) with most slopes at 4:1 or less. Slopes would be variable, to promote vegetative diversity, and to promote a more natural appearance. Revegetation would adhere to the specifications as provided in Attachment F of the Plan.

The proposed reclamation surface exists on a ridge between natural drainages, and the earthworks design for the reclamation of the waste rock pile includes drainages which would divert runoff from the native ground away from the reclamation surface. In areas where drainage reclamation is necessary, such as along the access road, the areas would be returned to approximate original contours and revegetated in accordance with the specifications provided in Attachment F of the Plan.

Second and third order drainages would be constructed in the re-graded production area. These constructed drainages are designed to be geomorphically stable and mimic the function of natural ground. Figure RP-2 in Attachment F of the Plan provides typical profile and cross-sectional views of these channels.

The final reclamation surface as shown is based upon the estimated maximum volume of waste brought to the surface without back-stowing as described in the discussion of ore and waste stockpiling in the Operation Plan. The reclamation design presented herein is of the maximum height and steepest likely slopes on site yet is geomorphically stable and based upon conservative hydrologic parameters. The berms would be knocked down and the area regraded to match the surrounding topography.

2.2.9.3. *Stockpiles:*

Ore: Prior to final reclamation, all ore stockpiled on site would be hauled to the mill. If the ore stockpiles cannot be shipped to the mill due to economic or other conditions, they would be treated as marginal material and disposed of with other such material within the waste rock pile or hauled and backstowed underground. The superblocks, liner, and concrete footer would be cleaned and removed from the site to be disposed of at a licensed facility.

Waste Rock: The majority of waste rock would be back-stowed underground in mined out areas to minimize the footprint of the waste rock pile on the surface. The reclamation plan described herein is a geomorphically stable surface that approximates native ground and runoff patterns. Alternative disposal of up to an additional 40,000 cubic yards of material in the reclaimed waste rock pile is possible while keeping the reclamation contours within 5 feet of the original design.

If backstowing is not possible, waste rock would be placed in the center of the surface waste rock pile beneath a minimum of 10 feet of interburden waste cover upon mine closure.

The eastern edge of the waste rock pile would be reduced and placed along the southern toe of the waste rock pile. The waste rock pile would be graded to elevations approximately 8 feet below the anticipated final reclamation surface. The unclassified materials from the initial decline development, previously stockpiled and utilized to expand the work area pad, would then be placed to the lines and grades shown in Figure RP-1. Rock materials exceeding a D50 of 6 inches would be placed in the drainage channels on the reclamation surface to ensure that the surface would remain non-erosive, exceeding the design parameters. This would prevent exposure and potential off-site transportation of the mine waste and associated radiometrically elevated materials encapsulated below the final reclamation surface.

2.2.9.4. *Topsoil and Revegetation:*

Topsoil material would be placed on the reclaimed surface at a minimum depth of three inches. If sufficient topsoil is not located within the project area for the three-inch minimum coverage depth, it would be imported. The source is not known at this time. However, should the need for imported topsoil arise a source would be identified and approved by the BLM and DOGM prior to importing it to the site.

All available topsoil would be utilized for revegetation of disturbed areas following treatment of the subgrade for acid forming materials. After regrading is complete and topsoil is placed, agricultural ripping would be done on any compacted topsoil areas to a minimum of 3-inch depth at a 12-inch spacing. Soil amendments would then be spread on the surface as needed. The type and application rate of amendments would be determined by the results of soil sampling. Agricultural discing of the amended surface would be completed to a depth of 8 inches. Pitting and seeding would then be done with the seed mix provided in the Plan (Section 110.5 and Appendix F).

Successful revegetation would consist of 70% of pre-mining vegetation coverage across the revegetated area.

2.2.9.5. *Mine Portal:*

Mine portal closure details are shown on Figure RP-2. Permanent mine closure would employ a grouted rock bulkhead to be constructed in the decline at a location where a sufficient thickness of competent roof rock exists to prevent future subsidence of the mine void which may report to the surface. The bulkhead shall extend a minimum of two mine heights length down the decline (approximately 24 feet) and consist of waste concrete from building, ore stockpile, and unclassified materials. This bulkhead material would be grouted in following placement using cementitious grout employing tremmie or other piping from the portal to the face of the bulkhead and pumped until refusal. The remaining decline upslope of the bulkhead would be blasted and the surface regraded for positive drainage away from the reclaimed portal.

2.2.9.6. *Vents:*

Permanent closure of mine vents would be done in accordance with DOGM preapproved specifications for a concrete slab closure with PUF (polyurethane foam) shoring (Drawing 41, AMRP Master Construction Specifications in Attachment F of the Plan). After surface structures have been uninstalled and appropriately disposed of, a 12-foot PUF plug shall be installed according to manufacturer specifications with a 2-inch diameter steel drainage pipe down the center. The PUF plug would be allowed to cure for at least one hour before being overlaid with a reinforced concrete slab of minimum 16-inch thickness in accordance with DOGM preapproved specifications for a reinforced structural slab with a drain (Drawing 46, AMRP Master Construction Specifications in Attachment F of the Plan). This slab would extend a minimum of four feet from the edge in every direction and would slope inward towards the drainage pipe. An impermeable membrane shall be utilized overtop the concrete slab in order to facilitate groundwater movement to the drain. A minimum of 12-inch fill would overlay the concrete slab, sloped to direct surface water away from the closure.

2.2.9.7. *Drill Pads:*

Exploration and geotechnical drill holes are not included in this Plan. Unless approved otherwise, existing drill holes would be abandoned in accordance with Utah Administrative Code (UAC) Rule R647-4-108 (See Section V of the Plan). Drill pad areas would be reclaimed by replacing salvaged topsoil, regrading, and ripping the disturbed area, and broadcast seeding with the approved seed mix.

2.2.9.8. *Surface Facilities:*

No surface facilities would remain on site after demolition and reclamation.

2.2.10. Treatment & Disposition of Deleterious and/or Acid Forming Material (see Plan Section 110.4)

Soil samples would be collected for laboratory analysis from the soil map units that would be impacted by mining operations. Samples would also be collected from the reclaimed waste rock area, ore stockpiles, and the evaporation pond area. Field parameters would include location and thickness and any structures that have developed. Laboratory parameters analyzed would include pH, electrical conductivity, calcium, magnesium, sodium, potassium, soil adsorption ratio, cation exchange capacity, percent organic matter, total nitrogen, available nitrate, phosphorus, and potassium, composition of sand, silt, and clay, texture, percent coarse fragments, percent total sulfur, neutralization potential and acid/base potential. As provided for in Attachment D of the Plan, any area that could be radiologically impacted by mining activities would be returned to its pre-operational condition.

At the time of mine closure, the remaining petroleum products on site would be used for their intended purpose, transported to another facility, or returned to the vendor. After removal of their contents, the tanks would be shipped to another facility, sold, or properly decommissioned and recycled at the Canyonlands Transfer Station.

The liner underneath the fuel station would be exposed, cut into sections, and hauled to a licensed landfill. Any soil found to have petroleum/oil contamination would be characterized, removed from the site, and taken to the landfill.

The solvent station and any remaining solvent would be returned to the vendor. The road stabilizing products would be used to control dust during reclamation and the tanks would be removed and shipped off site.

Trailers would be hauled to another facility, sold, or hauled to a licensed landfill for disposal. Prefabricated buildings would be disassembled and reassembled at another facility, sold, or disposed of at a licensed landfill. Solid waste meeting the definition of "inert waste" under UAC Rule R315-301-2 (e.g., concrete, blocks, brick, incidental rebar, and glass) would be removed from public lands and disposed of at a licensed landfill. All concrete foundations and pads would be broken, using a hydraulic excavator with a concrete breaker (or equivalent) to dimensions of five feet or less. The broken concrete would be removed from public lands and disposed of at a licensed landfill.

The mine site would be provided with storm water drainage control structures; however, it is anticipated that these facilities would not be receiving appreciable sediment from either the waste rock or the ore stockpile due to physical conditions and controls at those locations. Accordingly, it is most likely that cleanup would not be necessary at these locations. However, any sediment contained within the stormwater catchment ponds would be identified by gamma-survey following mining activities. If the sediments are found to be contaminated, they would be removed and placed within the mine workings. In addition, during mine operations the stormwater catchment ponds would be inspected periodically for sediment buildup and, as necessary, sediment removal and in mine disposal would be completed to maintain the integrity and size of the ponds.

2.2.11. BLM Required Design Features

Design features are specific means, measures, or practices that would reduce or eliminate effects of the proposed action or alternatives. Design features apply to all proposed Project components. These measures typically address specific environmental policies, best management practices (BMPs), planning guidelines, or regulatory requirements. As discussed above, the Applicant Proposed design features are included throughout the Plan. These additional design features have been identified by BLM are listed below.

2.2.11.1. *Noxious Weeds*

- Prior to construction, Anfield and its contractors would be trained in the methods for cleaning equipment, identification of problem plant species within the Mine property, and procedures to follow when an invasive or noxious weed is located. To assist in identification, construction personnel would be supplied with a list and pictures of noxious and invasive species that may exist within the mine property.
- Prior to any construction disturbance, known noxious weed populations would be flagged so that they may be avoided.
- Prior to entering the Mine property, vehicles and equipment would be cleaned by manual methods or forced air of mud, dirt and plant parts where there is a potential to import weeds.

This would be done to remove weed seed that may be attached to the equipment. Dry washing would occur at designated sites that include appropriate containment systems.

- Equipment, materials and vehicles would be stored at specified work areas or construction yards. Personal vehicles, sanitary facilities and staging areas would be confined to a limited number of specified weed-free locations to decrease chances of incidental disturbance and spread of noxious weeds and invasive plants.
- Disturbed areas would be promptly seeded following completion of activities to reduce the potential for the spread and establishment of noxious weeds and invasive plants. Seeding would occur as soon as possible following the disturbance activities and during the optimal fall planting time period. Only BLM and UDOGM-approved mixtures of certified "weed-free" seed would be used. All other introduced materials used for the mining activities, such as straw and fill, would also be certified weed-free.
- Should problematic weed infestation areas occur on site, Anfield would confer with the BLM and San Juan County regarding the appropriate control measures to be implemented. Anfield would mark areas where noxious weeds are found on the reclaimed areas and either spray or remove the weeds by hand. Weed identification and removal efforts would be documented and reported to the BLM and UDOGM.

2.2.11.2. *Public and Worker Health and Safety*

- Personnel working in radiation protection areas would be equipped with individual monitors and/or badges and would be required to participate in a routine bioassay program to further monitor exposure to radionuclides.
- Work areas subject to dusty conditions or chemical fumes would be monitored through fixed instrumentation and/or routine testing as required. Engineering controls would be employed in such areas to minimize exposures to the extent practicable. If the exposure could not be reduced sufficiently through engineering controls to meet regulatory requirements, then Personal Protective Equipment would be required of persons entering or working in these areas.
- The Mine would operate in accordance with federal regulations that are designed to protect the mine workers and the general public from radiation exposure.
- The miners would be protected through establishment of adequate ventilation and monitoring of radiation levels in the underground work areas in accordance with MSHA regulations.
- The general public would be protected by monitoring of radiation emissions from the Mine using methods approved by the EPA and adhering to ore transportation regulations established by the USDOT (CFR Title 49, Transportation).
- A radon-daughter monitoring program would be established at the Mine in accordance with 57 CFR § 5037, in which exposure levels would be monitored and recorded. If radiation levels in a working area were found to be in excess of MSHA standards, the ventilation would be corrected immediately, and more frequent monitoring would be implemented to

verify compliance. Radon daughter (or progeny) means the short-lived radionuclides formed as a result of the decay of radon 222.

- The air emissions would be measured for radon levels and flow rates in accordance with EPA regulations. This data would then be input into an EPA air modeling program to predict radiation levels at the nearest residence. The collected data and modeling results would be reported annually to Utah Division of Air Quality (UDAQ).
- To prevent spreading of the radioactive ore during transport, ore haul trucks would be tarped with tailgates closed and checked for radiation levels prior to leaving the Mine site and the processing site on the return leg. If gamma readings are found to be elevated, the ore truck would be cleaned using a power wash or other method to meet appropriate radiation standards.
- All scrap metal and other recyclables would be checked with a gamma meter prior to leaving the Mine site. If gamma readings were found to be elevated, the material would be cleaned using a power wash or other methods to meet appropriate radiation standards.
- The compacted soil immediately below the ore stockpile areas is expected to have radioactivity levels above background. These soils would be surveyed for radiation and any material with elevated radiation levels would be excavated and placed in the Mine.
- All stationary internal combustion engines, including generators, would comply with all UDAQ permitting requirements and best available control technology. Stationary engines would also meet Tier II or better emissions standards and for nitrogen oxides they must meet or exceed standards of 2g NOx/bhp-hr for engines 300HP and 1g NOx/bhp-hr for engines >300HP.
- Use of ultra-low sulfur diesel in engines.
- Develop a fugitive dust control plan detailing measures that reduce onsite and offsite dust emissions.
- The operator shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the mining areas. The monitoring shall incorporate and be an extension of the baseline data.

2.2.11.3. *Fire Risk and Prevention*

- Clear all flammable vegetation 30 feet away from any equipment, buildings, hazardous/flammable material storage and high-risk facilities
- Ensure that machinery and equipment used on the site are properly maintained and being operated with approved and properly functioning spark arrestors
- Have adequate fire equipment onsite including fire extinguishers, sprinklers and access to water.

- Follow all state and federal laws and regulations regarding fire restrictions, information can be found at utahfireinfo.gov
- Restrict or suspend high-risk operations—including hot work and heavy equipment use—during periods of elevated wildfire danger, as identified by local fire weather indices or agency advisories (e.g., Red Flag Warnings). Fire risk conditions shall be actively monitored, and operations adjusted accordingly to prevent ignition and wildfire spread.
- Report all fires to the Moab Interagency Fire Center 435-259-1850
- Follow all MSHA standards, regulations and CFRs regarding fire prevention and control at mine sites as well as vegetation management around active mine sites.

2.2.11.4. *Water Resources*

- Comply with requirements associated with Utah Water Right Application 05-4137, including install and maintain measuring and totalizing recording devices to meter all water diverted from all sources related to application 05-4137 and to report this data annually to the Utah Division of Water Rights and Water Use Program.
- Amend UPDES permit if/when a second water treatment facility and additional discharge are needed in relation to the Wood Mine Area.
- Obtain a Ground Water Discharge Permit from UDWQ once additional hydrologic characterization is conducted to address and final long term water treatment system and discharge scenario.
- Conduct photo monitoring at identified seeps and springs twice a year to document water flows and riparian vegetation conditions for the life of the mine.
- Continue measuring water levels at the 2 existing groundwater monitoring wells on a quarterly basis for the life of the mine and for a period after mine closure
- Collect and analyze water quality samples at the 2 existing groundwater monitoring wells on a monthly basis for the life of the mine
- Develop a groundwater monitoring plan that includes additional groundwater monitoring wells and monitoring efforts in order to better characterize hydrologic setting in preparation of a Ground Water Discharge Permit for the UDWQ. This would include drilling a minimum of 2 additional monitoring wells in the Wood Mine Area, one well located up gradient and one well located downgradient of the Wood Mine Area. Monitoring of these wells would include water level measurements and water quality samples.

2.2.11.5. *Vegetation*

The BLM approved seed mix that may be used for vegetating the topsoil stockpiles is included in Table 4.

Table 4. Topsoil Stockpiles Seed Mix.

Common Name	Species Name	Rate pounds/acre (PLS)
Thickspike wheatgrass*	Elymus lanceolatus	3.0
Slender wheatgrass*	Elymus trachycaulus	3.5
Sand Dropseed	Sporobolus cryptandrus	0.25
Yellow spiderflower	Cleome lutea	0.5
Rocky Mountain beeplant	Cleome serrulata	0.5
Hoary tansyaster	Machaeranthera canescens	0.25

*From Plan Section 106.6. The BLM is not authorizing the use of Crested wheat grass nor yellow sweet clover. Other native plants species that are listed in the reclamation seed mix Section 110.5 of the Plan can also be used.

2.2.11.6. *Post-Closure Management*

After reclamation is completed, post-closure monitoring and maintenance would be anticipated to require 3 to 5 years. Additional erosion control measures and seeding may be required during the post-closure period to meet the BLM and UDOGM reclamation standards. Revegetation success would be measured in accordance with UAC Rule R647-4-111 such that revegetation has achieved 70% of the pre-mining vegetative ground cover. In addition, the vegetation must survive three growing seasons following the last seeding. Revegetation would also be considered complete if the BLM and UDOGM determine that the site is stable, and revegetation work has been satisfactorily completed within practical limits.

In accordance with UAC Rule R647-4-113 and43 CFR 3809.500, Anfield is required to maintain a surety bond for reclamation until the BLM and UDOGM concur that reclamation is complete. Anfield would notify the agencies to conduct an inspection upon completion of reclamation activities. A partial release of surety may be requested in the event that substantial phases or segments of reclamation such as demolition, backfilling, regrading, and/or vegetation establishment has been successfully performed, and the residual amount of retained surety is determined adequate to insure completion of reclamation. Annual assessments and reporting would be conducted to inform the BLM and UDOGM of reclamation progress.

2.2.11.7. *Radiological Protection*

Anfield contracted to have a radiological survey of areas around old mine workings including a waste rock pile area, the former portal area, a powder magazine location, and unpaved access roads around these areas as well as near old or proposed new ventilation shafts. The purpose of the survey was to characterize baseline radiological conditions prior to proposed new mining activities in these areas.

The gamma survey was coupled with soil sampling. The primary objective of the soil sampling was to develop a predictive statistical correlation between gamma readings and soil Ra-226 concentrations in order to estimate soil Ra-226 concentrations across scanned areas. A product of the U-238 decay series, Ra-226 has a relatively long half-life (about 1,600 years) and is thus an important radionuclide with respect to baseline characterizations at uranium recovery sites.

These data will help ensure that any potential radiological contamination that could result from new uranium mining activities in the area can be effectively identified for remedial action. Extensive gamma survey data sets, HPIC cross-calibrations, gamma/Ra-226 correlations, and comprehensive quality control measurements provide thorough documentation of these baseline radiological parameters.

Average cover criteria would be Ra226 of 20 pCi/g, and maximum point value criteria would be Ra266 of 30 pCi/g. The BLM would require a survey be completed and provided to the agency during reclamation to ensure that these levels are met.

2.2.11.8. *Paleontological Resources*

If paleontological resources were encountered, activity in that location would stop immediately and the BLM Monticello Field Office would be notified immediately.

2.2.11.9. *Visual Resources*

All buildings, tanks, and other facilities would be painted a color from the Standard Environmental Colors palette that corresponds to the natural setting.

2.2.11.10. *Soil Resources*

- Salvaging and re-vegetating topsoil to be used for reclamation activities
- The preparation of a Storm Water Pollution Prevention Plan (SWPPP, Attachment G). The SWPPP is designed to divert all off site runoff water from entering onto mine portal areas; and to prevent all on site runoff water from flowing off-site

2.3. Alternatives Considered but Eliminated from Detailed Analysis

The BLM added design features in Section 2.2.11 that could have been included as a standalone alternative. The BLM has decided to instead add these design features to the Proposed Action.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter defines the scope of analysis contained in this EA, describes the existing conditions relevant to the issues presented in Section 1.6, and discloses the potential impacts of the Proposed Action and alternatives.

3.1. General Setting

The Velvet-Wood Mine is located in the central portion of the Colorado Plateau in southeastern Utah. Elevations at the Velvet-Wood Mine range between 6,400 to 7,000 feet above sea level. Precipitation often occurs in the form of high intensity, short duration and convective thunderstorms during the summer and fall that can produce high peak flows in the tributaries that drain the project areas, for watersheds into Dry Wash or McIntyre Canyon. The average yearly precipitation at a nearby range gauge is 9.19 inches. The Velvet-Wood Mine spans two HUC 10 watersheds: East Canyon – Hatch Wash Watershed (HUC 1403000505), which is nested within the Upper Colorado- Kane Springs Subbasin, and the Summit Canyon- Dolores River Watershed

(HUC 1403000207), which is nested within the Upper Dolores Subbasin. This area is a total of 305,965 acres of that 161,712 is BLM managed. This area has been influenced over the years from past projects, and is currently being influenced from ongoing projects. Table 5 outlines past and current projects that have occurred within the East Canyon – Hatch Wash and Summit Canyon – Dolores River Watershed. Table 6 outlines reasonably foreseeable future actions within these watersheds. The watershed boundaries encompass portions of Utah and Colorado. Past and present actions for recreation, grazing, rights-of-way, and oil and gas in the Colorado portion were assumed to be of the same type and concentration of the Utah actions based on a review of aerial imagery.

Table 5. Past and present projects and actions in the East Canyon – Hatch Wash and Summit Canyon – Dolores River Watershed.

Project	Description
Recreation	The location of the project area receives very little recreational activity. That which does occur in this area is seasonal in the spring and fall. Old Spanish Trail segments are present in the area, but there is very little evidence of recreational use.
Grazing	Livestock grazing occurs over 31 grazing allotments.
Fire and Fuels	East Canyon fuels project was conducted in 2022 and treated pinyon and juniper encroachment over 1,903 acres.
Rights of Way	Existing rights-of-way include oil and gas pipelines, water wells and pipelines, transmission lines, road and highway rights-of-way.
Oil and Gas	Oil and gas activity within the East Canyon – Hatch Wash and Summit Canyon – Dolores River Watersheds includes: • 4 active service wells • 1 approved Application Permit to Drill (APD) • 29 abandoned oil or gas wells • 3 producing oil or gas wells • 77 plugged and abandoned oil or gas wells • 21 shut-in oil or gas wells
Locatable Minerals	Lisbon Valley Mining Company (LVMC) conducts open pit copper mining operations in Lisbon Valley under a 1998 Record of Decision (ROD). The existing Mine Plan Boundary encompasses 4,480 acres, of which current operations encompass 1,146 acres.

Table 6. Reasonably foreseeable future actions in the East Canyon – Hatch Wash and Summit Canyon – Dolores River Watershed.

Project	Description
Grazing	Livestock grazing is expected to continue to occur over 31 grazing allotments.
Oil and Gas	Lightning Draw APD: Genesis ST Operating LLC submitted an APD to drill a horizontal well from the existing 2-31 well pad to test for economic quantities of helium with the intent of long-term production.
Locatable Minerals Lisbon Valley Mining Company	LVMC submitted a Plan of Operations Modification[1] to the BLM Moab Field Office in April 2024. LVMC is proposing to expand open pit mining operations and begin in-situ recovery operations for the extraction of copper. The Plan of Operations Modification has a proposed boundary encompassing 5,823 acres and proposed surface disturbance footprint of approximately 1,430 acres. The BLM is preparing an Environmental Impact Statement, with an anticipated ROD Date of May 2026.

3.2. Issue 1: How would implementation of the Proposed Action impact the availability of uranium and vanadium for energy production?

The proposed modification to the Velvet-Wood Mine Plan of Operations aligns with the intent of Executive Orders 14154, 14156, 14241, and Secretary's Order 3417 and 3418. By potentially bringing a domestic source of uranium and vanadium online, the project would contribute to the goals of reducing reliance on foreign sources and enhancing the security of the U.S. energy supply chain. Alternative B (Proposed Action) would increase the availability of these minerals for nuclear energy and energy storage applications, while Alternative A (No Action) would not.

3.2.1. Methodology and Assumptions

The analysis area for energy production is the Moab and Monticello Field Offices because the Monticello and Moab Field Office contain valuable uranium deposits that could contribute to national energy production. Data indicates the Colorado Plateau, specifically the Paradox Basin of San Juan County, which includes the Moab and Monticello Field Offices, contains the majority of uranium deposits in Utah (Gloyn, 2005). Executive Orders 14154, 14156, 14241, and Secretary's Order 3417 and 3418 reflect a U.S. government policy direction aimed at meeting the continuing and growing demand for uranium in nuclear power generation and for vanadium in energy storage

[1] The Velvet Mine lies due south of the LVMC proposed Plan Modification, which was submitted to the BLM Moab Field Office in April 2023 and has a proposed plan boundary encompassing 5,823 acres. The BLM is currently preparing an Environmental Impact Statement for LVMC's proposed Plan Modification, with an anticipated ROD Date of May 2026. The northern boundary of the Velvet-Wood Mine's proposed plan boundary overlaps the southern boundary of LVMC's proposed plan boundary by approximately 128 acres (representing approximately 2% of LVMC's proposed plan boundary). These 128 acres are comprised of approximately 95 acres of BLM-administered land and approximately 33 acres of private land. Components of the Velvet-Wood Mine would be within LVMC's proposed plan boundary, including one vent shaft and a water treatment facility. Anfield Resources and LVMC are in discussion to develop an agreement to ensure their proposed uses of this area of overlap would create no access or resource use conflicts and that both mining operations are able to proceed in an orderly fashion. Where BLM-managed lands and resources are involved, the BLM will have approval authority over the agreement and will ensure the BLM's statutory responsibilities are met.

and traditional steel strengthening. The Velvet-Wood Mine project would increase domestic production of uranium and vanadium, which are both minerals critical to U.S. national security.

3.2.2. Affected Environment

The Velvet-Wood Mine is an existing (currently idle) conventional underground mine within the Lisbon Valley uranium district, which holds a history of uranium production. The Velvet Mine itself produced approximately 4 million pounds of U3O8 and 5 million pounds of V2O5 between 1979 and 1984 (Beahm et al, 2003). The site retains underground infrastructure, including a decline to the ore body. The Plan seeks to mine the Wood mineralization in addition to the Velvet area. Historical mineral resource estimates for the combined Velvet and Wood areas suggest 4.6 million pounds of U3O8 and additional inferred resources of U3O8 and V2O5 (Beahm et al, 2003). There is one authorized uranium mine, the Daneros Mine, in the Monticello and Moab Field Offices. However, this mine is not currently in production.

The United States produced approximately 50,000 pounds (25 tons) of uranium concentrate in 2023 and 194,000 pounds (97 tons) in 2022 (EIA, 2024). Approximately 1,053 development holes were drilled in 2023, and 749 development holes in 2022. At the end of 2023, the White Mesa Mill and the Shootaring Canyon Uranium Mill in Utah and the Sweetwater Uranium Project in Wyoming were not in operation, but had a total capacity of 5,750 short tons of material a day. No uranium concentrate was produced from the Monticello Field Offices.

3.2.2.1. *Reasonably Foreseeable Trends and Planned Actions*

There are current efforts to revitalize domestic uranium production to support a stable supply of uranium within the U.S. to meet national energy needs, increasing demand for advanced manufacturing and artificial intelligence. Vanadium redox flow batteries are a promising technology for large scale energy storage, driving demand for high-purity vanadium (Karrech, 2023). Mining companies like Anfield Resources are likely to advance projects such as Velvet-Wood, to meet this anticipated demand. The Daneros Mine, authorized in 2016, could go into operation, increasing uranium production in the Monticello and Moab Field Offices. There are no other reasonably foreseeable Plan of Operations for Uranium and Vanadium in the Moab and Monticello Field Offices.

3.2.3. Environmental Effects

3.2.3.1. *Impacts of Alternative A – No Action Alternative*

Under Alternative A, the proposed Plan for the Velvet-Wood Mine would not be approved. The Velvet Mine would remain in its current idled state and the Wood mineralization would not be developed by Anfield under this proposal. The availability of uranium and vanadium for energy production would not increase. Availability of the resources for national energy production would remain at current production levels and the goals of EO 14154, 14156, 14241, and Secretary's Order 3417 and 3418 would not be partially realized by production from the Velvet-Wood Mine.

3.2.3.2. *Impacts of Alternative B – Proposed Action*

Under Alternative B, the BLM would approve Anfield's proposed Plan for the Velvet-Wood Mine, allowing for the mining of both the Velvet and Wood mineralizations. Production of uranium and vanadium from the Velvet-Wood mine would contribute these domestically sourced materials in the U.S. market. The Velvet-Wood mine would generate approximately 0.2 tons of waste per ton of ore mined. Table 7 provides the approximate amount of material and ore that would be mined out of each production area per month. Due to the mining of production areas being staggered, between 63,216 and 200,256 tons of ore would be produced annually from the Velvet-Wood Mine. This ore would be a mix of both uranium and vanadium. Therefore, national annual production of uranium and vanadium ore, and subsequently uranium concentrate, would increase by the aforementioned amounts. Over the course of the life of the mine, an estimated 815,000 tons of uranium ore would yield 4.6 million pounds of U308, based on a 0.285% grade.

Table 7. Velvet-Wood Production Amounts.

Production Area; Production Timeline	Material (tons) per month	Ore (tons) per month	Ore (tons) per year
Old Velvet; 12 months	7,345	5,876	70,512
New Velvet; 62 months	6,585	5,268	63,216
New Wood; 46 months	6,930	5,544	66,528

Implementation of Alternative B would directly address the policy aims of Executive Orders 14154, 14156, 14241, and Secretary's Order 3417 and 3418 by increasing the domestic availability of uranium and vanadium. This would bolster the U.S. energy supply chain, support domestic industry, and contribute to national and economic security by leveraging U.S. mineral resources.

3.3. Issue 2: What quantities and types of air pollutants would be produced from the Proposed Action? How would air pollutant emissions affect air quality and air quality related values?

3.3.1. Methodology and Assumptions

The analysis area for air quality is the airshed in which the Proposed Action is located, including Grand and San Juan Counties. This spatial scope of analysis was identified based on the regional nature of air pollution and to facilitate analysis using the best available air quality data, which are generally provided at the county level. For the purposes of this analysis, short-term effects to air quality are considered those that cease after facility construction; long-term effects are considered those associated with ongoing mining operations and material processing. The BLM Utah 2024 Air Monitoring Report (AMR) (BLM, 2024) discusses past, present, and foreseeable emissions and air quality data for Utah. The BLM incorporates by reference information from the AMR to help describe the air quality affected environment in the impact analysis area.

Stationary source emissions for the Proposed Action are incorporated by reference from the UDAQ air quality approval orders for the Velvet-Wood Mine (DAQE-AN141930004-23) and the White Mesa Mill (DAQE-AN112050024-21). Mobile source emissions are incorporated by reference

from the Daneros Mine EA (BLM, 2017) as a similar action. Stationary source emissions are compared against de minimis emissions thresholds (Utah Administrative Code R307-410-4).

Screening for impacts to air quality related values uses the EPA Guidance on the Development of Modeled Emission Rates for Precursors (MERPs). Like other air quality related value screening methodologies, this relatively conservative approach can be used to determine if a proposed source undergoing NEPA review does not have the potential to impact visibility, deposition, or wilderness lakes, or if it is appropriate to conduct a more complex but less conservative analysis.

3.3.2. Affected Environment

The EPA has primary responsibility for regulating air quality, including six nationally regulated criteria air pollutants (CAPs): carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} & $PM_{2.5}$), sulfur dioxide (SO_2) and lead. Volatile organic compounds (VOCs) are also regulated by the EPA as sunlight causes it to react with NO_2 to form O_3. The National Emissions Inventory (NEI) (EPA, 2024) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants. The NEI is released every three years based primarily upon data provided by state, local, and tribal air agencies for sources in their jurisdictions and is supplemented by data developed by the US EPA. The most recent reporting year for the NEI is 2020 and the updated NEI for 2023 is expected to be published March 2026 (EPA, 2025). County emissions inventories relevant to the analysis area are listed in Table 8. Total emissions include both natural (e.g., wildfires and biogenic) and anthropogenic (e.g., fuel combustion, mobile) sources.

Table 8. Existing Criteria Air Pollutant Emissions in the Airshed in Tons Per Year (TPY).

County	Source	CO	NO_x**	PM_{10}	$PM_{2.5}$	SO_2	VOC
Grand	Anthropogenic*	4,279.1	1,487.7	1,461.5	224.6	5.5	1,089.7
Grand	Total	6,623.1	2,059.7	1,465.1	227.7	5.9	11,687.5
San Juan	Anthropogenic*	3,874.9	849.5	4,141.7	668.5	43.6	1,239.9
San Juan	Total	8,621.9	1,672.2	4,205.2	722.4	49.7	20,814.3

Source: The National Emissions Inventory.

* Anthropogenic emissions are considered all emissions omitting wildfires and biogenic sources.

** nitrogen oxide(s)

The EPA has established National Ambient Air Quality Standards (NAAQS) for CAPs (EPA, 2024). The NAAQS are protective of human health and the environment. Compliance with the NAAQS is typically demonstrated through monitoring of ground-level concentrations of atmospheric air pollutants. The EPA designates areas where pollutant concentrations are below the NAAQS as attainment or unclassifiable. Locations where monitored pollutant concentrations are higher than the NAAQS are designated nonattainment, and the EPA considers this air quality as unhealthy. Air pollutant concentrations are reported using design values. A design value is a

statistic that describes the air quality status of a given location relative to the level of the NAAQS. Design values are used to designate and classify nonattainment areas, as well as to assess progress towards meeting the NAAQS. While Grand County does have a regulatory air quality monitoring station operated by the UDAQ, it has not yet been in place for three years to be given a design value. San Juan County has a design value of 0.065 ppm for ozone for the period of 2021-2023. Average annual pollutant concentrations that are representative for the airsheds of interest, the BLM has incorporated and listed in Table 9. The BLM assumes that counties without reported design values for a particular pollutant have air pollutant concentrations below the NAAQS and good air quality.

Table 9. 2024 Criteria Air Pollutant Concentrations.

Pollutant	County	Averaging Time	Concentration[1]	NAAQS	Percent of NAAQS
O_3	Grand	8-hour	0.067 ppm	0.070 ppm	95.7%
O_3	San Juan[2]	8-hour	0.063 ppm	0.070 ppm	90.0%
NO_2	Grand	Annual	4 ppb	53 ppb	9.4%
NO_2	Grand	1-hour	23 ppb	100 ppb	22.7%
$PM_{2.5}$	Grand	Annual	7 µg/m^3	9 µg/m^3	77.8%
$PM_{2.5}$	Grand	24-hour	15 µg/m^3	35 µg/m^3	43.7%

Source: EPA Outdoor Air Quality, https://www.epa.gov/outdoor-air-quality-data

[1]Concentrations in parts per million (ppm), parts per billion (ppb), microgram per cubic meter (µg/m^3).

[2]Ozone data for San Juan County is only available up to 2023. Data is from the Dark Canyon monitor in Bears Ears National Monument.

Hazardous air pollutants (HAPs), also known as toxic air pollutants, are known, or suspected, to cause cancer or other serious health effects, or adverse environmental effects. Emissions of HAPs are included as part of the NEI. HAPs emitted by the oil and gas industry include benzene, toluene, ethyl benzene, mixed xylenes, formaldehyde, normal-hexane, acetaldehyde, and methanol. Statewide, these individual pollutants make up 95% of the HAPs emitted from the oil and gas production. The total HAPs emissions for the State of Utah and Grand and San Juan Counties are listed in Table 10.

Table 10. Hazardous Air Pollutant (HAP) Emissions (TPY).

County	Total Emissions (TPY)	Vegetation and Soils (TPY)	Wildfire (TPY)	Prescribed Fire (TPY)	Oil and Gas Production (TPY)	Anthropogenic Emissions (TPY)
Grand	2,201.48	2,017.46	2.91	23.22	39.20	181.11
San Juan	4,025.14	3,811.96	49.05	53.76	6.13	164.13
State of Utah	83,710.82	39,695.91	26,178.41	798.10	3,496.35	17,836.5

Source: The National Emissions Inventory.

The EPA Air Toxics Screening Assessment is used to evaluate impacts from existing HAP emissions in Utah (EPA, 2023). Air Toxics Screening Assessment results for counties relevant to the analysis area are reported in Table 11. The total cancer risk is within the acceptable range of risk published by the EPA of 100 in 1 million as discussed in the National Contingency Plan, 40 CFR § 300.430 also see (EPA, 1999). Hazard index values less than one indicate it is unlikely that air toxics would cause adverse noncancer health effects over a lifetime of exposure.

Table 11. Total Cancer Risk and Noncancer Respiratory Hazard Index from Existing HAP Emissions (2019 Reporting Year).

County	Total Cancer Risk/Million	Background Cancer Risk/Million	Oil & Gas Cancer Risk/Million	Total Respiratory Hazard Index
Grand	11.74	2.66	0.01	0.12
San Juan	11.04	2.58	0.14	0.11
State of Utah	17.80	2.65	0.06	0.23

Source: EPA's Air Toxics Screening Assessment.

The Clean Air Act (CAA) Prevention of Significant Deterioration (PSD) requirements give more stringent air quality and visibility protection to national parks and wilderness areas that are designated as Class I areas, but a PSD designation does not prevent emission increases. The five national parks in Utah are Federally designated Class I areas, and the rest of the state is designated as Class II. Federal land managers are responsible for defining specific Air Quality Related Values (AQRVs), including visual air quality (haze), and acid (nitrogen and sulfur) deposition, for an area and for establishing the criteria to determine an adverse impact on the AQRVs. The Proposed Action is located within a PSD Class II area and is 27 miles to the east of the nearest Class I area

(Canyonlands National Park). Visibility trends based on air monitoring data from four Utah monitoring sites for the clearest, haziest, and most impaired categories is incorporated by reference from the AMR (see Figures 2 through 5 of the AMR). The marked improvement on the most impaired days at Utah Class I areas demonstrates progress toward Regional Haze Rule goals. The National Park Service monitors and evaluates deposition to determine which parks are most at risk from air pollution and where conditions are declining or improving. Nitrogen deposition conditions in Utah National Parks are fair to poor with no trend for improving or worsening conditions, while sulfur deposition conditions are good with trend data unavailable for most locations (see Table 22 of the AMR).

3.3.2.1. *Reasonably Foreseeable Trends and Planned Actions*

The BLM incorporates by reference the projected changes to air quality and AQRVs that are evaluated in the BLM's Regional Air Quality Model (Ramboll, 2023). This modeling study provides a reference for potential changes to the affected environment occurring from existing and foreseeable emissions producing activities, including development of oil and gas leases, mining, and other cumulative emissions sources in the region.

3.3.2.1.1 Emissions Trends

Past and present actions that have affected and would likely continue to affect air quality in the analysis area include surface disturbance resulting from oil and gas development and associated infrastructure, geophysical exploration, ranching and livestock grazing, range improvements, recreation (including OHV use), authorization of right of ways for utilities and other uses, and road development. These types of actions and activities can worsen air quality through emissions of CAPs (including fugitive dust), and HAPs, as well as contribute to deposition impacts and a reduction in visibility due to haze. Emissions from these activities are included in the inventory contained in Table 8 and Table 9Table . In the future, emissions from vehicle exhaust, residential, and commercial activities would likely increase as population and tourist visitation increases in the area.

Estimates of future criteria and hazardous emissions are made in the BLM Regional Air Quality Model (Ramboll, 2023). Emissions estimates are based on the EPA2016v2 modeling platform (Ramboll, 2023), the Western Regional Air Partnership (WRAP) Oil and Gas Working Group emission inventory, and BLM reasonably foreseeable development estimates for oil, gas, and coal production. Sources included mining, fossil fuel combustion, oil and gas development, other anthropogenic sources (mobile and non-point), and natural emissions (open land fires, biogenic). The effects of these emissions are evaluated in the modeled air quality projections section below. The modeled air quality projections fully capture reasonably foreseeable future actions in the region, including within the analysis area.

3.3.2.1.2 Modeled Air Quality Projections

Results from the BLM Regional Air Modeling Study show that there are no projected exceedances of the NAAQS for NO_2, SO_2, and CO. Source apportionment analysis shows that exceedances of the $PM_{2.5}$ and PM_{10} standards are due to wildfires, and there are no exceedances due to

anthropogenic emissions. Modeled concentrations of O_3 throughout Utah are in the 55-65 ppb range, which is also below the NAAQS.

3.3.2.1.3 Air Quality Related Values

Regional Haze modeling (WRAP/WAQS, 2021) was performed by the EPA and Western Region Air Partnership states to evaluate if reasonable progress is being made toward natural visibility conditions to be achieved by the year 2064. The model uses source apportionment to isolate the contributions of U.S. anthropogenic emissions, along with other sources (e.g., anthropogenic emissions, fires, and natural sources), to visibility extinction at monitoring sites representing Class I areas in the western U.S. This allows for the estimation of the changes in visibility impairment due to U.S. anthropogenic emissions at Class I areas over time and whether they are trending toward no impairment due to U.S. anthropogenic emissions by 2064. The modeling study shows that the current trendline would reach the no impairment goal before 2064.

The BLM Regional Model Study also evaluated deposition of nitrogen and sulfur. The critical load for deposition is 5 kg/ha/yr, and projected deposition rates for both nitrogen and sulfur are below the critical load value. Cumulative annual nitrogen deposition over the Utah analysis area varies between 0.6 and 4.5 kg N/ha. Deposition values are less than 4 kg N/ha throughout most of Utah. Aggregate annual sulfur deposition over Utah varies between 0.01 and 1.1 kg S/ha within Utah.

In summary, the BLM projects atmospheric concentrations for CAPs to be below the NAAQS or show improvement (i.e., decreasing concentrations). Visibility is generally projected to improve at nearby National Parks and deposition is estimated to remain below critical load criteria. HAPs emissions are not anticipated to change substantially and respiratory cancer and noncancer risks are also not expected to change.

3.3.3. Environmental Effects

3.3.3.1. *Impacts of Alternative A – No Action Alternative*

No processing facility under the Plan of Operations Modification would be constructed and mining operations and processes would not take place at this time. Emissions or air pollutants would not occur as a result of the mining operations and processes described in the Plan of Operations Modification, and air quality conditions described in the affected environment would continue as described.

3.3.3.2. *Impacts of Alternative B – Proposed Action*

Air quality impacts from mine development and operation would result from fugitive dust generation, diesel engine exhaust, and naturally occurring radioactive material (NORM) released as dust or gases into the atmosphere. These potential impacts would be created by mine operations and truck travel on unpaved roads. The 2008 BLM Monticello Field Office RMP specifies management actions intended to meet and comply with federal, state, and local air quality laws and regulations (BLM, 2008).

3.3.3.2.1 Underground Air Emissions Sources

The primary air emissions generated underground during mining operations and subsequently released to the atmosphere via vent shafts consist of NORM and criteria pollutants. NORM, including radon, is a health concern, particularly in confined spaces underground where it can accumulate, and specialized ventilation practices like using booster fans, vent bags, and brattice curtains are employed to direct fresh air and exhaust accumulated radon from work areas.

3.3.3.2.2 Surface Air Emissions Sources

Mining operations would result in NORM and criteria pollutant emissions from a variety of mining-related activities. Emissions would include fugitive dust and diesel combustion emissions from vehicle travel; particulate emissions from material handling; wind-blown fugitive dust from ore, development rock, and topsoil stockpiles; diesel storage tank vents; and diesel exhaust from generators and ore haul trucks. These mine activities are discussed in Section 2.2. Other sources of NORM include the ore stockpile and waste rock piles.

The produced ore would be trucked approximately 178 miles on public roads and highways to the Shootaring Canyon Uranium Facility near Ticaboo, Utah. In the event that the Shootaring Mill is unavailable, ore will instead be hauled approximately 61 miles on public roads and highways to the White Mesa Mill. There is a potential for ore dust to blow out of the haul trucks and spread uranium ore along public roads and adjoining areas. This was a common occurrence historically when ore trucks were not covered. Dust control measures, including tarpaulin covers and tailgate closure requirements for haul trucks, are now required by the USDOT and the Utah Department of Transportation (UDOT) to avoid spreading ore in transport. The implementation of such dust and radiation control measures should prevent ore dust from blowing out of the haul trucks.

3.3.3.2.3 Mine-Wide Project Air Emissions

Air pollutant emissions of criteria pollutants (PM_{10}, $PM_{2.5}$, CO, SO_2, NOx, lead), CO_2, and HAPs were calculated for on-site and estimated for off-site air emissions sources. Stationary emission sources within the Velvet-Wood Mine permit boundary as described and shown in the Notice of Intent for the UDAQ Approval Order (DAQE-AN141930004-23) and are classified as on-site stationary sources. The approval order specifies a maximum annual operating scenario with an annual production rate of 255,500 tons per year of uranium, vanadium, and waste rock. Mobile and fugitive emissions sources within the Velvet-Wood Mine permit boundary are classified as on-site fugitive and mobile sources. The fugitive and mobile emissions source have not been quantified for the Velvet-wood Mine, so the BLM is incorporating these emissions from the Daneros Uranium Mine (BLM, 2017) which would have similar type of emissions. Emission sources outside the mine permit boundary are classified as off-site sources and included ore haul roads and processing facilities. Emissions were based on site-specific information, such as fuel consumption, length of travel on dirt roads, silt content of the dirt roads, the type of vehicles, and speed of vehicles, and calculations were performed using engineering design specifications and standard emission calculation equations, such as EPA's AP-42 (EPA, 1995).

Annual criteria air pollutant emissions for the maximum annual operating a production rate of 255,500 tons per year are summarized in Table 12.

Table 12. Estimated Annual Criteria Air Pollutant and HAP Emissions for the Proposed Action.

Pollutant	On-Site Stationary Source Emissions	On-Site Fugitive and Mobile Source Emissions[1]	Off-Site Fugitive and Mobile Source Emissions[1]	Total Project Emissions for Average Annual Operating Case
SO_2	<0.01	12.09	0.02	12.11
NOx	3.15	158.1	6.20	167.45
PM_{10}	13.76	44.1	7.50	65.36
CO	1.81	301.8	22.8	326.41
Lead	<0.01	<0.01	<0.01	<0.01
$PM_{2.5}$[2,3]	13.76 (2.75)	9.90	1.70	25.36 (14.35)
Total HAPs	0.05	<0.01	<0.01	0.05

[1]Mobile emissions incorporated by reference from the Daneros Uranium Mine as a similar action. Numbers in this table have been scaled by a factor of 3.6 to account for the difference between 72,000 TPY (annual production rate of Daneros) and 255,500 TPY (annual production rate of Proposed Action).

[2]$PM_{2.5}$ emissions are not quantifiable using AP-42 so are conservatively assumed to be the same as PM_{10} in the air quality permitting process.

[3]$PM_{2.5}$ emissions estimate listed in parenthesis using 0.2 particle size fraction as recommended by AP-42 supporting documentation. (EPA, 1998)

3.3.3.2.4 Milling Operation Air Emissions

UDAQ permits and regulates the White Mesa Mill through its air quality permitting program, which places operational limits on the Mill to ensure emissions from its operations do not violate ambient air quality standards. In addition, the White Mesa Mill is subject to NSPS 40 CFR Part 60, Subpart DC (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) and NESHAP 40 CFR Part 61, Subpart W (National Emission Standards for Radon Emissions from Operating Mill Tailings). Maximum Achievable Control Technology (MACT) regulations do not apply to this source, nor is a Title V operating permit required at the present time. There is currently no active air quality permit with facility emissions limits for Shootaring Mill.

The White Mesa Mill is permitted by UDAQ approval order (DAQE-AN112050024-21). The approval order includes several provisions, requirements, and limitations that are designed to mitigate impacts to air quality. Permit requirements include opacity limitations at sources of fugitive dust, application of water or chemical treatments to roads, fuel requirements for internal combustion engines, and limitations and testing procedures for specialized equipment.

The UDAQ approval order authorizes the White Mesa Mill to process up to 720,720 tons per year (TPY). The Mill receives uranium ore and alternate feed material from many sources. Based on current and experience, the ore feed would be produced at, and transported from, mines in the Four Corners Area of Colorado, Utah, Arizona and New Mexico. The maximum ore production at the

Velvet-Wood Mine is 255,500 TPY, or 35% of the maximum mill feed. Table 13 lists the White Mesa Mill's potential to emit for criteria and hazardous air pollutant emissions and provides an estimate of emissions from processing ore from the Velvet-Wood mine based on the ratio of maximum throughput for the mine to the throughput of the mill.

Table 13. Estimated Emissions from Milling Operations.

Criteria Pollutant	Potential to Emit from White Mesa Mill (TPY)	Mill Emissions Attributable to Velvet-Wood Ore Supply at Peak Mine Production (TPY)
CO	10.69	3.79
NO_2	40.46	14.34
PM_{10}	34.09	12.08
$PM_{2.5}$	17.10	6.06
SO_2	2.91	1.03
VOC	4.06	1.44
HAPS	0.73	0.26

3.3.3.2.5 Direct Impacts from Mining Operations

The criteria pollutants emitted underground that are exhausted include fugitive dust and gaseous emissions resulting from activities such as blasting and exhaust from mining equipment and ore haul trucks. The Daneros Mine annual PM_{10} from underground sources was projected to total 1.3 tons per year and annual NO_x was projected to total 48.7 tons per year. By using the scaling factor of 3.6 as calculated by the differential in tonnages from Daneros Mine (72,000 TPY) and the Proposed Action (255,500 TPY), it is estimated that for the Velvet-Wood Mine the annual PM10 from underground sources is projected to total 4.7 tons per year and annual NOx is projected to total 175.3 tons per year.

UDAQ has established emissions thresholds (UAC R307-410-4) above which air dispersion modeling is required for a new or modified stationary emission source to demonstrate that emissions will not cause exceedances of national ambient air quality standards. Emissions below the thresholds are considered de minimis and would not have an adverse impact to air quality. The quantity of criteria pollutant emissions from Velvet-Wood Mine sources under the maximum ore production case (255,500 tons per year) is compared to these thresholds in Table 14. The maximum annual emissions rates for stationary sources are below the thresholds in R307-410-4 for all criteria pollutants, indicating that emissions are de minimis and would not pose an adverse impact to air quality.

Mobile source emissions associated with the Proposed Action include those from on-road and off-road vehicles such as haul trucks, bulldozers, loaders, service vehicles, and employee transportation. Unlike stationary sources, mobile emissions are not confined to a single point of

release. Instead, they are distributed spatially across the mining area and occur intermittently throughout the operational day and are therefore inherently dispersed in both space and time. This dispersion contributed to rapid dilution in the ambient atmosphere, reducing the potential for localized concentration hotspots and NAAQS exceedances. While the aggregate emissions from mobile sources may appear substantial when compared numerically to stationary sources, they are not directly comparable due to their distributed and transient nature.

Table 14. Proposed Project Emissions Comparison to UDAQ Modeling Thresholds.

Pollutant	Modeling Threshold for Stationary Sources	Velvet-Wood Project Stationary Source Emissions	Above Modeling Threshold
SO_2	40	<0.01	No
NOx*	40	3.15	No
PM_{10}*	5 fugitive / 15 non-fugitive	13.76	No
C0	100	1.81	No
Lead	0.6	<0.01	No
$PM_{2.5}$[1]	10	13.76 (2.75)	Yes (No)

* Modeling required by UDAQ per Utah Administrative Code R307-410-4.

[1]$PM_{2.5}$ emissions estimate listed in parenthesis using 0.2 particle size fraction as recommended by AP-42 supporting documentation. Based on this estimate, the $PM_{2.5}$ modeling threshold is not exceeded. (EPA, 1998)

Particulate matter is the main source of haze that reduces visibility. Some dust is unavoidable from motor vehicle travel over unpaved roads. Energy Fuels would employ control measures and operating procedures to minimize fugitive particulate emissions into the atmosphere, as specified by Utah Administrative Code (UAC) R307-205-7 and as required by UDAQ approval order (No. DAQE-AN141930004-23). The UDAQ approval order limits visible emissions from haul road and mobile equipment fugitive dust within the Velvet-Wood to 20% opacity, limits vehicle speed to 15 mph, and requires all regularly travelled unpaved roads or other unpaved areas to be water sprayed and/or chemically treated to control fugitive dust. Additionally, visible emissions from the underground mine exhaust at the surface are a concern and are restricted to not exceed 20% opacity, in accordance with UAC R307-205-4.

The BLM is requiring a Fugitive Dust Control Plan from the proponent that will specify procedures for reducing fugitive dust emissions resulting from mining sources on and off site. The Fugitive Dust Control Plan should include information about reducing dust emissions from mining, processing (i.e., crushing), and ore transport activities, and details the methods that would be employed to meet UDAQ's regulations. Water or other dust suppressants (e.g., magnesium chloride) would be applied to the roads, as needed, to bind soil particles and lessen the demand for water application. Implementation of the Fugitive Dust Control Plan would help control PM_{10} to protect human health and minimize impacts on visibility in the region.

EPA's Modeled Emission Rates for Precursors (MERPs) methodology is used as a screening procedure to estimate potential AQRV (NAAQS, visibility, and deposition) impacts at nearby Class I areas. The Velvet-Wood Mine is within 31 miles (50 km) of Canyonlands National Park and requires a MERPs analysis. Based on emissions inputs from the Approval Order from UDAQ from the Proposed Action, the MERPs screening shows no impacts to ozone concentrations, deposition of nitrogen and sulfur, or to visibility degradation at the Class I areas.

UAC R307-410-5 requires that HAP emissions be assessed and reviewed in an air permit application and requires an emission threshold value (ETV) be calculated for each emitted HAP to determine if dispersion modeling is required. ETVs were calculated for each HAP to be emitted from the Velvet-Wood Mine and were compared to the estimated HAP emissions. No HAP emissions exceeded the associated ETV. As a result, HAP emissions are considered de minimis and no further analysis is necessary.

Radon levels are monitored to ensure worker exposure limits set by the Mine Safety and Health Administration (MSHA) are not exceeded, and public exposure is controlled and verified through monitoring the mine exhaust according to federal regulations (40 CFR, Part 63, Subpart B) which limit emissions to ensure the nearest member of the public does not receive an annual dose exceeding 10 millirem. As a result of radon's propensity to dissipate very quickly in open air, the amount of radon gas at areas accessible to the public is very small and does not pose a health risk (International Commission on Radiological Protection, 2018). This would be verified by monitoring of the Mine exhaust in accordance with 40 CFR, Part 63, Subpart B. Therefore, no effects (or immeasurable effects) to air quality from radon would occur at greater distances, such as at the nearest residence to the mine, or along the haul route between the Mine and the White Mesa Mill. Annual radon monitoring and recordkeeping are required due to the planned production rate, and modeled results are reported annually to verify compliance with the public dose standard.

As with radon gas vented to the surface from the underground mine, NORM emission at the ore stockpile and waste rock piles would dissipate very quickly in open air and would not be an air quality concern. Project design features to further reduce NORM, including radon, exposure levels include concurrent reclamation of portions of the site, minimal on-site stockpiling of ore, and restricting access to the public during mining operations.

3.3.3.2.6 Indirect Impacts from Milling Operations

Compliance with the UDAQ approval orders at the mine and milling locations would ensure compliance with ambient air quality standards. The amount of criteria pollutant emissions that could be attributed to the processing of Velvet-Wood Mine ore would equal the same percentage of total mill feed material as noted above and, therefore, would not cause or contribute to a violation of the NAAQS.

The United States Geological Survey (USGS) prepared Scientific Investigations Report 2011-5231, entitled "Assessment of Potential Migration of Radionuclides and Trace Elements from the White Mesa Uranium Mill to the Ute Mountain Ute Reservation and Surrounding Areas, Southeastern Utah" (USGS, 2011) to investigate windblown dust at the White Mesa Mill. The USGS report identified wind-blown contaminants originating from the vicinity of the White Mesa Mill. The results of the USGS study indicate that contamination is limited.

3.3.3.2.7 Summary of Air Quality Impacts

The mine plan of operations includes a number of design features and control measures to mitigate potential impacts to air quality. These design features and control measures include the use of best available control technology, low-sulfur diesel fuel, and a fugitive dust control plan to achieve a reduction in fugitive dust and related emissions. With adherence to these design features, operation of the Velvet-Wood Mine would not result in exceedances of air quality standards or radiological standards (established by EPA, MSHA, and UDAQ). Emission estimates show that the Velvet-Wood Mine would be a minor emissions source of criteria and hazardous air pollutants as defined by the CAA and would have a de minimis effect on air quality. The MERPS screening methods indicate that Class I AQRV analyses are not required as any air quality-related impacts would be minor. Processing of ore at the local mills would have no appreciable indirect impacts to air quality beyond those that are already regulated and would not result in a violation of air quality standards.

3.4. Issue 3: How would the Proposed Action impact surface and groundwater resources?

3.4.1. Methodology and Assumptions

The impact analysis area for surface and groundwater resources is the combined area of two watersheds, the East Canyon – Hatch Wash Watershed and Summit Canyon- Dolores River Watershed, in which the Proposed Action is located. Indicators for surface and groundwater resources include water quality and water quantity. Water quality standards are set by the UDWQ. Water quantity is managed by the State of Utah Division of Water Rights.

3.4.2. Affected Environment

Watersheds: The project area spans two Subbasins as defined by the USGS. The western portion of the project area is located within the East Canyon – Hatch Wash Watershed (HUC 1403000505), which is nested in the Upper Colorado- Kane Springs Subbasin (USGS HUC 14030005). The eastern portion of the project area is located within the Summit Canyon- Dolores River Watershed (HUC 1403000207), which is nested within Upper Dolores Subbasin (HUC 14030002). The Velvet Mine portion of the proposal is mainly within the East Canyon- Hatch Wash Watershed while the Wood Mine portion of the proposal is mainly within the Summit Canyon- Dolores River Watershed.

Surface Water: There are no perennial or intermittent streams within or near the project area. Water courses flow to the east and to the west of the project area, flowing only during and after precipitation events including rain and snow melt. Dry Wash and tributaries drain to the west within the East Canyon- Hatch Wash Watershed. McIntyre Wash and tributaries drain to the east within the Summit Canyon- Dolores River Watershed.

Huntley Spring is located in T31S R26E sec 1 NE, approximately 0.75 miles north of the project area. This site no longer has surface flows and does not support any groundwater dependent vegetation.

Two small seeps are located less than 0.5 miles northwest of the project area (T31S R25E sec 33 SE), fed by water from the N Aquifer. These seeps support hanging garden systems with no water

flows leaving the hanging gardens. These sites were documented by the applicant, with photos included in the proposed Plan, Attachment B- Baseline Wildlife, Vegetation and Soils Survey.

There are several small springs in Dry Wash, located within the project area (T31S R25E sec 3), which are fed by water from the N Aquifer. These seeps have minimal surface flow and do not have surface flow year-round but do support groundwater dependent vegetation. These sites were documented by BLM staff in August 2024.

There may be other small seeps or springs in the area that have not been documented to date.

Groundwater: There are several aquifer systems in the area where the project area is located. The D Aquifer and N Aquifer is at or near the surface in the project area and the P Aquifer can be found at depth in the project area.

The D Aquifer consists of the Burro Canyon Sandstone and the Dakota Sandstone. These formations can be found in the western portion of the project area at the higher elevations. This aquifer is a shallow perched aquifer with low flows and lower quality Class III water as defined by the State of Utah. Class III ground waters exhibit one or both of the following characteristics: Total Dissolved Solids (TDS) greater than 3000 mg/l and less than 10,000 mg/l, or one or more contaminants that exceed the ground water quality standards and therefore is considered lower quality water. There are no known springs in or near the project area that are sourced in the D Aquifer.

The N Aquifer consists of the Wingate Sandstone, the Kayenta Formation, the Navajo Sandstone, the Carmel Formation and the Entrada Sandstone. The Wingate Sandstone, the Kayenta Formation and the Navajo Sandstone outcrop in the western and southwestern portions of the project area. Water from the N Aquifer supports multiple small springs and seeps in and near the project area.

The P Aquifer consists of permeable beds in the undifferentiated Cutler Group, permeable beds in the Rico Formation and the upper two thirds of the Honaker Trail Formation of the Hermosa Group. In the project area, the aquifer also includes the Moss Back member of the Chinle Formation which is stratigraphically located immediately above the Cutler Group and in the lower part of the Chinle Formation. This Aquifer is present at depth in the project area. The Moss Back member is both water bearing and ore bearing in the project area. The P Aquifer appears to be confined at the upper level, separated from the N Aquifer by the impermeable mudstone layers in the Chinle Formation above. The P Aquifer is confined at the lower level by the impermeable layers in the underlying Cutler Group.

The Velvet Mine has been inactive since 1984. Since operations ceased, groundwater has filled the mine workings with water from the P Aquifer, specifically the Moss Back Member of the Chinle Formation. This zone is mineralized and has poor water quality. Since the mine is at depth, no groundwater is flowing from the mine workings at the surface.

Two groundwater monitoring wells were drilled in the project area in 2008, CL-34T08A (T31S R25E sec 2 SWNW) and V-06-08A (T31S R25E sec 2 SWNE). These wells encountered a small amount of water at the contact of the Wingate Sandstone and the underlying Chinle Formation, within the N Aquifer. This zone was quickly depleted during drilling.

Water was not encountered during drilling again until the Moss Back member of the Chinle Formation and the uppermost sandstone of the Cutler Group was reached. This zone is within the

P Aquifer. Well # CL-34T08A documented a water zone at 6,254 feet above sea level (asl), and the well was completed with a screened interval at 736 feet to 836 feet below ground level. Well #V-06-08A documented a water zone at 6,215 feet asl, and the well was completed with a screened interval at 880-980' below ground level.

Groundwater monitoring is currently conducted semi-quarterly at both wells, involving water quality sampling and water level measurements, and is planned to continue for the life of the mine (Warren, 2025).

Due to local structural features including the Lisbon Valley Graben Structure and associated faults immediately northeast of the project area, the hydrologic gradient is expected to be towards the southwest. The overall dip of geologic formations at this location is towards the southwest and therefore groundwater movement can be assumed to follow this direction. The Lisbon Valley fault, located to the northeast and east of the project area, acts as a barrier to groundwater (BLM, Lisbon Valley Copper Project EIS, 1997) so groundwater is not expected to flow across the fault and move eastward.

Water quality sampling of water from well #CL-34T-08A exceeded Utah groundwater quality standards for uranium, gross alpha and combined radium-226 and radium-228 and are representative of groundwater quality in and around the mineralized zones (proposed Plan, Attachment C, page 14). Water from this well would be classified as Class III water by the UDWQ based on this information.

Water quality sampling of water from well #V-06-08A did not exceed any Utah groundwater quality standards.

Approximately 50% of water from dewatering activities would be used as non- potable water for an onsite toilet and shower facility. This water would be used after passing through the pilot water treatment system, piped or trucked from the treatment system to the toilet and shower facility.

Water Rights: Anfield Resources Holding Group has an approved water right application for 40.5 ac-ft/ year over a 10-year period (#05-4317, approved on Aug 16, 2024). This water right covers the proposed beneficial use for mining operations of 20.5 ac-ft/ year. The water right application describes the initial dewatering actions involving 129 ac-ft of treated water released to Dry Wash. This action does not require a water right as it is not a consumptive use.

The approval of water right 05-4317 includes requirements for the applicant to "install and maintain measuring and totalizing recording devices to meter all water diverted from all sources pertaining to this application" and to "annually report this data to the Division of Water Rights Water Use Program" (Order of the State Engineer, Aug 16, 2024).

UPDES: Anfield Resources Holding Corp applied for a UPDES permit from the UDWQ. This application was approved and the permit became effective on Dec 1, 2024. However, the permit is currently inactive; the operator would be required to submit construction plans to UDWQ 60 days prior to discharge commencement. The permit expires on Nov 20, 2029.

The permit authorizes discharge of treated water from a single point at the existing Velvet Mine into Dry Wash. This point is immediately downstream of the proposed pilot water treatment facility. Discharges shall be limited and monitored by Anfield Resources Holding Corp as

described in the UPDES permit. Both water quality and water flow data would be collected and reported to the UDWQ.

The UPDES includes requirements for monitoring and reporting. Parameters that would be monitored after treatment include Total Flow, Total Suspended Solids, Total Uranium, Total Radium 226, Dissolved Radium 226, Total Zinc, Total Dissolved Solids, Oil and Grease, pH and temperature.

The proposed Plan includes a water treatment facility for the Wood Mine area, potentially involving a second point of discharge. The existing UPDES permit would need to be amended if the applicant determines that a second discharge system would be constructed.

3.4.2.1. *Reasonably Foreseeable Trends and Planned Actions*

There are no other reasonably foreseeable trends and planned actions related to surface water quality and/ or quantity in the East Canyon – Hatch Wash Watershed where surface water quantity would be increased from this proposal.

There are no other reasonably foreseeable trends and planned actions in either the East Canyon – Hatch Wash Watershed or the Summit Canyon- Dolores River Watershed related to groundwater resources in the Moss Back Member of the Chinle Formation where groundwater resources would be impacted from this proposal. The Lisbon Valley Mine, located within the Summit Canyon- Dolores River Watershed, involves groundwater use in the N Aquifer and D Aquifer, not the Moss Back Member of the Chinle which is part of the P Aquifer. The Lightning Draw APD proposal involves an oil and gas well within the East Canyon- Hatch Wash Watershed to the west of this proposal and involves use of groundwater from a different watershed in the Monticello area.

3.4.3. Environmental Impacts

3.4.3.1. *Impacts of the Alternative A – No Action Alternative*

Impacts to surface and groundwater resources from the No Action Alternative include minor impacts to springs, seeps and groundwater resources during drought conditions. Dry Wash would continue to be an ephemeral stream, with flows only during and after precipitation events. Water flows at springs and seeps in the area would be slightly reduced during drought conditions. Groundwater resources would remain the same with some reduced recharge during drought conditions.

3.4.3.2. *Impacts of the Alternative B – Proposed Action*

Surface water: Surface water resources would be impacted by the Proposed Action as water would be discharged from the existing mine into Dry Wash. This would increase the water flows in the drainage during the initial dewatering efforts by 129 ac-ft over 4-6 months at a rate of 250 gpm. Water would flow from the discharge point down the wash, providing water for wildlife and riparian resources. As discharge is contributed to the ephemeral drainage, the alluvial soils would become saturated and water flows would extend farther downstream before surface flows would end.

After the initial dewatering efforts, long-term dewatering of the mine is expected to be 15 – 20 gpm (0.033 to 0.044 cubic feet per second) for the life of the mine. This is based on the expected discharge from the P Aquifer into the mine workings during operations. Approximately 50% of this water would be used for operational purposes leaving a discharge to the ephemeral channel of 7-10 gpm. This would decrease the quantity of surface flow contributed to Dry Wash and reduce the lateral extent of surface water from the initial dewatering phase, but would continue to have sustained surface flows in Dry Wash for a short distance for the life of the mine. Once the mining operations are discontinued, the contribution to surface flow would cease and Dry Wash would go back to being ephemeral in nature.

Other potential impacts to surface water quality such as increased sediment loading to stormwater runoff, due to accelerated erosion, are minimized by the use of temporary diversion structures, undisturbed buffer areas, stormwater catchment ponds, earthen berms and/ or sediment control fences downslope from disturbed areas to minimize the volume of sediment leaving the project area during and after precipitation or snowmelt events.

Construction and maintenance of earthen berms around the fuel storage and containment areas would also minimize any potential impacts to surface water quality by containing any spills, capturing the full volume of fuel storage and an additional 10% volume to account for potential precipitation contributions. These actions are described on page 22-23 of the proposed Plan.

Groundwater from the existing mine workings would be pumped to the surface and discharged in Dry Wash after being treated in the pilot water treatment facility. Once the existing mine workings are pumped out and mining operations begin, groundwater would be pumped out to keep the mine dry. It is expected that water would be pumped out at a rate of 15 - 20 gpm for the life of the mine. This water would also be treated in the pilot water treatment facility. After the initial dewatering process, approximately 50% of the treated water would be used for operation purposes including a toilet and shower facility and dust control. Per the UPDES permit, discharge of groundwater from the pilot water treatment facility is required to meet Utah water quality standards. The proposal includes an additional water treatment facility for the Wood Mine Area and discharge to the watershed may be increased. Potential impacts from this action would need to be addressed by a new UPDES permit. These impacts would also be addressed with BLM required design features- Sec 2.2.11.4.

The proposal includes collecting additional hydrologic information from existing groundwater monitoring wells and discharge monitoring. This information would be used to finalize the water treatment methods and to apply for a Ground Water Discharge Permit from the State of Utah. This information would minimize potential impacts to surface water quality in Dry Wash.

Surface water quality conditions are not expected to be impacted by the Proposed Action.

Groundwater: Groundwater resources would be impacted by the Proposed Action as water is pumped from the mine and removed from the aquifer. The proposed pumping of water from the mine would lower the elevation of groundwater in the immediate area and surrounding areas. The amount and aerial extent of groundwater level change is influenced by the porosity and permeability of the aquifer which can vary regionally and locally due to nearby faults and fractures. Lowering of groundwater levels, referred to as drawdown, is also influenced by the rate and amount of recharge in this area. This information is often obtained by pump tests on water wells

but no pump tests or hydrologic characterization has been conducted in this area. Due to the lack of hydrologic data, the amount and extent of drawdown from this proposal cannot be estimated at this time. There are no other groundwater wells in the immediate area so these impacts would not affect human uses.

Springs and seeps in the area are not expected to be impacted by the Proposed Action as the water sources for these sites are sourced in the N Aquifer which is not hydrologically connected to the P Aquifer where water is being pumped from.

Any potential impacts to groundwater from the septic system and associated leach field would be addressed by requirements in the UPDES permit. The permit states "Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of The Water Quality Act of 1987, the Permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at 40 CFR 403, the State Pretreatment Requirements at UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters." No impacts to the water quality of groundwater resources are expected from the septic tank and leach field.

3.5. Issue 4: How would impacts to groundwater hydrology (water depletion) impact Colorado River threatened and endangered fish?

3.5.1. Methodology and Assumptions

The analysis area for potential impacts to Colorado River threatened and endangered fish is the Upper Colorado River Basin. This area was chosen because that is the connected habitat for Colorado River fish and is the area for which the Service considers water depletion.

3.5.2. Affected Environment

Per GIS review, the Proposed Action ground disturbance and mine workings are not in critical habitat for Colorado pikeminnow (*Ptychocheilus lucius*) [Endangered], razorback sucker (*Xyrauchen texanus*) [Endangered], bonytail chub (*Gila elegans*) [Endangered], and humpback chub (*Gila cypha*) [Threatened], referred to as the Colorado River fish. However, review of the U.S. Fish and Wildlife Service's Information for Planning and Consulting (IPaC) identifies aquifer depletion impacts to the Colorado River fish in the project area. The water for the proposed activities would be sourced from an underground aquifer within the Colorado River watershed that is believed to discharge into the Colorado River System above Lake Powell and ultimately the Colorado River, which is critical habitat for Colorado River fish. The following subsections describe the status of the species and critical habitat.

Common to all fish species

The primary constituent elements of the critical habitat include water, physical habitat, and the biological environment (59 FR 13374). Water includes the quantity and quality of water delivered to critical habitat in accordance with the hydrologic regime requirements for the species. The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. This includes oxbows, backwaters, and other areas in the 100-year floodplain that provide access

to spawning, nursery, feeding, and rearing habitats when flooded. The biological environment includes food supply, predation, and competition from other species.

Colorado Pikeminnow (Ptychocheilus lucius)

The Colorado pikeminnow is the largest member of the family Cyprinidae native to North America and is endemic to warmwater reaches of large rivers in the Colorado River basin making long migrations to spawn. It was once widespread and abundant in warm-water rivers and tributaries from Wyoming, Utah, New Mexico, and Colorado downstream to Arizona, Nevada, and California but wild populations of pikeminnow now occur only in the Upper Colorado River Basin and the species occupies only 25 percent of its historic range-wide habitat (USFWS 2002a). Historically, it was the apex predator within these reaches and is believed to be almost entirely piscivorous as an adult. The Colorado pikeminnow (*Ptychocheilus lucius*) was listed by the Service in the original List of Endangered Species published in 1967. Full protection under the ESA of 1973 came upon its listing in the Federal Register on January 4, 1974. The Service designated six reaches of the Colorado River System as critical habitat for the Colorado pikeminnow on March 21, 1994 (59 FR 13374). Designated critical habitat makes up about 29 percent of the species' historic range and occurs exclusively in the Upper Colorado River Basin. For more details on habitat, threats, and trends see the Recovery Plan for Colorado Pikeminnow (*Ptychocheilus lucius*) (USFWS 2023).

Razorback Sucker (Xyrauchen texanus)

The largest native sucker to the western United States, the razorback sucker is endemic to the Colorado River Basin (Sigler and Sigler 1996; USFWS 2002b). The species feeds primarily on algae, aquatic insects, and other available aquatic macroinvertebrates using their ventral mouths and fleshy lips (Sigler and Sigler 1996). Historically, the razorback sucker occupied the mainstem Colorado River and many of its tributaries from northern Mexico through Arizona and Utah into Wyoming, Colorado, and New Mexico (USFWS 2002b). There are 15 reaches of the Colorado River system designated as critical habitat for the razorback sucker on March 21, 1994 (59 FR 13374). Designated critical habitat makes up about 49 percent of the species' original range and occurs in both the Upper and Lower Colorado River Basins. In the Upper Basin, critical habitat is designated for portions of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan Rivers. For more details on habitat, threats, and trends see the Species Status Assessment Report for the Razorback Sucker (*Xyrauchen texanus*) (USFWS 2018a).

Humpback Chub (Gila cypha)

The humpback chub is a medium-sized freshwater fish of the minnow family endemic to the Colorado River basin. The Humpback Chub inhabits disjunct canyon areas characterized by rocky habitat and swift currents (USFWS 2018b). Historic distribution reports indicate that the species inhabited portions of the Colorado, Green, and Yampa rivers USFWS 2018b). The species is now found as five extant populations, including four upstream of Lake Powell (Black Rocks, Westwater Canyon, Desolation/Gray canyons, and Cataract Canyon) and one downstream of Lake Powell (Grand Canyon) (USFWS 2002c, USFWS 2018b). USFWS designated seven reaches of the Colorado River System as critical habitat for the humpback chub on March 21, 1994 (59 FR 13374). Designated critical habitat makes up about 28 percent of the species' original range and occurs in both the Upper and Lower Colorado River Basins. Recently the humpback chub was downlisted from Endangered to Threatened in 2021. For more details on habitat, threats, and trends see the Species Status Assessment Report for the Humpback Chub (*Gila cypha*) (USFWS 2018b).

Bonytail (Gila elegans)

The bonytail is a medium-sized freshwater fish in the minnow family, endemic to the warm-water habitats of the Colorado River Basin. Little is known about the specific food and habitat of the bonytail because the species was extirpated from most of its historic range prior to extensive fishery surveys, but it is considered adapted to mainstem rivers, residing in pools and eddies, while eating terrestrial and aquatic insects (USFWS 2002d). Bonytail were once widespread in the large rivers of the Colorado River Basin (USFWS 2002d) but are now the rarest of the four Colorado River fish. The species experienced a dramatic decline starting in about 1950, following construction of mainstem dams, introduction of nonnative fishes, poor land-use practices, and degraded water quality (USFWS 2002d). The USFWS designated seven reaches of the Colorado River as critical habitat for the bonytail on March 21, 1994 (59 FR 13374). Portions of the Green, Yampa, and Colorado Rivers are designated as critical habitat, representing about 14 percent of the species' historic range. For more details on habitat, threats, and trends see the Bonytail (*Gila elegans*) Recovery Goals Amendment and Supplement to the Bonytail Chub Recovery Plan (USFWS 2002d)

3.5.2.1. *Reasonably Foreseeable Trends and Planned Actions*

The analysis area for potential impacts to Colorado River threatened and endangered fish is the Upper Colorado River Basin. This area was chosen because that is the connected habitat for Colorado River fish and is the area for which the Service considers water depletion. Past, present, and reasonably foreseeable actions in the analysis area that may affect fish, or their critical habitats were identified in the affected environment. Foreseeable trends and planned actions include the decline in abundance or range of the Colorado River fish, declines in quality of their habitats, loss of individuals, and water depletions through agriculture, aquaculture, municipal, and mining uses. These effects have been attributed to various human activities on federal, state, and private lands, such as human population expansion and associated infrastructure development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; and introductions of non-native plant, wildlife, or fish or other aquatic species, which can alter native habitats or out-compete or prey upon native species.

3.5.3. Environmental Impacts

3.5.3.1. *Impacts of the Alternative A – No Action Alternative*

Under the No Action alternative there would be no impacts to Colorado River fish because no water depletion from the aquifer to develop the proposed infrastructure and ore bed would occur.

3.5.3.2. *Impacts of the Alternative B – Proposed Action*

The proposed mine project does not occur within critical TE fish habitat or the ½ mile buffer as identified by USFWS Information for Planning and Conservation (IPaC) data. The nearest critical habitat, for any of the fish species, is located approximately 35 linear miles to the west within the Colorado River. The Dolores River located 12 miles east of the project area is a tributary to the Colorado River and known to be occupied by TE fish.

The primary impact from the proposed project is additional water depletion outside the 1988 programmatic recovery program review and increasing water depletions from the aquifers that may drain into the Colorado River or tributaries. The water for the proposed activities from the Velvet Mine would be sourced from an underground aquifer within the Big Indian Wash sub-watershed (140300050505) within the Upper Colorado River & Kane Springs sub-basin (14030005) and the Wood Mine be sourced from the Headwaters of McIntyre Canyon sub-watershed (140300020703) within the Upper Dolores River sub-basin (14030002) and are believed to discharge into the Colorado River System above Lake Powell and ultimately the Colorado River, which is critical habitat for Colorado River TE Fish. The water right associated with the Proposed Action is water right #05-4137 which replaced the expired water right #05-3400 and would not be certified, perfected, and proofed until after the use is documented. This is after the 1988 programmatic review, resulting in it not being included in the programmatic Section 7 consultation for water depletions. This would be classified as a new water depletion.

The Plan includes a Request to Appropriate water, and it indicates that the total dewatering within the Velvet mine, over the 10-year life of the project, is 534 ac-ft. Depletion associated with the Wood Mine is not included in this or the following calculation of water depletion and a new water right may be required if fully developed. Initial dewatering of the Velvet Mine to make it accessible is 129 ac-ft. There would be no water consumption during the initial Velvet Mine dewatering as all waters would be treated in a closed system and released to the adjacent ephemeral drainage with no evaporative losses. Subsequent annual dewatering to maintain access for mining is up to 40.5 ac-ft/yr. All the initial water diverted from the flooded mine workings (129 ac-ft) and approximately half of the long-term pumping rate (20.5 ac-ft/yr) would be returned to the adjacent ephemeral drainage. This is not considered depletion.

Long-term water depletion would be due to use of water in the mining process within the mine. This is estimated to be approximately half of the total water diverted over the long-term on an annual basis, or approximately 20 ac-ft/yr or 200 ac-ft over the 10-year mine life. As mentioned, water right #05-4137 permits up to 40.5 ac-ft/yr leaving an additional 20.5 ac-ft/yr that could be utilized for operations in the Velvet or Wood Mines using approved infrastructure. Water discharged into the ephemeral stream would be treated to meet state water quality standards associated with the Utah Pollutant Discharge Elimination System Permit (Plan Attachment J - UPDES).

Water depletions can reduce or eliminate fluvial and geomorphic processes within the Colorado River that create and maintain physical habitat (areas inhabited or potentially habitable to the Colorado River fish for spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment. Water depletions can create effects of reduced flow magnitude, habitat alterations and degradations, and increased fragmentation (Pennock et al. 2022). Food supply, predation, and competition are elements of the biological environment that can be altered by changes in habitat and flow availability. Food supply is a function of nutrient supply and productivity, which could be limited by the reduction of flows as a result of water depletions. The proposed depletion would be a contributing factor reducing movement of sediment and nutrients through the system that would be needed for food production for invertebrates and ultimately the four Colorado River fish. Predation and competition from nonnative fish species are additional contributing factor in the decline of the four Colorado River fish. The proposed water depletion would contribute to alterations in flow regime that favor

nonnative fishes and potentially increase the presence and predation rate from nonnative fish species. The 20 ac-ft, and up to 40.5 ac-ft, of water depletion for the project would contribute to the decline of important habitat needed for Colorado River fish but is less than the 100 ac-ft for which depletion fees are required (see discussion below).

Water quality issues can increase as water availability is reduced. Concentrations of heavy metals, selenium, salts, pesticides, and other contaminants can increase from water depletions (Hinck et al. 2007). Reduction in water availability leads to lack of dilution of the previously mention concentrations and can increase the bioaccumulation of these contaminates in the food chain, with negative effects for endangered fishes, particularly long-lived predatory Colorado pikeminnow (Hinck et al. 2007). Selenium can become more concentrated in depleted waters as it concentrates in low velocity areas that are important for Colorado pikeminnow and razorback suckers (Hamilton et al. 2015).

The USFWS considers water depletions from the Upper Colorado River Basin as impacts that are likely to adversely affect the federally endangered Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*) and their designated critical habitat. Under the 1988 Recovery Program, any water depletions from tributary waters within the Colorado River drainage are considered to "*jeopardize the continued existence"* of these fish.

To address depletion and other impacts on the Colorado River fish and their critical habitats, a Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) was initiated on January 22, 1988. Under the 1988 Recovery Program, any water depletions from tributary waters within the Colorado River drainage are considered to "jeopardize the continued existence" of these fish. To further define and clarify the recovery processes in the Recovery Program, an Endangered Species Act Section 7 Agreement was implemented on October 15, 1993, by Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (RIPRAP). The RIPRAP identifies actions currently required to recover the endangered fish species in the most expeditious manner. Included in the RIPRAP was the requirement that a one-time depletion fee would be paid to help support the Recovery Program for all non-historic water depletions (i.e., occurring after January 1988) from the Upper Colorado River Basin. The depletion fees ($27.22 per acre-foot as of October 2024) were intended to be the reasonable and prudent alternative to avoid jeopardy to the endangered fishes by depletions to the Upper Colorado River Basin. On July 8, 1997, the Service issued an intra-Service biological opinion determining that the depletion fee for depletions of 100 acre-feet or less annually are no longer required. This is because the Recovery Program has made sufficient progress and is considered to be the reasonable and prudent alternative that avoids the likelihood of jeopardy to the endangered fishes and avoids destruction or adverse modification of their critical habitat caused by depletions of 100 acre-feet of less. This project would not be required to pay a depletion fee.

CHAPTER 4. PUBLIC INVOLVEMENT, CONSULTATION AND COORDINATION

4.1. Public Involvement

On April 23, 2025, CEQ authorized the use of alternative arrangements to comply with the National Environmental Policy Act (NEPA) before taking urgently needed actions (43 CFR

46.150) for projects that respond to the national energy emergency (EO 14156). Under the Alternative Arrangements for NEPA Compliance, the Responsible Official is not required to seek public comment prior to finalizing the environmental assessment. The BLM published the project on ePlanning on May 12, 2025.

4.2. Consultation and Coordination

The President issued EO14156 Declaring a National Energy Emergency on January 20, 2025. Due to the national energy emergency, alternative procedures for Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act were requested by Anfield and approved by the Acting Assistant Secretary - Land and Minerals Management.

For Section 7 consultation, the BLM has coordinated with the U.S. Fish and Wildlife Service (FWS) in accordance with 50 CFR 402.05(a). BLM sent a memo to FWS on May 13, 2025, to initiate informal, expedited consultation procedures. FWS responded on May 13, 2025, that the BLM has applied the appropriate conservation measures to minimize the effects on ESA-listed species.

For compliance with 54 USC 306108, consistent with 36 CFR § 800.12(b)(2), the BLM followed the process for undertakings responding to an emergency declaration when there is no formal emergency procedure or applicable programmatic agreement. Letters were sent to the ACHP, the appropriate State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer, and Tribal Nations on May 13, 2025. Comments were invited within seven days of the notice. The BLM also met virtually or in-person with the Hopi Tribe, Pueblo of Zuni, staff from the Navajo Nation Heritage and Historic Preservation Department, staff from the Pueblo of San Felipe, and staff from the Ute Mountain Ute Tribal Historic Preservation Office (THPO). The BLM received five responses in writing, three from Tribal Nations, one from the Utah SHPO, and one from the ACHP.

At the in-person or virtual meetings the Tribal Nations expressed similar concerns with the emergency procedures, water impacts, transportation, and uranium contamination. The Ute Mountain Ute THPO in their letter expressed concern with the project and potential effects from uranium transportation and water issues. The Pueblo of San Felipe in their letter expressed concerns with the emergency procedures process, uranium transport, water contamination, effects to cultural resources important to the Tribe near the mine and with transport through Bears Ears National Monument. The Pueblo of Pojoaque Tribal Historic Preservation Officer expressed concerns with the emergency procedures process.

The Utah SHPO concurred with BLM’s determination of effect for the undertaking. The ACHP found BLM's proposed measures for minimization and avoidance to be reasonable. The ACHP also advised the BLM to follow 36 CFR 800.13(b)(3) if there are any post-review discoveries identified during monitoring of the implementation of the proposed action.

CHAPTER 5. LIST OF PREPARERS

Name	Title	Area of Responsibility
Nate Huber	Natural Resource Specialist	Air Quality, Wastes (hazardous or solid)
Jeremy Martin	Outdoor Recreation Planner	Areas of Critical Environmental Concern; Recreation
Misti Haines	Outdoor Recreation Planner	BLM Natural Areas; Lands with Wilderness Characteristics; Wilderness/WSA; Visual Resources; Wild and Scenic Rivers
Audrey Pefferman	Archaeologist	Cultural Resources
Yoni Argov	Wildlife Biologist	Fish and Wildlife Excluding USFW Designated Species; Migratory Birds; Threatened, Endangered or Candidate Animal Species
Jed Carling	Range Conservationist	Floodplains, Livestock Grazing, Rangeland Health Standards; Wetlands/Riparian Zones
Lydia Zowada	Natural Resource Specialist (Fuels)	Fuels/Fire Management; Woodland/Forestry
Norbert Norton	Realty Specialist	Lands/Access
Emily Lessner	Paleontologist	Paleontology
Tina Marian	Assistant Field Manager for Resources	Minerals; Invasive Species/Noxious Weeds; Soils
Christopher Quirin	Botanist	Threatened, Endangered or Candidate Plant Species; Vegetation Excluding USFW Designated Species
Gabe Bissonnette	Aquatic Ecologist	Fisheries
Emilee Helton	Planning and Environmental Specialist	Socioeconomics; NEPA Coordination and Review
Catherine Chachere	Physical Scientist	Air Quality; Greenhouse Gases
Jill Stephenson	Planning and Environmental Coordinator	NEPA Coordination and Review
Jordan Nesbitt	Wildland Firefighter	Fuels/Fire Management
Jared Lundell	Assistant Field Manager for Planning and Cultural	Native American Concerns
Ann Marie Aubry	Hydrologist	Water Resources/Quality

REFERENCES

Anfield Energy Inc. (2025, April). Velvet-Wood Mine Plan of Operations.

Beahm, D. L., Hutson, H. H., Warren, C. D., & McNulty, T. (2023). The Shootaring Canyon Mill and Velvet-Wood and Slick Rock Uranium Projects, Preliminary Economic Assessment National Instrument 43-101. Pg. 1-143.

Bureau of Land Management. 2017. Daneros Mine Plan of Operations Modification Environmental Assessment. DOI-BLM-UT-Y020-2016-0001-EA

Bureau of Land Management (BLM). *2024 Air Resource Management Strategy Monitoring Report*. 18 Dec. 2024, https://eplanning.blm.gov/eplanning-ui/project/101390/570.

Bureau of Land Management (BLM). *Monticello Resource Management Plan.* 2008, https://eplanning.blm.gov/eplanning-ui/project/68097/510.

Bureau of Land Management (BLM). *Onshore Oil and Gas Operations; Federal and Indian Oil and Gas Leases; Onshore Oil and Gas Order No. 6, Hydrogen Sulfide Operations.* 22 Jan. 1991, https://www.blm.gov/sites/blm.gov/files/energy_onshoreorder6.pdf.

Casey A Pennock, Phaedra Budy, William W Macfarlane, Matthew J Breen, Justin Jimenez, John C Schmidt, Native Fish Need A Natural Flow Regime, *Fisheries*, Volume 47, Issue 3, March 2022, Pages 118–123, https://doi.org/10.1002/fsh.10703

Energy Information Administration (EIA). (2024). *2023 Domestic Uranium Production Report.* Washington, DC: U.S. Department of Energy.

Environmental Protection Agency (EPA). *2019 AirToxScreen: Assessment Results.* 9 jan. 2023, https://www.epa.gov/AirToxScreen/2019-airtoxscreen-assessment-results.

Environmental Protection Agency (EPA). *2020 National Emissions Inventory (NEI) Data*. 29 Apr. 2024, https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data.

Environmental Protection Agency (EPA). *2023 National Emissions Inventory (NEI) Documentation*. 16 Apr. 2025, https://www.epa.gov/air-emissions-inventories/2023-national-emissions-inventory-nei-documentation.

Environmental Protection Agency (EPA). *AirToxScreen Mapping Tool*. 2 Mar. 2022, https://www.epa.gov/AirToxScreen. Accessed 11 July 2022.

Environmental Protection Agency (EPA). *National Emissions Inventory*. 26 May 2023, https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei.

Environmental Protection Agency (EPA). *NAAQS Table*. 7 Feb. 2024, https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Environmental Protection Agency (EPA). *Residual Risk Report to Congress 1999*. Mar. 1999, https://www.epa.gov/fera/residual-risk-report-congress-1999.

Environmental Protection Agency (EPA). "Compilation of Air Pollutant Emission Factors." *AP-42, Fifth Edition, Volume 1, Chapter 11: Mineral Products Industry*. July 1998, http://www.epa.gov/ttn/chief/ap42/ch11/final/ch11s09.pdf

Gloyn, R. W., Krahulec, K. (2005). Uranium Potential in Utah. Salt Lake City: Utah Geological Society.

Hamilton, S. J., & Kulp, M. A. (2015). "Accumulation and effects of selenium in razorback sucker (Xyrauchen texanus) from the Colorado River basin." *Environmental Toxicology and Chemistry*, 34(3), 577-586.

International Commission on Radiological Protection (ICRP). *Summary of ICRP Recommendation on Radon.* 26 Jan. 2018, http://www.icrpaedia.org/images/f/fd/ICRPRadonSUmmary

Jo Ellen Hinck, Vicki S. Blazer, Nancy D. Denslow, Kathy R. Echols, Robert W. Gale, Carla Wieser, Tom W. May, Mark Ellersieck, James J. Coyle, Donald E. Tillitt. 2008. Chemical contaminants, health indicators, and reproductive biomarker responses in fish from rivers in the Southeastern United States, Science of The Total Environment, Volume 390, Issues 2–3, 2008, Pages 538-557

Karrech, A. 2023. Large-scale all-climate vanadium batteries. *Applied Energy*.

Ramboll. *BLM Cumulative Hazardous Air Pollutants Modeling Final Report*. 21 Dec. 2023, https://eplanning.blm.gov/eplanning-ui/project/1505069/570.

Ramboll. *BLM Western US Photochemical Air Quality Modeling for 2032.* 2023.

San Juan County. 2018. San Juan County General Plan. (2018 General Plan Update).

San Juan County. 2022. San Juan County Resource Management Plan. (As amended on August 16, 2022).

Sigler, W.F. and J.W. Sigler. 1996. Fishes of Utah; a natural history. University of Utah Press, Salt Lake City, UT.

U.S. Fish and Wildlife Service. 2002a. Colorado pikeminnow (Ptychocheilus lucius) Recovery Goals: amendment and supplement to the Colorado Squawfish Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002b. Razorback sucker (Xyrauchen texanus) Recovery Goals: amendment and supplement to the Razorback Sucker Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002c. Humpback chub (Gila cypha) Recovery Goals: amendment and supplement to the Humpback Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002d. Bonytail (Gila elegans) Recovery Goals: amendment and supplement to the Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. (2010). 2010 Colorado River small depletion biological opinion (Revised June 4, 2010).

U.S. Fish and Wildlife Service. 2018a. Species status assessment report for the razorback sucker Xyrauchen texanus. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado

U.S. Fish and Wildlife Service. 2018b. Species status assessment for the Humpback Chub (Gila cypha). U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, CO. Version 1.1.

U.S. Fish and Wildlife Service. 2023. Recovery plan for Colorado pikeminnow (Ptychocheilus lucius). September 2023. U.S. Fish and Wildlife Service, Mountain-Prairie Region, Denver, Colorado. 28 pp.

Warren, Carl (BRS Engineering). 2025, May 7. email to Tina Marian (BLM) "Re: Hydrology questions"

Western Regional Air Partnership/Western Air Quality Study (WRAP/WAQS). *United States Anthropogenic Emissions Rate of Progress*. 2021, https://views.cira.colostate.edu/tssv2/Docs/USAnthroRoP.pdf.

APPENDICES:

Appendix A: Issues Analyzed in Brief

APPENDIX A:

Issues Analyzed in Brief

The following issues are analyzed in brief because they do not relate to how the Proposed Action or alternatives respond to the purpose and need or they have no potential for significant impacts.

A.1 AIB-1 (Paleontological Resources)

How would paleontological resources be affected by proposed subsurface activity?

The area analyzed for subsurface paleontological resources includes the 147,000 cubic yards to be removed from the subsurface over the life of the mine (Anfield, 2025). Paleontological resources are defined by the Paleontological Resources Preservation Act of 2009 (PRPA) as the fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth (16 USC 470aaa[1][c]). PRPA directs the BLM to 'preserve, manage, and protect paleontological resources' (43 CFR § 49.1(a) and 49.30(b)). Collection of vertebrate and other paleontological resources is limited to those holding BLM-issued permits (43 CFR § 49.100(a)).

The Potential Fossil Yield Classification (PFYC) system is used as a tool to assess resource impacts and mitigation needs by providing estimates of the potential for paleontological resources within a geologic unit (BLM PIM 2022-009). The PFYC system is based on numeric classes of 1–5 and unknown (U). A geologic unit identified as PFYC 1 has very low likelihood of containing paleontological resources, whereas a geological unit identified as PFYC 5 is a geologic unit that has a very high likelihood to contain and predictably produce scientifically important paleontological resources. A class U assignment indicates that there is not enough information available for a formal class assignment. Until additional information is available, and a provisional or formal assignment made, these units should be considered to have paleontological potential. Areas of moderate to very high and unknown PFYC class (3-5, U) should be assessed prior to authorizing land use action.

The geologic units with high potential to contain paleontological resources (Chinle and Cutler Formations) are the targeted layers containing uranium ore below ground. These units contain over 20 million years of geologic time, numerous plant, invertebrate, and vertebrate localities, and are being studied by researchers interested in origins of modern ecosystems (Martz et al., 2014). Past mining activities from the 1970s to 1980s produced about 400,000 tons of ore from the Velvet Mine (Beahm et al., 2023) likely disturbing and damaging the associated paleontological resources. Currently, the subsurface paleontological resources are not experiencing damage or disturbance from erosion beyond natural interaction with groundwater. Their depth (800 to 1,400 feet below ground) means they are currently unavailable for collection by paleontological researchers or the public and would likely not be exposed by natural processes during the foreseeable future.

The rock proposed to be mined under the Plan is at the unconformity of the Moss Back Member of the Triassic Chinle Formation and the Permian Cutler Formation. The Chinle Formation is PFYC 5 and the Cutler Formation, PFYC 2(low potential), is known to be locally fossiliferous in this area. There are at least 600 known paleontological localities in the Chinle and Cutler

Formations in the adjacent 5,834 acres of surface exposures of these units in Lisbon Valley (Utah Geologic Survey confidential database). About 12,000 to 14,000 cubic yards of rock (Section 2.2.1.3) and associated paleontological resources would be removed along the main decline extension from the Chinle Formation; 11,000 to 28,000 cubic yards of waste rock would be removed annually during active mining from the Chinle and Cutler Formations; and 31,000 to 100,000 cubic yards of ore would be mined per year from the Chinle and Cutler Formations (Anfield, 2025), all of which with very high potential to contain paleontological resources.

Under the No Action alternative, the BLM would not authorize Anfield's Velvet-Wood Mine Plan. There would be no subsurface mining activities. Existing fossils would remain undisturbed beyond typical natural processes in the 147,000 cubic yards of rock and ore that would remain in the ground.

Under the Proposed Action, the BLM would authorize Anfield's Velvet-Wood Mine Plan to reinitiate subsurface mining activities. Existing fossils in the 147,000 cubic yards of rock and ore to be removed from the subsurface would be damaged and destroyed by the mining process.

Paleontological resources were only analyzed in brief for subsurface resources. Paleontological resource surveys of the proposed surface areas were completed May 1 and 2, 2025. Petrified wood and common invertebrate trace fossils were noted on the surface. Paleontological resources are not expected to be disturbed or damaged by the proposed surface activities because the PFYC 4 and 5 geologic units in the area are highly weathered, paleontological resources are uncommon in the Formations in these proposed areas, and much of the surface has already been disturbed.

The analysis in brief above covers the impacts to paleontological resources wholly and a detailed analysis was not required.

A.2 AIB-2 (Greenhouse Gases)

How would the Plan of Operations Modification impact greenhouse gas emissions?

Mining would produce greenhouse gases from equipment use and processing/transport of material. Construction emissions would be a single occurrence and would be a minor short-term contributor to global climate change. Emissions from mining operations would be similar to that which has been calculated in the UDAQ permits for the Tony M (DAQE-AN140100011-24) and the Bullseye Canyon (DAQE-AN144920002-14) uranium mines, which is 10,594 tons of CO_{2e} per year and 16,829 tons of CO_{2e} per year respectively. These emission levels are below the EPA GHG reporting threshold of 25,000 tons per year of CO_2e and are therefore considered de minimis.

The uranium mined is intended for use in energy production. Processing and transport of ore produces GHGs as well as transport and end use of refined uranium in energy production. Nuclear energy is one of the lowest GHG-emitting forms of energy production. Table 10-3 in the BLM Specialist Report on Greenhouse Gases (BLM, 2023) shows that nuclear energy produces on average 12 grams CO_2e/kWh. Compared to fossil fuel energy generation, nuclear energy produces about 1.2% of the GHG emissions of an equivalent energy-producing coal-fired power plant, and 2.6% of a natural gas power plant. On a national scale the use of renewables and nuclear energy sources have helped reduce the GHG emissions associated with the energy production sector. The Proposed Action would contribute to this trend.

A.3 AIB-3 (Cultural Resources)

How would the Plan of Operations Modification impact cultural resources?

In accordance with the regulations at 36 CFR § 800.12(b)(2), the BLM has notified the Advisory Council on Historic Preservation (ACHP), Utah State Historic Preservation Office (SHPO), and 32 Tribal Nations. A consultant permitted by the BLM to do archaeological survey work in San Juan County, Utah, was hired by the proponent to complete the Class III pedestrian survey. A simultaneous survey by the same archaeological contractor was ongoing for a separate undertaking which covered the northern boundary of the Woods project area. These 2 surveys cover the proposed ground disturbance and buffers to include construction, use, and maintenance. During U23HQ0750 a total of 5 sites were recorded, one of which is determined to be eligible for the National Register of Historic Places (NRHP). The portion of U24HQ0068 that covers the north end of the Woods project area includes 2 sites that were updated during that project, both considered eligible to the NRHP. The BLM has included measures such as archaeological monitoring, avoidance, other stipulations, and project design features to avoid and minimize effects to historic properties. With the above avoidance measures and stipulations, the proposed action would not affect cultural resources within the area of the proposed action to a degree that requires detailed analysis.

A.4 AIB-4 (Floodplains)

How would the Plan of Operations Modification impact floodplains?

As outlined in EA Section 2.2.5.4 (Drainage Control Structures), no disturbance to existing drainage systems are proposed, and surface facilities would be located outside of ephemeral drainages. There are no active floodplains associated with perennial streams in the immediate mine area. The area supports ephemeral washes (e.g., Dry Wash) that only flow with runoff from storm events. Stormwater runoff would be managed in conformance with the Stormwater Pollution Prevention Plan and Permit, which includes storm water / surface drainage control structures to contain 10-year/24-hour precipitation events. For the reasons listed above, floodplains are not affected to a degree that detailed analysis is required.

A.5 AIB-5 (Fuels/Fire Management)

How would the Plan of Operations Modification impact fuels/fire management?

The Proposed Action is within the La Sal (FMU10) and Monticello Plains (FMU12) Fire Management Units. Vegetation is generally pinyon-juniper (PJ) country with areas of sagebrush parks and native grass fields. There are extensive areas where chainings have been created. The vegetation in the chained areas is primarily crested wheat grass and sagebrush with PJ invading the chained areas. There is still extensive down and dead material from the chaining action. Recent drought conditions are causing a bug, the ips beetle, invasion of the pinyon trees resulting in the loss of many pinyon trees. Firefighter and public safety are the top priority for all fire management. Hard rock mining and equipment operations are potential ignition sources for wildland fires; however, impacts would be mitigated with implementation of design features listed in Section 2.2.11.3.

A.6 AIB-6 (Geology)

How would the Plan of Operations Modification impact geology?

The dominant geologic feature in the Velvet-Wood area is the Lisbon Valley Anticline. The Lisbon Valley Anticline is a northwest/southeast feature about 20 miles long that was formed when salt in the Paradox Formation was mobilized. The up-warping and subsequent erosion of the anticline has exposed Pennsylvanian to Cretaceous age rocks along the length of the anticline. Consolidated rocks that crop out in the Lisbon Valley area range in age from Late Pennsylvanian to early Pleistocene. The oldest, the Pennsylvanian Honaker Trail Formation, is exposed in the interior of the anticline with successively younger rocks exposed in the faces of three mesas along the flanks of the anticline. In the Velvet-Wood area the mesa recedes southward stepwise away from the center of the anticline and is known as Three Step Hill. Among the rock units exposed along the Lisbon Valley Anticline are the Permian Cutler Formation, the Triassic Chinle Formation (Moss Back Member) and the Morrison Formation (Salt Wash Member) that contain uranium deposits.

Three Step Hill is composed of three mesas, each progressively higher than the last. The Velvet-Wood Deposit is under the lowest mesa and on the margin of the second. The top of the mesa is a dip slope primarily on the top of the Wingate Sandstone. Low mesas of Kayenta Formation rocks are preserved near the southern base of the dip slope. The dip slope of the middle mesa is composed of resistant sandstone units of the Salt Wash Member of the Morrison Formation. The Brushy Basin Member has been stripped from the plateau but is exposed near the base of the slope of the third mesa. The highest mesa is capped by the Burro Canyon Formation. Some remnants of Dakota Sandstone are exposed on the upper plateau. The dips of the rocks are progressively shallower toward the south. The dips on the lower plateau are about 6-8 degrees and dips on the upper plateau are about 3-5 degrees. Faulting and folding are the major structural features of the Velvet-Wood area. The host rocks of the Velvet-Wood Area are truncated by the faulting on the southwest side of the Lisbon Valley graben. The faults are northeastward dipping normal faults. Displacement on the faults ranges from a few feet to as much as 700 feet. The mineralization of the Velvet-Wood Deposit appears to be fault bounded on the northeast side of the deposit. There are two major faults in the Velvet-Wood area. The rocks between the two faults are folded downward to the northeast (see Plan, Figure OP-6 (Anfield, 2025)). The rocks in the Velvet-Wood area exhibit jointing parallel to the Lisbon Valley anticline and are thought to be tensional joints.

Uranium mineral resources within and in the vicinity of the Velvet-Wood Project are found in the upper Permian Cutler formation. Many of the other mines in the district were hosted in the basal Moss Back member of the Triassic Age Chinle Formation overlying the Cutler Formation.

The operator has stated that “the ore will be mined using a modified room-and-pillar system and retreat mining.” Low level subsidence may occur within and outside the mining area based on the width of the extraction area, angle of draw, depth of cover, and overburden geology; however, backfilling (backstowing) and intentional pillar collapse would occur which would reduce subsidence. For the reasons stated above, mining in these formations is not expected to result in a geologic hazard or impact the geology in the area to the extent that a detailed analysis is needed.

A.7 AIB-7 (Lands/Access)

How would the Plan of Operations Modification impact lands/access?

There is a powerline right-of-way (ROW) (UTUT 106256635) that exists within the vicinity of the Proposed Action. However, the Proposed Action would not impair the access or function of the ROW. The proposal would widen a short portion of the existing B112 route to access and develop

the site. The Proposed Action would use existing roads and routes for access. The Proposed Action would not measurably influence lands and access because only the area near the mine portal would have limited access.

Overall, for the reason stated above, there are no impacts to lands from the Proposed Action to a degree that detailed analysis is required for reasons listed above.

A.8 AIB-8 (Livestock Grazing)

How would the Plan of Operations Modification impact livestock grazing on the Big Indian and the Lower Lisbon Allotments?

The project occurs within the Dry Wash Pasture (3,421 acres) of the Big Indian Allotment in the Monticello Field Office, and the Lower Three Step Pasture (1,407 acres) of the Lower Lisbon Allotment in the Moab Field Office. The area of proposed activity is primarily located in an Upland Shallow Loam (Pinyon-Utah Juniper) ecological site, which naturally lacks appreciable forage production for livestock due to the high content of rock, shallow soils, steep slopes, and arid environment.

The Proposed Action would have minimal impacts on the authorized livestock grazing use because 25 acres of the 28 acres slated for surface disturbance are already disturbed from past mining activities. In addition, soil and vegetation disturbances would be offset in the long-term by recovering conditions towards its original levels as specified in the Reclamation Section of the Proposed Action. Also, water treatment systems, Velvet facilities, and the leach field would be fenced to prevent intrusions by livestock. Livestock would likely have access to excess treated water being discharged into Dry Wash, therefore aiding in cattle distribution.

Proposed mining activities that occur during the grazing period may potentially have a minor influence to livestock practices, such as a modification in livestock distribution, increased vehicular use, and impediments to livestock grazing and movement at the mine site. During active mine operations cattle would likely spend little time in the operational area due to these disturbances from ongoing human activities.

Overall, for reasons stated above, there are no impacts to livestock grazing from the Proposed Action to a degree that detailed analysis is required for reasons listed above.

A.9 AIB-9 (Native American Concerns)

How would the Plan of Operations Modification impact Native American concerns?

The proposed mining activities would include some fencing to limit access to the mine portal and some other facilities for public safety, but designated roads through the mined areas will remain open to use by the general public. This should limit the impact to Native American religious practitioners to access any religious sites that may exist within the area of the Proposed Action. The BLM is not aware of any significant religious sites within the proposed mine plan area.

The BLM sent notification to Tribal Nations about the Proposed Action. No sacred sites were identified in the area of the proposed mining activities. Tribal Nations did not notify the BLM of any sacred sites or Native American ceremonial sites within the area of the proposed action and therefore no resources are available for a detailed analysis.

A.10 AIB-10 (Rangeland Health Standards)

How would the Plan of Operations Modification impact Rangeland Health Standards?

Utah Standards for Rangeland Health are individually addressed as separate resources for determination of impacts. Therefore, there are no effects to overall Rangeland Health Standards and Guidelines to a degree that detailed analysis is required because they are taken into consideration by the individual Standard / Resource in this document.

A.11 AIB-11 (Recreation)

How would the Plan of Operations Modification impact recreation?

The location of the project area receives very little recreational activity. That which does occur in this area is seasonal with light use in the spring and fall. The Old Spanish National Historic Trail segment for Las Tinajas is roughly three miles from the project area. There is very little evidence of recreational use to this and other Old Spanish National Historic Trail segments in the area. Users that do visit the Old Spanish Trail segments may experience a temporary rise in noise and dust from mine traffic, but some mine traffic already occurs in this area from other mining operations. Because of the limited visitation and impacts, further analysis is not needed.

A.12 AIB-12 (Socioeconomics)

How would the Plan of Operations Modification impact socioeconomics?

Development of the mine is expected to provide up to 76 jobs for surface preparation, underground development, mine production, and reclamation phases over an approximately 8-year period. It is likely that the full figure of 76 would be reached gradually as mine expansion proceeds.

The mining sector (which includes oil and gas as well as surface and underground mining), , is a relatively small portion of the regional economy, with 7% of employment (324 jobs in 2024) in San Juan County in the mining sector (U.S. Bureau of Labor Statistics). The 76 additional jobs expected from the current project would represent an increase in mining employment in the County of approximately 19%. It is likely that at least some of these workers would reside outside San Juan County. For example, another large mining operation in proximity to the Proposed Action (Lisbon Valley Copper Mine), draws many of its workers from outside San Juan County, principally from Grand County, Utah, and neighboring Colorado counties. Total employment in San Juan County was 4,936 jobs in 2024. The 76-job increase in the planning area's economy over the next 8 years represents a 1.5% increase in total jobs. No concomitant increase in population is expected due to the marginal increase in total jobs.

The State of Utah conducts assessments on large scale mineral projects using a variety of formulas for appraisal (State of Utah, 2025). Regardless of which formula is utilized, the Proposed Action could result in an increase in property tax value, with an associated increase in property tax revenue.

The Lisbon Valley Copper Mine employs approximately 70 individuals (San Juan Record, 2024). The proposed Plan Modification, which is being considered by the BLM would employ up to approximately 300 individuals. This increased employment, in addition to the employment from the Velvet-Wood Mine could result in increased pressure on local housing and other services. This would be mitigated somewhat by the distribution of employees to beyond the borders of San Juan

County. Overall, the proposed mine expansion is not expected to have an appreciable effect on socioeconomic factors such as employment, population, tax revenues or housing.

For the reasons stated above, socioeconomics is not affected to a degree that detailed analysis is required.

A.13 AIB-13 (Soils)

How would the Plan of Operations Modification impact soils?

Soils at the mine portal where most of the surface facilities would be located are 70- Rizno-Rock outcrop complex, 3 to 15 percent slopes soils which with the 3rd most common soil type within the project boundary (16.4%). The Velvet water treatment facility is within 74- Rock outcrop-Rizno complex, 3 to 15 percent slopes which is the most common soil type found within the project area (49.5%). Both of these Rizno soils consists of fine sandy loams with a parent material of Eolian deposits over residuum weathered from sandstone and shale. Vegetation on this series generally consists of blackbrush, Mormon-tea, Utah juniper and pinyon (PJ). The proposed Wood water treatment facility is within 101-Ustic Torriorthents-Ustollic Haplargids complex, 10 to 60 percent slopes soils which account for 7% of soils within the project boundary. This soil consists of very cobbly sandy loams with a parent material of colluvium derived from sandstone and shale. Vegetation on this series generally consists of blackbrush, shadscale and PJ. The 2nd most common soil within the project boundary is 14- Bond-Rizno fine sandy loams, 3 to 15 percent slopes which are fine sandy loams with a parent material of Eolian deposits derived from sandstone. The vegetation for this soil type is generally blue grama, sideoats grama, New Mexico feather grass, Indian ricegrass, scattered one seed juniper, and winter fat. Mine access roads are mainly within these 4 most common soil types, they rate slight to moderate for erosion risk, but the majority is unrated but has a high percentage of rock outcroppings.

The Proposed Action is in conformance with the Monticello Field Office RMP dated 2008. The RMP specifies a Fragile Soils/Slopes CSU (21% to 40%) and NSO (slopes greater than 40%) stipulation for surface disturbing activities (2008 RMP-Appendix B). The Proposed Action meets the CSU stipulation because it contains an erosion control strategy and reclamation and site plan with a design acceptable to the BLM. The area specified surface facilities including vent holes and associated access roads are mostly in areas of less than 40% slope (Maps available in supporting documentation) Some of the access roads, which are existing on the landscape already do pass through on slopes in excess of 40%, however this is still consistent with the RMP, Appendix B which states “An NSO stipulation cannot be applied to operations authorized under the mining laws without a withdrawal” and because the routes are existing and are not a new surface disturbance. Any areas of surface disturbance on slopes in excess of 40% would be subject to the CSU slopes stipulation.

The proposed mine operations would disturb approximately 28 surface acres, of which only 3 acres is new disturbance, the rest of the area has been already disturbed by previous mining activity and roads. The application of design features listed in Section 2.2.11.10 would mitigate impacts to the soil resources from the Proposed Action because soil would be salvaged to aid in reclamation activities and soil runoff would be reduced. The area of surface disturbance is not significant when compared to the overall area represented by these soil mapping units. The application of design features contained in the proposed action would adequately mitigate impacts to the soil resource

from the proposed action. Soils would not be impacted to the degree that would require detailed analysis in the EA.

A.14 AIB-14 (Vegetation – UT BLM Sensitive Species)

How would the Plan of Operations Modification impact vegetation – UT BLM Sensitive Species?

The Proposed Action is in potential habitat for four BLM sensitive plant species identified in contractor produced baseline reports from 2023: Cymopterus beckii, Lomatium latilobum, Erigeron kachinensis, and Pediomelum aromaticum var. tuhyi. The project boundary does not overlap with the Astragalus iselyi conservation area. Known populations of these species within Canyon Country District are not expected to be impacted by project activities since they are miles beyond the plan boundary. The habitat for these species is listed below:

Cymopterus beckii: Mountain brush, pinyon-juniper, and ponderosa pine in sandy or stony soils.
Lomatium latilobum: Pinyon-juniper, dwarf mountain mahogany, and desert shrub communities mainly in Entrada sandstone.

Erigeron kachinensis: Seeps and hanging gardens, montane sites with mountain brush, pinyon juniper, ponderosa pine, Douglas fir and manzanita.

Pediomelum aromaticum var. tuhyi: Pinyon-juniper and mixed desert shrub communities on rimrock or shallow sand.

No habitat occupancy was documented during baseline surveys in 2023, nor from site visits completed on May 1, 2025. Suitable habitat was not identified in areas associated with new and old project disturbances. Therefore, for the reasons stated above, vegetation – UT BLM sensitive species are not affected to a degree that detailed analysis is required.

A.15 AIB-15 (Vegetation – Invasive Species/Noxious Weeds)

How would the Plan of Operations Modification impact vegetation – Invasive Species/Noxious Weeds?

Noxious and invasive weeds observed throughout the site include cheatgrass (Bromus tectorum), redstem filaree (Erodium cicutarium), mullein (Verbascum thapsus), Russian thistle (Salsola tragus), and saltcedar (Tamarix ramosissima. In Utah, saltcedar is listed as a Class C Weed, which is found extensively in the state and is thought to be beyond control, with containment focused on small infestations. The other invasive species occurred in isolated localities and were not negatively influencing the overall structural / functional components of the native vegetative community.

The Monticello Field Office does not anticipate any changes in the proportion of controllable spreading agents to contribute to the establishment and spread of invasive plants as a result of the Proposed Action. This is due to the arid environment, limited presence of invasive / noxious weeds in the area, and incorporating the design features included in Section 2.2.11.

The Proposed Action does not pose an appreciable threat to the further establishment and spread of noxious weeds and invasive species for reasons listed above. Thereby, invasive species and noxious weeds are not impacted to a degree that detailed analysis is required.

A.16 AIB-16 (Visual Resources)

How would the Plan of Operations Modification impact visual resources?

The proposed facilities are located in an area designated as visual resource management (VRM) Class IV (BLM 2008a: map 71). The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change may be high and may dominate the view and be the major focus of viewer attention. However, the impact of these activities should be minimized through careful siting, minimal disturbance, and repeating the basic elements of form, line, color, and texture within the existing setting.

Past mining and exploration disturbances are prevalent in the area of the proposed project, including the large Lisbon Valley mine facility immediately north of the proposed project area. Both the Lisbon Valley facility and the proposed project are within the viewshed of US 191 north of Monticello, UT. The proposed project involves development of facilities which could draw attention, including, but not limited to: waste rock piles, ore and topsoil stockpiles, an office, a warehouse, mine access roads, and a water treatment facility.

The proposal would be consistent with the objectives for VRM Class IV. Design features incorporated into the proposal such as dust abatement, painting mine facilities a color from the Standard Environmental Colors palette that corresponds to the natural setting, and contouring and reseeding of topsoil stockpiles would mitigate visual contrast during the eight-year period of mine operation. Proposed site reclamation would mitigate visual contrast over the long term. For the reasons stated above visual resources are not affected to a degree that detailed analysis is required

A.17 AIB-17 (Vegetation – Threatened, Endangered, or Candidate Species)

How would impacts to groundwater hydrology from the proposed mining activities affect habitat suitability for Navajo sedge?

The Proposed Action includes areas identified by USFWS as potential habitat for Navajo sedge (*Carex specuicola*). This species occurs at seeps and hanging gardens in sandstone alcoves of the Cedar Mesa Formation and Glen Canyon Group (Navajo, Kayenta, Wingate).

Suitable geology and slopes appropriate for the existence of hanging gardens are present in the project boundary. However, these areas have not been completely surveyed to FWS Botanical Survey Guidelines. Vegetation baseline surveys completed in 2023 did indicate the presence of two hanging garden seeps approximately ¼ mile outside of the project area but found no occupied habitat. These surveys relied on aerial imagery which may not effectively identify springs and associated vegetation on cliff walls.

As described in Section 3.4, springs in the vicinity of the project area are fed by water from the N Aquifer while the aquifer affected by the dewatering of the mine is from the confined P Aquifer which is located within geological formation deposited between the upper Carboniferous to lower Triassic periods. Therefore, there are no potential impacts to the known seeps in the vicinity of the proposed project from the Proposed Action due to the lack of hydrologic connection between the N Aquifer (source of seeps) and the Moss Back Member of the Chinle (zone of water production for this proposal).

Formations containing the P aquifer outcrop just to the north of the project area but these outcrops are higher than hydraulic heads measured at the monitoring wells and identified as areas of localized recharge to the system (see Plan/Attachment C-Hydrology Report (Anfield, 2025)). The

outcroppings of the formations containing the P aquifer are approximately 25-miles to the west of the project area and given potential hydraulic conductivity ranges it would be expected that changes in water availability to springs would take centuries to millennia to occur and the potential impacts to any individual spring supporting the species would be impossible to predict. For the reasons stated above, vegetation - threatened, endangered, or candidate species are not affected to a degree that detailed analysis is required.

A.18 AIB-18 (Wastes – hazardous or solid)

How would the Plan of Operations Modification impact wastes – hazardous or solid?

The mining activities would generate various solid wastes, including typical household waste (e.g., paper, glass, plastics, metals, and sewage), scrap iron, and overburden. Household-type wastes would be disposed of in industrial roll-off containers, while sewage would be managed through portable sanitation units and a septic system (with a fenced leach field) According to 40 CFR 261.4(b)(7), overburden from uranium ore mining is not considered hazardous waste. Waste rock piles would be reclaimed in accordance with an approved reclamation plan (NOI-OP Rev. 4, Section 6) submitted to the BLM.

Hazardous materials anticipated at the site include fuels, lubricants, antifreeze, lead-acid batteries, and explosives. Secondary concrete containment systems would be installed around all fuel tanks and bulk oil storage to prevent accidental releases and soil contamination. These containment systems would be designed to hold more than 110% of the largest container's volume, plus runoff from a 100-year, 24-hour storm event. A Spill Prevention, Control, and Countermeasure (SPCC) Plan has been developed (NOI-OP – Rev. 4, Attachment H) and would be maintained on-site as per 40 CFR 112. Explosives storage would comply with Mining Safety and Health Administration (MSHA) regulations, while other hazardous materials would be kept in a secure, locked shop. The shop floors would be constructed to contain any liquid spills within the building.

A Hazardous Communication Plan (HazCom Plan) would need to be available on-site, addressing training, labeling, chemical inventory, disposal protocols, and Material Safety Data Sheets (MSDS). Hazardous wastes expected at the site include used oils, spent solvents, lead-acid batteries, and any accidental spills of hazardous materials. Used oils and batteries would be recycled and thus not counted toward hazardous waste determinations. Since Energy Fuels would generate fewer than 100 kg (roughly 220 pounds) of hazardous waste monthly, the company qualifies as a Conditionally Exempt Small Quantity Generator (CESQG) under 40 CFR 261.5. The BLM would be promptly notified in the event of any spills or releases, and immediate action would be taken to contain and clean up any such incidents.

No extremely hazardous substances, as defined in 40 CFR 355, would be used, produced, stored, transported, or disposed of as part of the Proposed Action. Given the comprehensive waste management protocols and contingency plans in place, there would be no adverse impacts related to hazardous or solid wastes. Therefore, further analysis of hazardous or solid wastes is not required in this Environmental Assessment (EA).

A.19 AIB-19 (Wildlife – Non-designated species)

How would the Plan of Operations Modification impact wildlife – non-designated species?

The Proposed Action would occur within deer and elk critical winter range according to the 2008 Moab RMP and the 2008 Monticello RMP. Surface disturbance would not occur between November 15 and April 15 to prevent disturbance to deer and elk on critical winter range.
Exceptions would be granted by the BLM wildlife biologist if the proposed areas are surveyed preconstruction and found to be unoccupied by deer or elk. Most deer and elk will emigrate from the project area by April 15. Those that remain in the area will likely habituate to the sounds and traffic occurring on the mine and mining roads or disperse to similar habitat nearby.

For the reasons stated above, non-designated wildlife species will not be affected to a degree that detailed analysis is required.

A.20 AIB-20 (Wildlife – Migratory birds including raptors)

How would the Plan of Operations Modification impact wildlife – Migratory birds including raptors?

The Proposed Action would occur within migratory bird nesting habitat. Surface disturbance would not occur between March 1 to July 31 to prevent disturbance to migratory birds during nesting season. Exceptions would be granted if preconstruction surveys conducted by a BLM approved wildlife biologist find the habitat to be unoccupied by nesting migratory birds protected by the Migratory Bird Treaty Act. Migratory bird species in surrounding habitat would likely habituate to the sounds and traffic occurring on the mine and mining roads or disperse to similar habitat nearby.

For the reasons stated above, migratory birds would not be affected to a degree that detailed analysis is required.

A.21 AIB-21 (Woodland/Forestry)

How would the Plan of Operations Modification impact woodland/forestry?

The Proposed Action is within the Moab Field Office and Monticello Field Office and is not within locations with woodland or forestry restriction on wood cutting (Moab RMP 2008; Monticello RMP 2008). The general vicinity is comprised of pinyon pine and juniper woodland, with areas of sagebrush, and open sagebrush/grassland steppe as viewed from aerial imagery, and vegetation survey photos in the Plan. The area of disturbance is comprised of previously disturbed area and no longer exhibit pinyon and juniper woodland characteristics. The Proposed Action would require removal of existing pinyon and juniper woodland on the approximately 28 acres of surface disturbance, with 3 acres of new surface disturbance beyond the existing mining footprint. Approximately 25 acres of previous disturbance have pinyon pine and juniper seedlings and saplings beginning to establish, thus requiring the removal of early successional staged of woodland establishment. The removal of newly established pinyon pine and juniper as well as the removal of established stands of trees would be a minor disturbance given the scale of the surrounding landscape and the abundance of pinyon and juniper woodland and shrubland. If feasible, firewood diameter pinyon pine and juniper removed during construction or mine operation are recommended to be made available for use as fuelwood by allowing the material to be gathered with a valid BLM wood collection permit by members or the public, or by coordinating effort to have the material hauled to a nearby wood bank. For the reasons stated above, woodlands and forestry would not be affected to a degree that detailed analysis is required.

A.22 AIB-22 (Human Health and Safety)

How would the Plan of Operations Modification impact human health and safety?

Mining was historically hazardous work; however, modern mine safety practices and regulatory requirements have significantly improved worker health and safety. Worker health and safety at mining and mineral processing operations in the United States are strictly regulated by the Mine Safety and Health Administration (MSHA).

Uranium mine safety has improved substantially since the late 1960s when state and federal regulations for mine ventilation were first implemented. Unlike the early days of uranium mining, the industry now has extensive knowledge of the dangers of unprotected inhalation of uranium dust, exposure to radon gas, and the mechanics of radiation. Thorough ventilation is now required in uranium mines and smoking is prohibited within the mines.

Uranium is a naturally occurring radioactive material in rocks and soils in the vicinity of the proposed Project Area. During the mining process, subgrade ore/mineralized waste rock (uranium ore not rich enough to meet market demand and price) are removed to allow extraction of the uranium ore. Most of the natural radioactivity is derived from the uranium-238 and uranium-235 decay chains. One of the products in the uranium-238 decay chain is radium-226 (Ra-226), which is the principal radionuclide of concern for characterizing the distribution of radioactivity in the environment. Ra-226 decays to radon, an invisible, odorless gas.

Baseline gamma surveys were conducted in 2008 at the existing reclaimed portal and waste rock site and proposed facilities. The detailed survey methods are provided in Attachment D of the Plan. Background levels of Ra-226 that are normally present in soil in trace concentrations for this area are 1 pCi/g.

Estimated Ra-226 concentrations in surface soils within the project area are generally low (< 1 pCi/g), with slightly higher concentrations (1-2 pCi/g) tending to correspond to previously disturbed areas such as the access road leading to the waste rock pile and two historical air shaft locations. In some cases, very small portions of these latter areas also have estimated Ra-226 concentrations in excess of 2 pCi/g. The reclaimed waste rock pile itself was more than 20 pCi/g but did not give a specific value.

Background gamma radiation for most of the project area was under 15 microroentgen (µR/hr) which is considered low. The area of the reclaimed waste rock exhibited higher gamma activity with values above 50 µR/hr, but did not give a specific value.

The EPA requires monitoring and annual reporting of radon emissions from mine ventilation shafts. EPA's regulations limit the emissions of Radon-222 to the ambient air from an underground uranium mine to an amount that would not cause any member of the public to receive an annual incremental dose of 10 mrem above background levels (40 CFR Part 61, Subpart B).

The Mine rock (subgrade ore/mineralized waste rock and ore) has the potential to generate acid and leach elevated concentrations of some metals if subjected to water infiltration. The rock also has the potential to present a human health risk through direct contact to an exposed individual.

Ore extracted from the Velvet-Wood Mine would be planned to be hauled to the Shootaring Canyon Uranium Facility near Ticaboo, Utah for processing mostly likely via State Highway

SR191 through Monticello and Blanding and then SR 95 to SR 276. It would be transported according to USDOT regulations (CFR Title 49, Transportation). According to the Utah Department of Transportation's (UDOT) annual average daily traffic (AADT) counts, traffic on segments of State Highways 95 and 191 that are part of the access route has increased since 2013. Reported AADT on SH 95 between SH 261 and SH 191 increased from 405 vehicles in 2013 to 560 in 2023. Reported AADT on SH 191 in the section south of Blanding increased slightly from 3340 in 2013 to 3500 vehicles in 2023. The highest AADT count occurs on the SR 191 north of Monticello with 5200.

Highway 95 traverses through the Bears Ears National Monument which is managed under the 2025 BENM Resource Management Plan (RMP). The BLM does not have the ability to restrict travel on rural highways (e.g., SR-95).

Radiation exposure, primarily from radon-222 gas, and its daughter products, is a human health and safety concern at uranium mines. Studies have documented the increased risk of cancer and related mortality rates among uranium mine workers. Miners at the Velvet-Wood Mine, and other uranium mines throughout the country, are protected through enforcement of MSHA regulations which establish maximum exposure levels of radon and radon-daughter products. The MSHA regulations and protection measures focus on properly ventilating underground mine workings because potentially harmful levels of radon are most likely to be found in those confined spaces. The radon released from a mine's ventilation system could also represent a health concern to the public.

Potentially harmful levels of radon are most likely to be found in the confined space of the underground mine workings infrastructure, not in the open air outside of the mine workings. Because radon is the heaviest noble gas (8 times the density of our atmosphere), it would tend to sink to the lower portions of the mine rather than move to the top. The underground working environment, including air quality and radiation exposure, is regulated by MSHA. MSHA inspects and regulates the overall safety of mining operations. The Velvet-Wood Mine would be required by MSHA to monitor and control particulate and radiation exposure to workers at the Mine.

Anfield would be required to establish a radon-daughter monitoring program in accordance with 57 CFR § 5037, in which exposure levels would be monitored and recorded. If radiation levels in a working area are found to be in excess of MSHA standards, the ventilation would be corrected immediately, and more frequent monitoring would be required to verify compliance.

Radon gas emissions are typically mitigated by external venting. The radon ventilated from a mine would quickly disperse upon reaching exhaust shafts or portals. This has been verified at the Daneros Mine another uranium mine located within San Juan County other uranium mines through monitoring and modeling of ventilation rates and radon concentrations in accordance with 40 CFR Part 61, Subpart B (BLM 2017).

In 2013, Energy Fuels, with BLM oversight, conducted a study of soil around ventilation shafts at the La Sal Mines Complex (Energy Fuels, 2013), which is an underground uranium mine located near La Sal, Utah. The purpose of the study was to determine if air and dust emanating from vent shafts would settle into the soil near the vent and result in elevated radionuclide concentrations. Areas around the vents were checked with a gamma meter and soil samples were collected to determine the extent of radionuclide concentrations above background levels. Background gamma

radiation levels in the general area ranged from 4 to 8 µR/hr with an average of 6 µR/hr. The maximum gamma levels reported around the three shafts for waist-level measurements were 34, 23, and 16 µR/hr. A marked reduction in gamma readings were observed as the distance from the vent shafts increased with background levels being present within 15 feet at two of the shafts and within 33 feet at the third shaft. Ra-226 activity levels in the surface soil samples ranged from 0.3 to 3.1 pCi/g. Similar measurements would be expected for vent shafts associated with the Velvet-wood Mine, especially given that the La Sal Mines Complex has operated for a longer period of time.

Currently the soil samples taken at the reclaimed waste rock pile had a pCi/g more than 20. As part of reclamation, Anfield had committed to a 20 pCi/g average Ra226 cover criteria for the Velvet-Wood Mine, with a maximum point value criteria of Ra266 at 30 pCi/g. Most areas that were sampled currently in the project area are less than 1 pCi/g and that is not expected to change for most areas, the exception being the waste rock pile and areas adjacent to it.

This and the other design features of the Proposed Action (see Section 2.2, specifically 2.2.11.7) would prevent or minimize the effects from radiation and therefore would not be further analyzed in the EA.

References

Beahm, D. L., Hutson, H. H., Warren, C. D., & McNulty, T. (2023). The Shootaring Canyon Mill and Velvet-Wood and Slick Rock Uranium Projects, Preliminary Economic Assessment National Instrument 43-101. Pg. 1-143.

Bureau of Land Management. 2017. Daneros Mine Plan of Operations Modification Environmental Assessment. DOI-BLM-UT-Y020-2016-0001-EA

Energy Fuels Resources (USA) Inc. 2013. Vent Shaft Gamma Survey and Sampling Report La Sal Mine Complex, San Juan County, Utah. Lakewood, Colorado. August.

Martz, J. W., Irmis, R. B., & Milner, A. R. C. (2014). Lithostratigraphy and Biostratigraphy of the Chinle Formation (Upper Triassic) in southern Lisbon Valley, southeastern Utah. In

MacLean, J. S., Biek, R. F., and Huntoon, J. E., editors, Geology of Utah's Far South: Utah Geological Association Publication 43, p. 397-448.

San Juan Record. (2024, November 26). *San Juan Record*. Retrieved from San Juan Record News: https://www.sjrnews.com/san-juan-county/90-workers-lose-jobs-lisbon-valley-mine

State of Utah. (2025, May 13). *Centrally Assessed Property*. Retrieved from Utah Property Tax Division: https://propertytax.utah.gov/centrally-assessed/

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Monticello Field Office
365 North Main Street
Monticello, Utah 84535

FINDING OF NO SIGNIFICANT IMPACT
for Velvet-Wood Mine Plan of Operations Modification
DOI-BLM-UT-Y020-2025-0018-EA

INTRODUCTION:

The Bureau of Land Management (BLM) prepared an Environmental Assessment[1] (EA) (DOI-BLM-UT-Y020-2025-0018-EA) for the Anfield Resources Holding Corp. (Anfield or Applicant) proposed Plan of Operations Modification (Plan) for the Velvet-Wood Mine. This Finding of No Significant Impact applies to the Proposed Action as described in Section 2.2 of the EA.

FINDING OF NO SIGNIFICANT IMPACT:

Based on my review of the attached EA and supporting documents, I have determined that the Proposed Action/Alternative B will not significantly affect the quality of the human environment. Therefore, an environmental impact statement (EIS) is not required. This finding is based on the degree of the effects described in the following sections within the identified affected environment.

Potentially Affected Environment

Section 3.1 of the EA describes the general setting of the Proposed Action. The Velvet-Wood mine is located in the central portion of the Colorado Plateau in southeastern Utah. The Mine spans two watersheds: East Canyon - Hatch Wash Watershed (HUC 1403000505), which is nested within the Upper Colorado - Kane Springs Subbasin, and the Summit Canyon - Dolores River Watershed (HUC 1403000207), which is nested within the Upper Dolores Subbasin. This area is a total of 305,965 acres, of which 161,712 acres is BLM-managed. Existing and historical land uses in this area include recreation, grazing, rights-of-way, and oil and gas development.

Degree of Effects

I considered the following in my evaluation of the selected alternative:

i. Short- and long-term effects

The Plan would have both short- and long-term effects on the human environment during the mine operation and after cessation of mining. EA Section 3.2 and Appendix A discuss the short- and

[1] The President issued Executive Order 14156 (EO14156) Declaring a National Energy Emergency on January 20, 2025, which directed the heads of executive departments and agencies to identify and exercise lawful authorities to "...facilitate the identification, leasing, siting, production, transportation, refining, and generation of domestic energy resources... on Federal lands". On April 23, 2025, the Council on Environmental Quality (CEQ) authorized the use of alternative arrangements to comply with the National Environmental Policy Act (NEPA) before taking urgently needed actions (43 CFR 46.150) for projects that respond to the national energy emergency. On April 28, 2025, Anfield submitted in writing that it requests the alternative arrangements for NEPA compliance to be used. On May 12, 2025, their request was approved by the Acting Assistant Secretary – Land and Minerals Management.

long-term effects of implementation of the Proposed Action. Neither the short-term nor the long-term effects would be significant for the following reasons:

- The extent of the new surface disturbance is limited to 3 acres.
- The design features, both applicant-committed (included in the Proposed Action in Section 2.2 of the EA) and BLM-required (Section 2.2.11 of the EA), reduce the short- and long-term magnitude of the effects by mitigating or avoiding effects.

ii. Beneficial and adverse effects

Implementation of the Plan would have both beneficial and adverse effects on the human environment during the mine operation. EA Section 3.2 and Appendix A discuss the beneficial and adverse effects. The adverse effects would not be significant because:

- The scope of the effects is limited (3 acres of new disturbance).
- The design features, both applicant committed (included in the Proposed Action in Section 2.2 of the EA) and BLM required (Section 2.2.11 of the EA), reduce the adverse effects by mitigating or avoiding effects.

The Plan would result in increased uranium and vanadium mining, which would cause beneficial impacts to domestic energy production and help address the national energy emergency (EA Section 3.2.3).

iii. Effects on public health and safety

Public health and safety is analyzed in Appendix A of the EA. Design features for public health and safety are included in Section 2.2.11.7 of the EA. The underground working environment, including air quality and radiation exposure, is regulated by the Mine Safety and Health Administration. Based on the analysis documented in Appendix A of the EA, the potential impacts to public health and safety would not be significant.

iv. Effects that would violate Federal, State, Tribal, or local laws protecting the environment

The relationship of the Proposed Action to applicable statutes and regulations is discussed in Section 1.5 of the EA. No Federal, State, local or Tribal laws or requirements imposed for the protection of the environment would be violated as a result of the selected alternative.

Due to the declaration of the national energy emergency on January 20, 2025, alternative procedures for Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act were requested by Anfield and approved by the Acting Assistant Secretary - Land and Minerals Management.

For Section 7 consultation, the BLM coordinated with the U.S. Fish and Wildlife Service (FWS) in accordance with 50 CFR 402.05(a). BLM sent a memo to FWS on May 13, 2025, to initiate informal, expedited consultation procedures. FWS responded on May 13, 2025, that the BLM has applied the appropriate conservation measures to minimize the effects on ESA-listed species.

For compliance with 54 USC 306108, consistent with 36 CFR § 800.12(b)(2), the BLM followed the process for undertakings responding to an emergency declaration when there is no formal emergency procedure or applicable programmatic agreement. BLM sent letters to the Advisory

Council on Historic Preservation, the appropriate State Historic Preservation Officer or Tribal Historic Preservation Officer, and Tribal Nations on May 13, 2025. The BLM also met virtually or in-person with the Hopi Tribe, Pueblo of Zuni, staff from the Navajo Nation Heritage and Historic Preservation Department, staff from the Pueblo of San Felipe, and staff from the Ute Mountain Ute Tribal Historic Preservation Office (THPO). The BLM received five responses in writing, three from Tribal Nations, one from the Utah SHPO, and one from the ACHP.

At meetings, the Tribal Nations expressed concerns with the emergency procedures, water impacts, transportation, and uranium contamination and as summarized in Section 4.2 of the EA.

The Utah SHPO concurred with BLM's determination of effect for the undertaking. The ACHP found BLM's proposed measures for minimization and avoidance to be reasonable. The ACHP also advised the BLM to follow 36 CFR 800.13(b)(3) if there are any post-review discoveries identified during monitoring of the implementation of the proposed action.

The BLM will follow all regulations, as necessary, pertinent to applicable emergency procedures including 36 CFR 800.13(b)(3). The BLM or the proponent have also included design features to help minimized impacts to cultural resources from the dewatering of the mine, radiation, and water contamination.

APPROVAL:

NICOLLEE GADDIS-WYATT

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Nicollee Gaddis-Wyatt

Canyon Country District Manager

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Monticello Field Office
365 North Main Street
Monticello, Utah 84535

DECISION RECORD
for Velvet-Wood Mine Plan of Operations Modification

DOI-BLM-UT-Y020-2025-0018-EA
May 2025

I. DECISION

I have reviewed the attached Environmental Assessment (EA) and Finding of No Significant Impact (FONSI), and it is my decision to select the Proposed Action (described in detail in EA Section 2.2), which is to authorize the proposed modification to the Plan of Operations for the Velvet-Wood Mine that was submitted by Anfield Resources Holding Corp. (Anfield or Applicant), including all of the design features in Section 2.2.11 of the EA (DOI-BLM-UT-Y020-2025-0018-EA).

The Velvet Mine is an existing, conventional underground uranium/vanadium mine located near Lisbon Valley in San Juan County, Utah. The first Plan of Operations for the Velvet Mine was submitted and approved in 1981. An amendment to the Velvet Mine Plan of Operations was authorized by the BLM in 1988 when the mine was not in active operation. Reclamation work began on the Velvet Mine in 2003, and more work was completed in 2019, but as of 2023, the reclamation standards had not yet been met. These lands are subject to location under the mining laws of the United States. Authorized mining operations are governed by Federal regulations at 43 CFR Subpart 3809 for the purpose of preventing unnecessary or undue degradation of public lands. The authorized Plan is also consistent with the Use and Occupancy regulations (43 CFR Subpart 3715).

The President issued Executive Order (E.O.) 14156, "Declaring a National Energy Emergency," on January 20, 2025, which directed the heads of executive departments and agencies to identify and exercise lawful authorities to "facilitate the identification, leasing, siting, production, transportation, refining, and generation of domestic energy resources... on Federal lands." On April 23, 2025, the Council on Environmental Quality (CEQ) authorized the Bureau of Land Management (BLM) to use alternative arrangements to comply with the National Environmental Policy Act (NEPA) before deciding whether to take urgently needed actions (43 CFR § 46.150) for projects that respond to the national energy emergency. On April 28, 2025, Anfield submitted in writing a request for BLM to use the alternative arrangements for NEPA compliance. On May 12, 2025, the Acting Assistant Secretary, Land and Minerals Management, approved the request.

II. MONITORING, COMPLIANCE AND CONFORMANCE

The BLM will routinely inspect operations to verify compliance with the approved Plan and the Federal regulations at 43 CFR Subpart 3809 and 43 CFR Subpart 3715.

The specific compliance and monitoring programs that Anfield must implement pursuant to the approval of the Plan are found throughout the Proposed Action of the EA, including design features (Sec. 2.2.11) and the Monitoring Plan submitted by Anfield (Attachment I of the Plan). These

include monitoring programs that Anfield committed to under its Plan to comply with the applicable environmental, statutory, and regulatory programs developed through Federal, state, and local permitting processes.

The decision is in conformance with the 2008 Monticello Field Office Record of Decision and Approved Resource Management Plan (RMP) and the 2008 Moab Field Office Record of Decision and Approved Resource Management Plan. The goals and objectives in both plans promote responsible exploration and development. The specific decisions that provide for this activity include Mineral Resources (MIN) management decision in the RMPs: MIN-18 for Monticello and MIN-6, 7, and 9 for Moab. Further details regarding land use plan conformance are found in Section 1.4 of the EA.

III. PUBLIC INVOLVEMENT

On April 23, 2025, CEQ authorized the use of alternative arrangements to comply with NEPA before taking urgently needed actions (43 CFR § 46.150) for projects that respond to the national energy emergency. Under these alternative arrangements for NEPA compliance, the Responsible Official is not required to seek public comment before finalizing an EA. The BLM published a summary of the proposed project on ePlanning on May 12, 2025.[1]

IV. RATIONALE FOR DECISION

The Proposed Action will allow Anfield to extract valuable mineral deposits that are open for development on the public lands under the Mining Law of 1872, as amended, in a manner that will prevent unnecessary or undue degradation of the public lands, as defined in 43 CFR § 3809.5. The authorities under which I am making this decision are 43 CFR Subparts 3715 and 3809; the Federal Land Policy and Management Act (43 U.S.C. §§ 1701 *et seq*.), and the Mining Law of 1872, as amended (30 U.S.C. §§ 22 *et seq*.).

The Bureau of Land Management (BLM) has determined that the Velvet-Wood Plan of Operations Modification will not cause unnecessary or undue degradation of public lands for the following reasons:

- The Plan of Operations requires design features (Section 2.2.11 of the EA) that meet the performance standards at 43 CFR § 3809.420.
- The planned operations are reasonably incident to prospecting, mining, or processing operations, as defined at 43 CFR § 3715.0-5.

Under the Department's alternative arrangements to comply with NEPA, the BLM prepared a rigorous and thorough EA, which considered the relevant potential environmental impacts, and which concluded with a FONSI.

Furthermore, the Plan of Operations Modification includes appropriate protective measures (EA Section 2.2.11) designed to avoid or minimize environmental impacts.

[1] Under NEPA, 42 USC §§ 4321–4347, and the Department of the Interior's Alternative Arrangements for NEPA Compliance, the BLM was not required to seek public comments when preparing the environmental assessment for this action. The BLM and the Department nevertheless considered the comments that they received, including those submitted in writing by the Grand Canyon Trust and the Wilderness Society on May 22, 2025.

In addition, the implementation of the proposed action will contribute to addressing the national energy emergency declared in E.O. 14156, which notes the "unusual and extraordinary threat to our Nation's economy, national security, and foreign policy" posed by "[t]he United States' insufficient energy production, transportation, refining, and generation." The declaration invoked concerns about the adequacy of the domestic supply of both uranium and critical minerals, including vanadium.

Uranium and vanadium are important to U.S. national security. Commercial uses of uranium include fuel for civilian nuclear reactors, as well as uses in medical applications. Uranium is also used for fuel in U.S. Navy nuclear reactors, such as reactors in Virginia-class attack submarines, and in the production of tritium, which is required for nuclear weapons. Vanadium also has important uses, namely as a strengthening agent in steel production. Additionally, it is used in titanium aerospace alloys in both commercial and military aircraft.

Due to the failure of the previous administration to address mineral supply chain vulnerabilities, the United States is highly reliant on imports—oftentimes from unreliable sources—for both uranium and vanadium. Under the Biden administration in 2023, U.S. nuclear generators had to rely on imported uranium concentrate for 99% of their source materials, including from sources in Russia, Kazakhstan, and Uzbekistan. For vanadium, in 2024, China, Russia, South Africa, and Brazil produced almost 100% of the world's mined vanadium, and the United States relied on vanadium imports for nearly half of its domestic consumption.

As the national energy emergency declaration notes, "Our Nation's current inadequate development of domestic energy resources [including both uranium and vanadium] leaves us vulnerable to hostile foreign actors and poses an imminent and growing threat to the United States' prosperity and national security." Russia has imposed export controls on uranium, while China has imposed export controls—including outright bans—on several critical minerals. By increasing U.S. production of uranium and vanadium, the Velvet-Wood Mine Plan of Operations Modification would bolster domestic energy production and address the national security risks identified by the President in the national energy emergency declaration.

In conclusion, the Department considered the relevant factors and hereby determines that the Plan of Operations Modification is appropriately approved using emergency procedures because it will help the United States address the national energy emergency by increasing uranium and vanadium production in the United States.

V. FINAL AGENCY ACTION

Plan of Operations Modification Approval

Approved by:

NICOLLEE GADDIS-WYATT

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Date: 2025.05.23 10:14:22 -06'00'

Nicollee Gaddis-Wyatt

Canyon Country District Manager

Secretarial Approval

I hereby approve the decision to authorize the Plan of Operations Modification for the Velvet-Wood Mine. Because I am exercising the delegated authority of the Secretary, my approval constitutes the final decision of the Department of the Interior and, in accordance with the regulations at 43 CFR § 4.410(a)(3), is not subject to appeal under Departmental regulations at 43 CFR Part 4. Any challenge to this decision must be brought in federal district court.

Approved by:

ADAM SUESS

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Adam G. Suess

Acting Assistant Secretary - Land and Minerals Management